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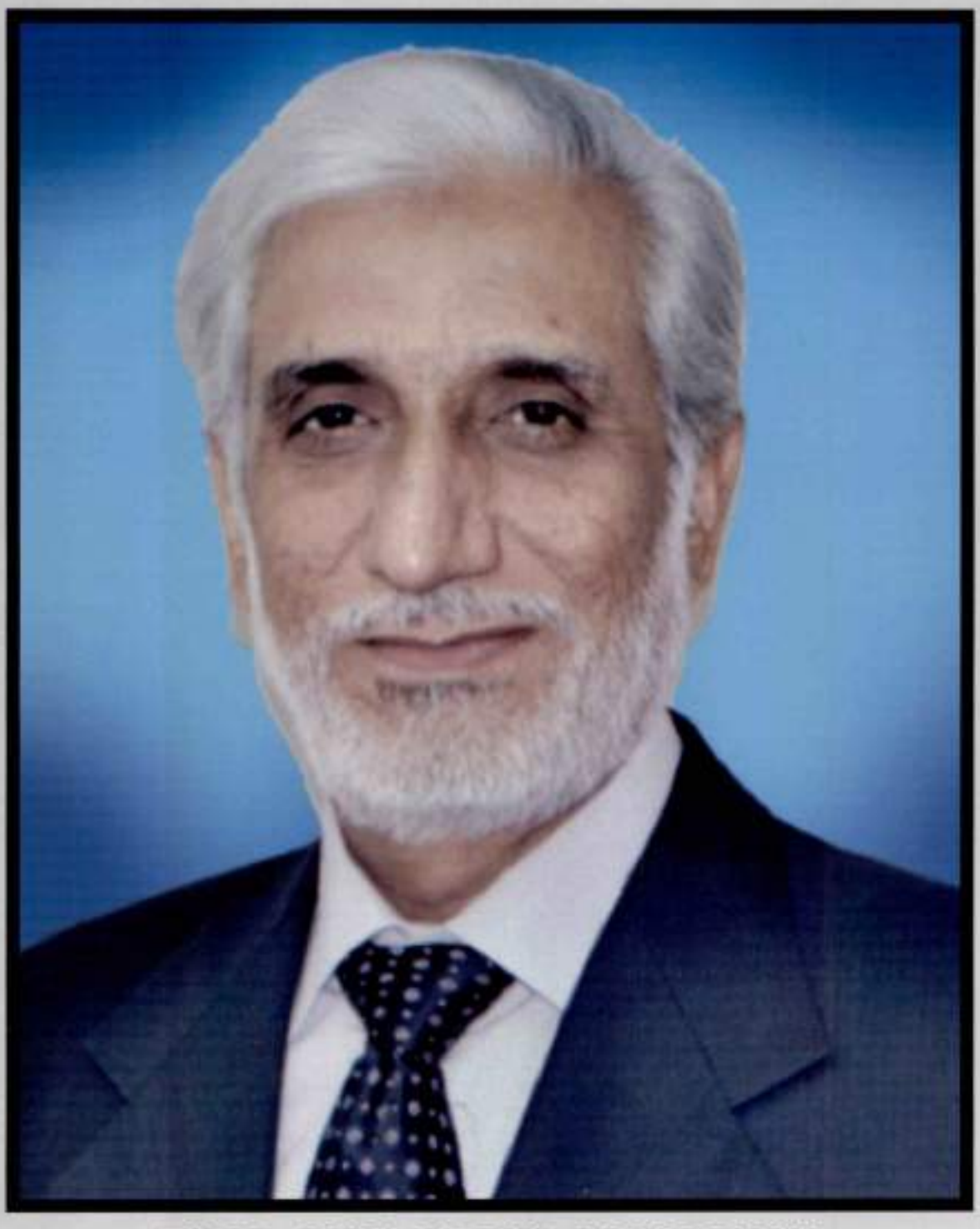

ENGR. SYED ABDUL QADIR SHAH
CHAIRMAN, PAKISTAN ENGINEERING COUNCIL

MESSAGE FROM THE CHAIRMAN PEC

RESPECTED MEMBERS OF GOVERNING BODY,

It is heartening to share that the things have begun to move in positive direction at satisfactory pace within PEC. I am hinting towards the successful holding of PEC dinner in Karachi on 26th October, in which over one thousand engineers participated, was a source of pleasure for me. It proved two important points: Firstly, there is a dearth and scarcity of such usefull events within the engineer community and PEC through its PR Committee can play a vital role to fill this gap. Secondly, it proved that the PR Committee under its vibrant convener Mr. Mukhtar Sheikh is determined to live up to the expectations. The same is also evident from the fact that this committee also convened its meeting on 2nd November in PEC HQs to finalize its aims and objectives and the future line of action. The PR committee merits appreciation and I am sure, this will encourage other committees formed on different subjects to follow the suit.

DEAR FELLOW ENGINEERS,

PEC is a body of the engineers made by the engineers for the engineers. Being its chairman my desire and policy is that every engineer of Pakistan should be reached out to share with him or her the initiatives and activit ies of PEC and to get his or her feedback and suggestions. This will raise the level of association of professional engineers with PEC, which at the moment is negligible. With this in mind, I advised the Chief Editor of PEC Magazine who is also convener of PR committee to get articles from professional engineers, students of engineering universities and colleges, as well as, from the registered constructors and publish them. I am sure with response flowing-in, from all these quarters, not only the quality of magazine will improve but also create a feeling of ownership within the engineers, for the magazine.

There are around one lac and fifty thousand registered engineers of Pakistan, more than sixty thousand registered contractors and seventy engineering universities and colleges in the country producing over ten thousand engineers every year. This community is playing the most important role in National development and growth. However, it is regretfully observed that on account of almost Nil projection, their importance, is not being duly recognized. As Chairman PEC, it is my wish that due recognition and status is given to the engineers. To achieve this objective, as well as, that of reaching out to each engineer of the country by disseminating information about activities of PEC and to get their feedback, a decision to make use of electronic media has also been taken. This job has also been mandated to the PR Committee. Serious efforts are under way to get licenses for exclusive radio, as well as, TV channel of PEC from PEMRA.

In the end, I would like to say that PEC is committed and determined to deliver more in all relevant dimensions. Quality accreditation for quality education, employment of engineers, their service structure, in service and post service welfare, projection of the role they are playing in national development etc., all these aspects are being given equal attention and focus. The success will come through synergic effect which in turn will come through team effort. May Allah Almighty help us to achieve our goal

MESSAGE FROM THE CHIEF EDITOR: ENGR. MUKHTAR A. SHEIKH

Dear Engineers, It is said that challenges are opportunities but for those who have perseverance and are determined to perform despite odds. In 1992, I became the member of PEC for the first time at an age of 35 years. The record of youngest PEC member is still with me. My association with PEC is stretched over a period of almost quarter of a century. I have observed that there always were and there are innumerable opportunities for improvements and uncountable gaps which can be filled with little attention and effort. I feel great pleasure to share that the members of PR committee are extremely motivated and committed to take these gaps as opportunities, to perform and deliver goods. The key motivating factor has been the dynamic figure of Chairman PEC Syed Abdul Qadir Shah who was found to be extending his support and giving approval in respect of every constructive proposal, aiming at the betterment of engineer community and was taken to his table. Allow me to say that he has created an, "Enabling Environment" where the initiatives are being supported and efforts are being facilitated. The core target given by Chairman is that PEC through PR Committee must reach out to every engineer of Pakistan to share, what it is doing for him and to get his feedback. One of the tools the PR Committee has developed to achieve this end is the PEC Magazine. Under the directions of Chairman PEC the format of the magazine has been designed in such a way that it covers not only the PEC & its activities but also the professional engineers serving within or outside the country, students of engineering universities and colleges and the constructors, who are major source of employment for engineers. Me and my team are encouraged by the response in the form of articles and feedback in the form of suggestions received from all the concerned quarters. I am sure concerted efforts and perseverance of the PR committee in general and the Editor and his team in particular will take this magazine in the list of the successful professional magazines of not only the country but the region, Insha Allah.

WORDS FROM EDITOR: ENGR. HABIB AHMED

The worthy Chairman PEC Syed Abdul Qadir Shah, Vice Chairman Sind Mr. Mukhtar Sheikh who is Chief Editor of the magazine and convener PR committee have given clear directions to the effect that the PEC must involve participation of all sections of engineer community. To achieve this end, the format of the magazine was designed in such a way that it covers the community in its entirety. Its proposed draft was circulated to the respectable members of Governing Body, professional engineers, Vice Chancellors/ Rectors of Engineering Universities/ Colleges and the constructors for their comments and also for contribution in the form of articles. This was the first such attempt from the platform of PEC and was by and large appreciated. Expectedly, the contributions in the form of articles were slow which caused delay in publishing of this edition. It is hoped that once this edition is circulated and read better, response will come in future. It is pertinent to highlight that accomplishment of this job was not possible without continuous support, guidance and motivation of worthy Chairman PEC, the Chief Editor and the colleague members of the PR committee, especially Engr. Mohsin Ali Khan.

INTRODUCTION ABOUT PEC CHAIRMAN VICE CHAIRMEN AND MEMBERS OF GOVERNING BODY

PAKISTAN ENGINEERING COUNCIL

In order to regulate the engineering profession in Pakistan an Engineering Council was created through the Act of Parliament, in the year 1975. It was mandated to ensure that the engineering profession functions as a key driving force for achieving rapid and sustainable growth in all national, economic and social fields. It was further entrusted to maintain realistic and internationally relevant standards of professional competence and ethics for engineers, and license engineers, engineering institutions.

FUNCTIONS

The functions to be performed by PEC are mentioned in section 8 of Pakistan Engineering Council Act 1975. The major ones are as under:

1. Registration of persons qualified to work as engineers, constructors and operators;
2. Levy and collection of fees from applicants for registration;
3. To safe guard the interests of engineers, constructors, and operators;
4. To promote reforms in the engineering profession;
5. Accreditation of engineering qualifications and review of courses of studies;
6. Formation of such committees and subsidiaries as may be prescribed;
7. Assistance to the Federal Government as a Think Tank;
8. Facilitation of engineering sector industries;
9. Co-ordination between various engineering forums and Federal Government;

NUMBER OF ENGINEERS REGISTERED WITH PEC

At present, one lac forty seven thousand five hundred and sixty eight engineers are registered with PEC. Discipline wise count of these engineers is as under:

1.	Aeronautical	01469
2.	Agriculture	03509
3.	Architecture	00217
4.	Automotive	00068
5.	Biomedical	00694
6.	Chemical	10118
7.	Civil	32184
8.	Computer	09133
9.	Electrical	34590
10.	Electronics	16486
11.	Engineering Sciences	00067
12.	Environment	00158
13.	Geology	00077
14.	Industrial	01801
15.	Mechanical	24677
16.	Mechatronics	00986
17.	Metallurgy	02878
18.	Mining	01329
19.	Nuclear	00005
20	Petro gas	01366
21.	Tele communication	04023
22.	Textile	01431
23.	Transport	00072

CONSTRUCTORS/ OPERATORS REGISTERED WITH PEC

Under PEC Act, a "Constructor" is defined as any person, partnership, corporate body or any other legal entity which or who is engaged in the business of construction and is licensed and registered as such. Whereas, an "Operator" is defined as any person, partnership, corporate body or any other legal entity which is engaged in the business of operating construction work and is licensed and registered as such. At present, there are sixty thousand constructors/ operators registered with PEC.

RECOGNIZED ENGINEERING UNIVERSITIES AND COLLEGES

Engineering institution is defined in PEC Act as an institution within or out side Pakistan which grants degree, diploma and certificate in engineering and related education and is accredited as such by the Council. There are seventy four engineering institutions registered with PEC. These include Engineering universities, their affiliated colleges and other universities where accredited engineering education is imparted.

GOVERNING BODY

Section 9 of PEC Act 1975 states that the principal executive authority of the Council for supervising and governing the affairs and functions assigned to it, is a Governing Body comprising of following sixty-five engineers registered with the Council for a minimum period of twenty years :

1. The Chairman, one Senior Vice-Chairman and four Vice-Chairmen (one from each Province)
2. The Registrar of PEC
3. Two engineers to be nominated by the Federal Government, one each from Azad Jamu and Kashmir and Gilgit-Baltistan
4. One engineer to be nominated by each Provincial Government
5. Five Vice-Chancellors of engineering universities - one nominated by each Provincial and one by the Federal Government
6. President or Chairman Association of Consulting Engineers (Pakistan)
7. President or Chairman All Pakistan Contractors Association or their nominee
8. Elected President of the Institution of Engineers Pakistan
9. Elected President of Pakistan Engineering Congress
10. One nominee each from the Planning Commission, Ministry of Science and Technology and Higher Education Commission, not below the BPS-20
11. Forty members to be elected in proportion to the number of engineers registered in each Province, by the engineers having valid PEC registration on the 30th June of the year in which elections to the Governing Body are to be held

TENURE OF GOVERNING BODY

The members of the Governing Body, other than the Registrar, can hold office for a term of three years and no person can hold office for more than two consecutive terms. The Governing Body needs to hold at least three meetings per year, the quorum for which is thirty per cent of the total membership.

POWER TO MAKE BY- LAWS AND REGULATIONS

The section 25 of PEC Act 1975 states that the Governing Body may, with the previous sanction of the Federal Government, by notification in the official Gazette, make by-laws for carrying out the purposes of this Act. Whereas, section 26 of the Act lay down that the Governing Body may, in consultation with Vice-Chancellors of the Universities of Engineering and Technology of Pakistan, set up by the Higher Education Commission; make such regulations which are consistent with the provisions of PEC Act and the by-laws.

PROCEDURE FOR ELECTIONS

The procedure for election of Governing Body of PEC is given in Part-IV of the Pakistan Engineering Council by-laws, 1976. The salient features of this procedure are as under:

1. Appointment of Election Committee

For conducting the elections an "Election Committee" is constituted by the sitting Governing Body. It comprises of the Registrar PEC and six engineers with not less than twenty-five years of registration with PEC. The members of the existing Governing Body are not eligible to become member of Election Committee. Moreover, the members of the Election Committee can not contest the election. The Election Committee is responsible for issuance of election instructions and operating procedures, not in-consistent with the provisions of the Act and by-laws.

2. Fixation of Number of Seats of Provinces

The Governing Body fixes the number of seats for all Provinces proportionate to the number of engineers registered in each Province, subject to a minimum of two. These seats are then allocated to the disciplines, keeping in view, the number of members belonging to that discipline.

3. Announcement of Election

By giving notice through press the Election Committee calls upon the engineers registered with PEC to elect a Chairman, a Senior Vice-Chairman, four Vice-Chairmen and other members of the Governing Body from each Province.

4. Procedure for Nomination of Candidates for Elections

An engineer from any discipline having valid registration with PEC may propose or second the name of one engineer from any discipline having valid registration with PEC for election to the office of Chairman or Senior Vice-Chairman, or one member of his own Province for election to the member Governing Body. Nomination paper of each candidate is to be signed by the proposer and the seconder; and a certificate duly signed by the candidate to the effect that the candidate is qualified to be elected and consents to the nomination is to be attached with the nomination paper.

5. Eligibility as Voter

Every engineer having valid registration with PEC has as many votes as the number of members to be elected from the discipline to which he belongs, besides one vote each for the office of Chairman, Senior Vice-Chairman and Vice-Chairman of his Province.

6. Balloting

For balloting, the voter (an engineer having valid registration with PEC) appears before presiding officer, shows his original National Identity Card and requests for issuance of ballot paper. After satisfying him about the identity of the voter and ensuring that his name is included in the valid voters' list, the presiding officer issue the ballot paper to the voter. On receipt of ballot paper from the presiding officer, the voter marks the ballot paper secretly and then drops in the relevant ballot box, in presence of the presiding officer.

7. Counting of Votes and Election Result

Immediately, after closing of the balloting, the counting of votes is done in the presence of the candidate or his representative, if present; at all polling stations and results along with the votes casted is transmitted to Election Committee at Islamabad. A certified copy of the result is given to representatives of candidates at each polling station. On the completion of counting, the Election Committee compiles the results from all polling stations and then prepares a return of election and submits the same to the Chairman within five days after polling. On the receipt of the return of the election, the Chairman declares, by public notice, the names of the elected candidates.

PEC GOVERNING BODY - TERM (2012-2014)

After having explained, the procedure for election of the Governing Body of Pakistan Engineering Council, now a brief introduction will be given about the Chairman, Vice Chairmen and some members of the Governing Body for the years 2012-2014, who wer elected through the meticulously laid down transparent election procedure.

ENGR. SYED ABDUL QADIR SHAH - CHAIRMAN PEC

Engr. Syed Abdul Qadir Shah is the Chairman, Pakistan Engineering Council since August 2011. He was born in 1948, in the province of Sindh and graduated in Civil Engineering from the SUEC, Jamshoro, University of Sindh, in 1971. He began his career as a Field Engineer in a private firm where he worked for two years. In 1973, he joined Communication & Works Department, Government of Sindh where he served for more than 35 years. He retired from Communication and Works Department as Chief Engineer Highways, Sindh. In recognition of his professional excellence, he was hired as Project Director for an Asian Development Bank's Project in Sindh. Engr. Syed Absul Qadir Shah has been awarded with various certificates and awards during his entire career. He is also the Chairman, Board of Directors, Pakistan Institute of Cost & Contracts (PICC) and an active member of Institute of Engineers Pakistan, and Pakistan Engineering Congress. Under his dynamic and vibrant leadership within one year, the PEC has already taken innumerable new initiatives which will go a long way towards the welfare and betterment of engineers and engineering profession in the country.

ENGR. NIAZ AHMAD AKHTAR - VICE CHAIRMAN, PUNJAB

Engr. Dr. Niaz Ahmad Akhtar is the Professor and Rector at National Textile University having 25 years of teaching & research experience in his credit. He is also the co-chair of International Association of University Presidents. Dr. Niaz has played a leading role in building quality conscious society by establishing Quality Management Institutions and introducing Quality Management Programs of various levels. Dr. Niaz established Quality Management Division at University of The Punjab, Lahore, Pakistan in 2002 and designed, as well as, launched M.Sc, M.S and Ph.D program in Total Quality Management area, first time in the country. The Division was upgraded as Institute of Quality & Technology Management in 2004 and he had honor to be the first Director of this Institute.

Since 2006, many platforms have been provided by Dr. Niaz, to Academicians and Researchers at National and International levels to share their research, thoughts, knowledge and experience through Journals and Conferences. He launched Journal of Quality & Technology Management in which local and foreign researchers are publishing their work. He is also Chief Editor of International Journal of Quality and Innovation, which is being regularly published by Inderscience Publisher.

Dr. Niaz has successfully organized 3 International Conferences on "Quality Assurance in Higher Education" in 2006, 2008 and 2010 in collaboration with HEC and Local Universities. He was able to publish three edited books on Quality Assurance in Higher Education with other scholars in 2007, 2009 and 2011. Dr. Niaz has also been Chairman of Engineering Accreditation Board (EAB) at Pakistan Engineering Council since 2008.

As a Rector of NTU, he has given an exemplary performance in two years by creating four faculties and 10 departments; enhancing number of students, faculty strength, number of Ph.Ds and revenue of the University by three times, implementing Quality Assurance criteria through Quality Assurance Division and organizing International Conference on Value Addition and Innovation in Textile. Six new programs including M.Sc and Ph.D in Textile Engineering, as well as, Textile Design and Fashion Design were also launched at NTU.

Dr. Niaz has successfully supervised seven Ph.D students and has been winner of Institution of Engineers Pakistan National Award of Excellence twice, for the year 2008 and 2009 for his dedication and continuous service for engineering profession.

ENGR. MUKHTAR A. SHEIKH-VICE CHAIRMAN SINDH, CONVENER PR COMMITTEE

Engr. Mukhtar A. Sheikh holds the record of being the youngest member of Governing Body of PEC. When he became a member of GB for the first time in 1997,his age was 33 years. He is an electronics engineer and graduated from Dawood College of Engineering & Technology, in the year 1983. He is serving as a senior officer in Pakistan Customs and has held the office of President of Officers' Association of Pakistan Customs for consecutive seven tenures. he is Chairman Customs cricket Academy since last 9 Years. At present he is serving as head of the Customs formation at Jinnah International Airport. He has unique distinction of extending remarkable services towards PEC and Pakistan Customs, at the same time. On account of his dynamism and extraordinary abilities in public relations, the honourable Chairman PEC has entrusted him with another Honour of Being convener PR committee of PEC.

ENGR. ZAHID ARIF - VICE CHAIRMAN, KHYBER PAKHTOONKHWA

Engr. Zahid Arif is a gold medalist from UET Peshawar in the field of Civil Engineering. After serving in different distinguished positions, he became Managing Director, Pakhtunkhwa Highways Authority, Peshawar on August 15, 2009. In acknowledgement of his Administrative abilities and engineering skills he was made Secretary Communication & Works Department on 24th June 2010. Engr. Zahid Arif has authored Civil Engineering professional book with the title "Road Guide" in April 2011. The book is being used as a guide by professional Engineers engaged in Road construction. He also compiled and wrote Pakhtunkhwa Works Code, a Book which caters for code of ethics of Engineering and showing duties and responsibilities of Field Departmental Officers of Works Departments. He is responsible for the development of Digital Map of Khyber Pakhtunkhwa through GIS/MIS and establishment of Asset Management System in IT Section of C&W Secretariat. In the year 2011 he was elected as Vice Chairman of Pakistan Engineering Council from his native province.

ENGR. GHULAM USMAN BABAI-VICE CHAIRMAN, BALOCHISTAN

Engr. Ghulam Usman Babai is also a Civil Engineer. He completed his graduation from NED Engineering University, Karachi in 1973-74. He started his career as Deputy Project Director Bolan Medical College Complex, Quetta. His next assignment was Project Director of a World Bank financed Balochistan Community Irrigation & Agriculture Development Project. He then served as Director General, Water \ Resource Planning, and Development & Monitoring Irrigation & Power Department, Balochistan. From March 2007 to July 2008 Mr. Usman Babai served as Chief Engineer Irrigation South, Provincial Irrigation Department, Quetta. In recognition of his services and competence, he first became a member of Chief Minister's Inspection team and then elevated as Chairman of Chief Minister's inspection team.

ENGR. SYED RAGHIB ABBAS SHAH - MEMBER GOVERNING BODY

Engr. Syed Raghib Abbas Shah is a Civil Engineer. He completed his graduation from NED Engineering College, Karachi in 1970 with First Division. He also got Post Graduation Diploma in Civil Engineering from Mehran University of Engineering and Technology, Jamshoro in First Division. He joined Water & Power Development Authority (WAPDA) as Junior Engineer (Civil) in 1974. On account of his dedication and devotion towards his profession he was promoted to BPS-21 in November 2007 and was further elevated as Chairman WAPDA on 8th September 2012.

ENGR. MOHAMMAD WASEEM ASGHAR MEMBER GOVERNING BODY

Engr. Waseem Asghar is a Civil Engineer. He completed his graduation from Balochistan University of Engineering and Technologhy, Khuzdar in 1996.

ENGR. HUSNAIN AHMAD - MEMBER GOVERNING BODY

Engr. Husnain is a graduate of UET Lahore, possesses multi-disciplinary academic qualifications of Masters in Engineering, Business Administration, IT and Finance. His outstanding academic profile includes a Gold Medal and a Fellowship. He has a diversified and rich experience of working in Federal Government as a civil servant. Currently, in BPS-21, he has been successfully holding the office of Member Administration in the FBR Headquarters since July 25, 2012. Before coming to FBR, he has served at senior positions in the Senate Secretariat of Pakistan, National Accountability Bureau (NAB), and City District Government. He also served as the Project Director of technical and scientific Projects. His last posting was Director General in the Senate of Pakistan.

ENGR. MUHAMMAD ASGHAR - MEMBER GOVERNING BODY

The career of Engr. Muhammad Asghar, spans over 39 years of active military service, planning and administration of higher education, infrastructural development, and managerial/ organizational positions. He possesses the experience necessary both to develop and administer programs that are progressive, sustainable and result oriented, across military and civilian domains. His academic qualifications include bachelor in Civil Engineering from Military College of Engineering with Gold medal, diploma in Mapping, Charting and Geodesy from Defense Mapping School, USA with distinction, masters in War Studies, Quaid-e-Azam University Islamabad, Pakistan, masters in Military Art and Science, USA, diploma in Arabic Language from National University of Modern Languages, Islamabad. He was awarded Hilal-i-Imtiaz (Military). He has been on the faculty of Military College of Engineering, Risalpur, Command & Staff College, Quetta and National Defense University, Islamabad. He has been performing the duties of Rector NUST since July 2007

ENGR.BRIG ® DR. MUHAMMAD AKBAR - MEMBER GOVERNING BODY

Engr. Brig (R) Dr. Muhammad Akbar received his B.Sc. In Telecommunication Engineering from Military College of Signals (UET Lahore) in 1980. He got his MS and PhD degrees in Electrical (Computer) Engineering from Michigan State University (MSU), USA in 1984 and 1992, respectively. He was the founding Dean at MCS (NUST) and served there for over 30 years in different capacities. He was among the senior faculty members of NUST who were involved in its raising since its inception in 1993. He has been a visiting and adjunct faculty member at MSU, USA. For last four years, he has been Dean of Faculty of Engineering and IT at NUML, Islamabad. Dr. Akbar has served on the EA & QEC of Pakistan Engineering Council for three years. He has been involved in the accreditation process for more than 15 years.

ENGR. MAHMOOD A. SULEHRI - MEMBER GOVERNING BODY

Engr. Mahmood A. Sulehri graduated in Civil Engineering in 1981 from University of Engineering and Technology, Lahore. Later, he completed his Masters in Transportation Engineering in 2003 from University of Engineering and Technology, Taxila. Engr. Sulehri, General Manager/ Head Contracts Division, N ESPAK, is a practicing Professional Engineer since 1982 in the fields of Contract Administration, Construction Supervision and Middle-level Corporate Management. He has around 32 years of professional experience to his credit in Pakistan and abroad. As member PEC Governing Body (2011-14), it is his second consecutive term after serving PEC in the same position for the session 2008-10. He has proved to be one of the major contributors as he served on numerous PEC committees, including Deputy Convener, Engineering Professional Development Committee (EPDC) for the session 2008-10. Major achievements of Engr. Sulehri for the betterment of the Engineering Community/ Profession include constitution of a Committee of PEC Governing Body for development of Service Structure for the Government Engineering Departments, blocking provisions from inclusion into PEC by-laws for independent registration of foreign contractors and consultants, in the wider interest of the construction business in Pakistan, life Membership Incentive (Rs. 1,500 Package) for Defaulter PEC Members, empowerment of Registered Engineer (RE) in PEC By-Laws to perform all professional work except signing designs and reports. Engr. Sulehri has regularly been contributing to the advancement of the profession by publishing numerous technical papers in national and international journals of repute and a book on use of computers. He is a regular resource person for conducting Continuous Professional Development (CPD) short courses for PEC and NESPAK. He is also a Fellow of American Society of Civil Engineers (ASCE), USA, Fellow of Institution of Engineers Pakistan (IEP) and Member of Construction Institute (CI), USA.

PROF. DR. ABDUL SATTAR SHAKIR - MEMBER GOVERNING BODY

Dr. Shakir is working as Professor/ Dean, Faculty of Civil Engineering, University of Engineering & Technology Lahore. He has more than thirty year professional experience including teaching, research and consultancy services. He has published about fifty research papers of international repute and supervised large number of post-graduate research students. In recognition of his services he was awarded Best University Teacher Award for the year 2005 by the Higher Education Commission of Pakistan (HEC), Islamabad. He has contributed significantly in various professional/ academic bodies in various capacities. He is a member of the Syndicate, Senate, Academic Council and Board of Advanced Studies & Research of UET Lahore. He has also been Convener/ Member National Curriculum Revision Committee (NCRC) Civil Engineering, HEC, Islamabad and Convener/ Expert of Accreditation/ Re-accreditation visitation teams of Pakistan Engineering Council, Islamabad. He is Member Board of Governors (BoG), Centre of Excellence in Water Resources Engineering (CEWRE), Lahore & also a Director, of National Engineering Services (NESPAK) Pakistan

ENGR. SYED IQBAL YOUNAS - MEMBER GOVERNING BODY

Engr. Syed Iqbal Younas completed his graduation in Mechanical Engineering from UET Peshawar with honors in 1974. Began his career as Aircraft Engineer in PIA, on Boing & D.C-10 Engines from 1975 1977. Soon after, he joined a multidiscipline EPC construction company M/s Technicon Enterprises and became its Chief Executive in 1981. Under him, the company has successfully completed many prestigious projects such Hydropower Plants, Roads, Bridges, Barrage, Buildings. He has successfully completed many R&D Projects including TRCM for Rasul Powerhouse, zero-level generators , desiccant space cooling system, design and manufacturing of ECG Tread Mill for Khyber Teaching Hospital, Peshawar and bio-gas plant and conversion of petrol generator into bio-gas generator at UET Peshawar.

For feedback and comments

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ENGR. DR. HAFEEZ-UR-REHMAN MEMON – MEMBER GOVERNING BODY

Engr. Dr. Hafeez-ur-Rehman Memon completed BE (Chemical) from Dawood College of Engineering and Technology Karachi in 1983. He did PhD (Fuel and Energy) from University of Leeds, Leeds, UK in 1996 and Post-doctorate from School of Process, Environment and Materials Engineering, University of Leeds, Leeds, UK in 2003. He began his career as Chemical Engineer in Mehran Sugar Mills, Tando Allahyar from 1983 to 1984. Joined MUET as Lecturer in Chemical Engineering 1984, promoted as Asst. Professor in 1989 and Associate Professor in Petroleum and Natural Gas Engineering in 1996. Worked as Director Technical, Environmental Protection Agency Government of Sindh on deputation from August 1996 to February 1997 and re-joined the MUET in 1997. Appointed as Professor in the year 2000. Further, appointed as Meritorious Professor (BPS-22) in 2011. Currently, working as Professor/ Director, Institute of Petroleum and natural Gas Engineering, MUET, since 2007.In addition, also working as Director Continuing Education since 2009. Dr. Hafeez is a Member on various bodies including Advanced Studies and Research Board of the university (MUET), MUET research journal editorial board, syllabus review committee of HEC, board of studies in Petroleum Technology University of Karachi. Also HEC approved PhD supervisor, until now supervised four (04) PhD candidates.

ENGR. SARDAR AMJAD YOUSAF KHAN - MEMBER GOVERNING BODY

Engr. Sradar Amjad Yousaf completed his graduation from NED Engineering University, Karachi followed by graduation in Human Rights Law, University of Nottingham (UK). He has served as Advisor to the Prime Minister AJK from 1996 to 2001. Currently, he is serving as Executive Director, Kashmir Institute of International Relations which is a non-profit, non-governmental internationally recognized Organization. Engr. Yousaf has been working with International Centre for Religion and Diplomacy, Washington DC (ICRD) on Kashmir Project. He has delivered lectures, as important as, including a lecture on Indo-Pak Peace Initiative at Cambridge University in Feb. 2004 and a lecture on Kashmir Conflict at University of Nottingham, UK in March 2008. His publications include Kashmir – An Array of Options, Role of Civil Society in Prevention of Arms Conflict in South Asia and Torture, Arbitrary Detention and Extra-Judicial Killings in Jammu & Kashmir.

ENGR. COL (R) SYED ZAFAR-U-DIN AHMAD
MEMBER GOVERNING BODY

Col (R) Syed Zafar-u-din Ahmed has done his B.E (Mech.) from N.E.D Engineering College in the year 1969 and subsequently completed his Master's degree in Mechanical Engineering (Production) from U.E.T Lahore, 1991.He was commissioned in Pakistan Army in 1970. During 25 years stay in the Army, he had seen and participated in the 1971 war. During his career with the Army, he remained professionally committed in fields of production, R&D and Command assignments. His secondment to Kuwait on behalf of Pakistan Army for a period of 3 ! years provided an enriched experience and exposure to international environment. After retirement in 1994 as a Colonel, he got an opportunity to achieve his life time desire to establish an assembly plant of 4x4 military specs vehicle in Pakistan. The opportunity came in the shape of Land Rover, the world's finest and state of the art engineered vehicles, Col. Zafar CEO & MD of Sigma Motors Ltd seized the opportunity and strived strenuously to transform his dreams into reality. Land Rover is being assembled successfully since 2002, the only western technology based 4x4 assembly plant. He has travelled extensively observed usage of Alt energy solar and wind in Europe. His belief is that energy crisis in Pakistan can be minimized by exploiting solar and wind resources. He has established solar business and achieved success in developing SMD based street lights, and other lights for urban and rural requirements.

WORKING COMMITTEES OF PAKISTAN ENGINEERING COUNCIL

The primary function of Pakistan Engineering Council is to regulate the engineering profession in Pakistan and to ensure that this profession functions as a key driving force for achieving rapid and sustainable growth in all national, economic and social fields. With over one lac fifty thousand engineers, 74 engineering institutions and over sixty thousand constructors, the canvas and field for performance becomes too wide and diversified. Keeping this challenging position in view, the section 8(k) of Pakistan Engineering Council Act, 1975 allows the Engineering Council to form such committees and subsidiaries as may be required. Accordingly, the following seventeen committees and sub-committees have been formed by the Chairman PEC and each has been assigned specific task and role.

1. MANAGEMENT COMMITTEE

Section 9A of PEC Act provides for establishment of a Management Committee within PEC. Its job is to oversee working of the Secretariat to run the affairs of the Council, in accordance with, the provisions of this Act and by-laws. The tenure of the Management Committee is same as that of the Governing Body. The Management Committee has to hold at least one meeting in a quarter, the quorum for which is three. It comprises of the following members:

a. Chairman *(Convener)*
b. Senior Vice-Chairman, and
c. Four Vice Chairmen

2. ENROLMENT COMMITTEE

Every application for registration and every case of removal of a name from the Register shall be considered by an Enrolment Committee. The Enrollment Committee in its discretion may refuse Registration or direct removal altogether or for a specified period from the Register of the name of any engineer, constructor or operator who has been convicted of any such offence as implies in the opinion of the committee/ PEC Act. The present Enrolment Committee comprises of Chairman PEC, four Vice Chairmen and four other members of the Governing Body. The Chairman PEC Engr. Syed Abdul Qadir Shah is the convener of the enrolment committee.

3. ACCREDITATION COMMITTEE EA & QEC

Section 15 of PEC Act provides for establishment of an accreditation committee for organizing and carrying out a comprehensive program of accreditation of engineering universities, colleges and institutions etc. according to the criteria approved by the Governing Body in consultation with Higher Education Commission. The present Accreditation committee comprises of eighteen members including Vice Chairman Punjab Engr. Prof. Dr. Niaz Ahmad Akhtar, Vice Chairman KPK Engr. Zahid Arif and sixteen other members. Vice Chairman Punjab is the convener of the committee

4. VICE CHANCELLORS COMMITTEE

The Governing Body may, in consultation with the Committee of Vice Chancellors of the UETs of Pakistan make regulations for engineering education in Pakistan under Section 25A of PEC Act 1976. The present Vice Chancellors Committee comprises of following fifteen members:

a. Engr. Syed Abdul Qadir Shah - Chairman PEC (Convener)
b. Engr. Prof. Dr. Niaz Ahmad Akhtar - Vice Chairman PEC/ Convener EA&QEC
c. Engr. Prof. Dr. Sohail H. Naqvi - Executive Director, HEC
d. Engr. Lt. Gen (R) Muhammad Akram Khan - VC UET, Lahore
e. Engr. Dr. A.Q. Khan Rajput - VC MUET, Jamshoro
f. Engr. Syed Imtaiz Hussain Gilani - VC NWFP, UET Peshawar
g. Engr. Brig. (R) Mukhtar Ahmed - VC BUET, Khuzdar
h. Engr. Prof. Dr. Ali Bux Soomro - VC QUEST, Nawabshah
i. Engr. Prof. Dr. Saiyid Nazir Ahmad - VC SSUET, Karachi
j. Engr. Prof. Dr. Muhammad Abbas Choudhary - VC UET, Taxila
k. Engr. Abul Kalam - VC, NED-UET Karachi
l. Engr. Lt. Gen. (R) Muhammad Asghar - Rector NUST
m. Mr. Jehangir Bashar - Rector GIKI, Topi-Swabi
n. Engr. Ahmed Farooq Bazai - VC BUITEMS, Quetta
o. Engr. Abdul Rauf Sheikh - Registrar PEC (Secretary)

5. ENGINEERING PROFESSIONAL DEVELOPMENT COMMITTEE (EPDC)

The Committee is constituted to take all measures and perform all functions which may be necessary for professional development of all engineers registered with the Council. The Committee is to administer and evaluate Continued Professional Development (CPD) and Engineering Practice Examination (EPE).The present Committee comprises of twelve members. The Vice Chairman Baluchistan Engr. Ghulam Usman Babaiis is the convener of the committee.

6. ACT & BY-LAWS COMMITTEE

The Act & By-laws committee acts as an advisory body to PEC Governing Body in respect of PEC Act & By-laws. The present Act & By-laws Committee comprises of ten members. Engr. Husnain Ahmad is the convener of this committee.

7. CONSTRUCTION INDUSTRY REGULATION COMMITTEE (CIRC)

The objective of the CIRC Committee is to monitor compliance of construction industries related to PEC By-laws, regulate constructors, technology transfer and providing protection to Pakistani constructors against foreign constructors. The present CIRC Committee comprises of eight members and Engr. Syed Mansoob Ali Zaidi is its convener.

8. THINK TANK COMMITTEE

The terms, "Think Tank", and, "Think Tank Committee", have been defined in section 2 of PEC Act. "Think Tank" is defined as a creative and innovative body to advise on engineering and national development plans, whereas, "Think Tank Committees" is defined as body of eminent engineers constituted by the Council to assist in formulation of relevant policies relating to national development. The present Think Thank committee has six sub-committees on different subjects of National importance and comprises of following seven members:

a. Engr. Syed Abdul Qadir Shah, Chairman PEC (Convener)
b. Engr. Ahsan Iqbal MNA
c. Engr. Syed Raghib Abbas Shah
d. Engr. Abdul Sattar Naeem
e. Engr. Lt. Gen. (R) Muhammad Asghar
f. Engr. Prof. Dr. Noor Muhammad Sheikh
g. Engr. Muhammad Yousuf

The Think Thank committee has following six sub committees

a. **Think Tank sub-committee on Energy**
   It comprises of eleven members and Engr. Ahsan Iqbal MNA is its convener
b. **Think Tank sub-committee on Water**
   It comprises of six members and Engr. Syed Raghib Abbas Shah is its convener
c. **Think Tank sub-committee on Telecommunication**
   It comprises of five members and Engr. Abdul Sattar Naeem is its convener
d. **Think Tank sub-committee on Engineering Education**
   It also comprises of five members and Engr. Lt. Gen. (R) Muhammad Asghar is its convener.
e. **Think Tank sub-committee on Construction & Infrastructure**
   It comprises of four members and Engr. Prof. Dr. Noor Muhammad Sheikh is its convener.
f. **Think Tank sub-committee on Manufacturing**
   It comprises of eight members and Engr. Muhammad Yousuf is its convener.

9. ACADEMIA INDUSTRY LINKAGE COMMITTEE (AILC)

The objective of the committee is to keep close liaison in order to strengthen the potential available in Industrial sector and academia to facilitate/ promote/ regulate engineering activities jointly. The present AILC comprises of eleven members. Vice Chairman KPK Engr. Zahid Arif is its convener.

10. SERVICE STRUCTURE COMMITTEE

The task of the service structure committee is to look into the affairs and problems related to professional services of members of PEC. Pursuit of a system for engineers in which there is merit based selection followed by quality training and then a career in which there is time based promotions are few of the top agendas of this very important committee which comprises of following members:-

a. Engr. Riaz Ahmed Khan (Convener)
b. Engr. Ahsan Iqbal MNA (Dy. Convener)
c. Engr. Mahmood Ahmad Sulehri
d. Engr. Col (R) Syed Zafaruddin Ahmad
e. Engr. Dr. Mohammad Yasin
f. Engr. Muhammad Nasrullah
g. Engr. Syed Naseer Ahmad Gillani
h. Engr. Muhammad Idris Rajput
i. Engr. Zaffaruddin Ahmed Zuberi

11. PUBLIC RELATION COMMITTEE

The Public Relation Committee shall act as advisory body to PEC Governing Body pertaining to Public relations of the Council. The committee comprises of eleven members and three co-opted members. Bridging of communication gap between PEC and engineers, projection of role being played by engineers, constructors, operators in the national development, regular publishing of quality PEC magazine, development of radio and TV channel for engineers, holding of social events where engineers can interact with each other are few of the agenda items of the PR Committee. Vice Chairman Sindh Engr. Mukhtar Ali Sheikh is the convener of this vibrant and forward looking committee. This committee convened its first meeting on 2nd November 2012 in which aims, objectives and line of action to achieve them were discussed and finalized. A detail account of the first meeting of PR committee has been given in the following pages.

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IMPORTANT RECENT ACTIVITIES OF PEC

CM KHYBER PAKHTOONKHWA HONOURS INAUGURAL CEREMONY OF TRAINING COURSE

The Chief Minister of Khyber Pakhtunkhwa, Mr. Amir Haider Khan Hoti termed the role of engineers' community as essential in improving the infrastructure and furthering the development process on sound footings in the province. He expressed the confidence that engineers' community would endeavor to enhance their capabilities and bring compatibility in all spheres of development so that the dream of a developed and prosperous nation could be realized accordingly. He was addressing as Chief Guest at inaugural ceremony of training workshop for capacity building of the officers and officials of nation building departments. It was organized under the auspices of Pakistan Engineering Council (PEC) and Provincial Communication and Works (C&W) Department at local hotel in Peshawar on Tuesday. Engr. Syed Abdul Qadir Shah, Chairman PEC, Engr. Zahid Arif, Secretary C&W and Vice-chairman PEC, also addressed the workshop that highlighted importance of the continuing training program for engineers.

Mr. Amir Haider Hoti paid rich tributes to nation building departments of the province especially engineers of C&W deptt. for immediately restoring the destroyed infrastructure in devastating floods of 2010 and incidents of terrorism, as well as, eulogized viable role of Engr. Zaid Arif in this regard. He said he still remembered havoc of flash floods when all bridges and land routes were washed away right from Chakdara to Kalam. All the Govt. authorities including him were anxious about how to restore communication and mitigate sufferings of the affectees. However, he contended that engineers of C&W, PHE and Irrigation departments ensured its prompt restoration by working round the clock. He said, he was proud of being the in-charge minister of C&W and PHE department. due to its commendable performance.

Engr. Syed Abdul Qadir Shah Chairman PEC said that Islam was the pioneer of engineering and by then we could convert our downfall into the renaissance of Muslim Ummah by again achieving these skills. He lauded the KP government and thanked the Chief Minister for providing time scale promotions and other in centives to the engineers' community of the province much earlier than the centre and other provinces. Engr: Zahid Arif, Secretary C&W in his address said engineering sector required research and updating due to its role in all spheres of life and sciences including medical equipment, industrial and agricultural machinery, roads, bridges, canals, buildings and gardens etc. He termed steps of the Chief Minister as historical, in respect of, encouraging and training of engineers and other experts, as well as, enhancing the engineering related ADP by 75%.

BALAKOT AFTER EARTH QUAKE OF 2005

BALAKOT AFTER ITS RECONSTRUCTION BY ENGINEERS

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VISIT OF DELEGATION OF NATIONAL TALENT POOL TO PEC

A delegation of NTP headed by the Director General Fayyaz Amad Ranjha visited HQs of PEC in Islamabad on 28th November 2012. A comprehensive presentation was given by NTP team to the Chairman PEC Engr. Syed Abdul Qadir Shah, Member PEC Mr. Hasnain Ahamd, Registrar PEC Mr. Abdul Rauf Sheikh , Member PR Committee Mr. Habib Ahmad and other officers of PEC HQs.

VISION OF NTP

Over the last few decades thousands of Pakistanis have left their country in pursuit of higher education or better employment opportunities abroad. For various economic, social and historical reasons, however, many choose to settle abroad resulting in creating "brain drain" depriving the country of much needed talents and skills. Many of these expatriates possess a strong sense of belongingness and respect for the country and desire to contribute in the development of their home land. The National Talent Pool (NTP); a department under Ministry of Labor and Manpower, Government of Pakistan, is implementing a program titled "President's Program for the Care of Highly Qualified Overseas Pakistanis" (PPQP).

Through this program first of all areas where technical assistance and support is needed on short term basis is identified and then Pakistani professionals having matching qualification are invited so that benefit of their expertise could be availed. The focus is on the fields of health and medicine, education, agriculture, computer science, economics, engineering, management, natural and physical sciences. The program provides excellent opportunities to expatriate to visit their home country with a purpose and commitment.

HOW TO UTILIZE THE SERVICES OF OVERSEAS ENGINEERS

The NTP has planed that HQOP engineers can be utilized to deliver specialized lectures, conduct seminars/ workshops/ symposiums/ training courses or can be utilized to initiate a research activity, participate in an on going research project or to develop a new project.

REMUNERATION PACKAGE

Following terms and conditions are offered to visiting professionals of international repute:

a. Status of State Guest would be awarded to the visiting HQOP
b. Direct economy class return air ticket from place of residence to work place, if not provided by any other agency.
c. Daily Subsistence Allowance (DSA) @ Rs. 50,000/- per week

HOW TO ENLIST

Interested expatriate Pakistani having requisite qualification/experience to become a PPQP fellow may get themselves registered either online through this office web portal titled www.ppqp.gov.pkor on prescribed Personal History (PHS) Form available on the site as document.

The organization/ institutions in Pakistan which require any technical support of (HQOP) may identify deficient areas/ sectoral needs for the services of expatriate Pakistani professionals in various fields through prescribed Technical Requirement (TR) Form available on the said Web portal.

PRESENTATION OF DG NTP

Through an impressive presentation the DG NTP informed that for implementation of program, NTP was developing database of educational institutions and organizations needing highly professional expertise and of highly qualified Pakistanis serving within the country or abroad including engineers. So far NTP had registered more than ten thousand such institutions/ organizations and identified around hundred fields/subjects in which such expertise was needed.

During the presentation DG NTP shared that the number of engineers who had moved abroad since 1971 was 40,000 as compared to doctors whose number in the same period was 12,000. This on one hand showed high demand of engineers in overseas countries and on the other hand it showed the opportunities within the country were not upto a satisfactory level for engineers. It was further shared that so far 23000 engineers had been registered with National Talent Pool out of those more than two thousand were serving abroad.

ASSURANCE OF CHAIRMEN PEC

The Chairman Pakistan Engineering Council Syed Abdul Qadir Shah appreciated the initiation of "President's Program for the Care of Highly Qualified Overseas Pakistanis", under the enlightened vision of the Honorable President of Pakistan. He also appreciated the role NTP was playing under the committed leadership of the Director General Fayyaz Amad Ranjha. He assured that PEC will extend all necessary support to NTP in disseminating the information about its aims & objectives to one lac fifty thousand Engineers, over sixty thousand constructors and the seventy four Engineering Institutions registered with PEC and will also extend technical support in the accreditation required in the process of registering engineers in the National Talent Pool.

PEC'S DONATIONS FOR FLOOD AFFECTEES

Pakistan Engineering Council (PEC) has donated one million rupees for flood affectees of Balochistan. Engr. Syed Abdul Qadir Shah, Chairman PEC, handed over the cheque to Mir Changez Khan Jamali, Federal Minister for Science and Technology on 11th October, 2012.

Engr. Syed Abdul Qadir Shah called on the Minister and sympathized on the recent devastation caused by the tragic floods in the Jaffarabad and Naseerabad districts of Balochistan. The Federal Minister appreciated the humanitarian gesture of Pakistan Engineering Council and thanked the Chairman for donation. Secretary of Registrar, Engr. Abdul Rauf Sheikh was also present on the occasion.

In an other occasion the chairman PEC distributed blankets amongst flood affectees of interior sindh.

Engr. Syed Abdul Qadir Shah Chairman PEC presenting donation cheque for flood affectees of Balochistan to Mir Changez Khan Jamali, Federal Minister for Science & Technology.

1ST MEETING OF PUBLIC RELATION COMMITTEE

The first meeting of the PEC Public Relation Committee was held on 2nd November, 2012 at PEC Headquarters, Islamabad. The meeting was convened by Engr. Mukhtar Ali Sheikh, Vice Chairman (Sindh) and Convener PEC Public Relation Committee. After brief introduction of the participants, the Member Public Relation Committee, Engr.Habib Ahmad gave presentation to share the proposed objectives of Committee, focused areas and progress of public relation initiatives taken under the guidance of Engr. Mukhtar Ali Sheikh.

AIMS & OBJECTIVES OF PR COMMITTEE

It was unanimously agreed that following will be the aims and objectives of PR committee:

1. Service to Pakistan
2. Welfare of Engineers
3. Dissemination of information about activities of PEC amongst Engineer Community
4. Gather feedback on the performance of PEC
5. Gather suggestions/ ideas for improvement
6. Bridge the gap between PEC and Engineers

MEANS TO ACHIEVE THE OBJECTIVES

After detailed deliberations under the chair of the convener Mr. Mukhtar A Sheikh, it was decided during the first PR committee meeting that the committee would employ and make use of following tools to achieve the above mentioned aims and objectives:

1. Improved service structure and to make efforts to the effect that Heads of Engineering Departments are engineers
2. Creation of jobs in private sector/ constructors and their distribution through PEC
3. Introduction of self-sustainable schemes for regular Scholarships
4. To focus on UETs/ colleges - final year students
5. To develop economical accommodation facilities in major cities/ capital
6. To develop Engineers' Club in major cities on the pattern of Gymkhanas, Defense Clubs etc.
7. To seek more facilities for registered engineers through smart Membership card
8. Issuance of monthly Newsletter
9. Issuance of PEC Magazine
10. Introduction of Engineer's Channel
11. Regular holding of social events

SCHOLARSHIPS FOR ENGINEERING STUDENTS:

During the meeting it was decided that efforts will be made by the PR Committee to print out a quality PEC Magazine on monthly basis regularly with wide circulation. Income earned through advertisements given in the magazine and through its sale at an,"approved", price to the contractors and other readers will be utilized in giving merit scholarships to the engineering students and extending other welfare objectives of Pakistan Engineering Council.

PROMOTION OF SPORTS

Col Zafar ud-din Ahmad, Member Governing Body PEC opined that PEC also needed to introduce and promote healthy activities at the University level. In this regards the PR Committee could consider introduction of PEC Running trophies and holding of interuniversity tournaments of major sports. The The chair appreciated the proposal and requested Col Zafar-ud-din to work out a comprehensive proposal and present it in the following meeting of PR Committee.

CENTRALIZATION OF EMPLOYMENT OPPORTUNITIES:

It was decided that the PR Committee members would maintain a liaise with the contractors and constructors registered with PEC and other organization and compile the details of jobs available with them. Detail of these jobs to be displayed on the website of PEC, printed in the PEC Magazine and circulated amongst the final year engineering students.

REMARKS OF THE CONVENER - ENGR. MUKHTAR A SHEIKH

The convener PR Committee/ Vice Chairman Sindh Engr. Mukhtar A. Sheikh, apprised the participants that although the aims & objectives of the PR committee had been formally discussed and approved that day but the efforts towards their achievement were already underway. He shared that concession in room rent in leading hotels of the country for registered engineers had already been secured and further concessions are being obtained. A culture of social events had been introduced through the first grand dinner that was arranged in Beach Luxury Hotel, Karachi. Negotiations with Sindh Government for allocation of land for Engineers' Club in Karachi were under way. Similarly PEMRA had been approached for grant of license for TV and radio channel for engineers. He hoped that with the active participation of the members and with the support and backing of Chairman PEC Engr. Syed Abdul Qadir Shah, the efforts of PR committee will start bearing fruits, very soon.

The meeting concluded with vote of thanks by the convener who in the end also shared that encouraged by the success of the grand dinner held in September 2012 in Beach Luxury Hotel, Karachi, the PR committee will hold social events in all major cities with the help of local Vice Chairman and governing body members on identical pattern. He announced that next event would be a family event that would be held in Dream world, Karachi.

PAKISTAN BECOMES MEMBER OF INTERNATIONAL ACCREDITATION BODIES

FEIAP MEMBERSHIP

Pakistan has been declared as one of the member of the **Federation of Engineering Institutions of Asia and the Pacific (FEIAP)** during its 19th General Assembly meeting held in Singapore on 5th October, 2011. Pakistan is the 22nd member to join the FEIAP and will be represented by the Pakistan Engineering Council (PEC). After joining the FEIAP, Pakistan will be facilitated to exchange information and ideas related to engineering education amongst the member organizations and to work for the advancement of engineering profession through various activities.

While thanking President FEIAP and its Executive Committee, Chairman PEC, Engr. Syed Abdul Qadir Shah assured PEC's active role in various Technical Committees and invited all members to hold General Assembly meeting in Islamabad after India in 2014.

WASHINGTON ACCORD

The Washington Accord established in 1989 is a multi-lateral agreement between agencies responsible for accreditation or recognition of tertiary-level engineering qualifications within their jurisdictions that have chosen to work collectively to assist the mobility of engineering practitioners holding suitable qualifications. Membership to, "Washington Accord" is voluntary, but the signatories are committed to development and recognition of good practice in engineering education.

The Washington Accord is, thus an international accreditation agreement for professional engineering academic degrees, between the bodies responsible for accreditation in its signatory countries. This agreement recognizes that there is substantial equivalency of programs accredited by those signatories. Graduates of accredited programs in any of the signatory countries are recognized by the other signatory countries as having met the academic requirements for entry to the practice of engineering. Recognition of accredited programs is not retroactive but takes effect only from the date of admission of the country to signatory status. Australia, Canada, China, Hong Kong, India, Ireland, Japan, Korea, Malaysia, New Zealand, Singapore, South Africa , Sri Lanka, United Kingdom and US are its regular members, whereas, Pakistan and Bangladesh are its Provisional Members.

SCOPE

The Washington Accord covers under-graduate engineering degrees. Engineering technology and post-graduate programs are not covered by the accord. Only qualifications awarded after the signatory country or region became part of the Washington Accord are recognized.

PEC BECOMES PROVISIONAL SIGNATORY OF WASHINGTON ACCORD (WA)

Pakistan Engineering Council is the only authorised statutory body in Pakistan entrusted with the task of undertaking accreditation and registration of Engineering and Technology education programmes. All engineering programmes are accredited by PEC. The council evaluates the quality of programmes offered by educational institutions at all degree levels. In July 2010, PEC became a provisional member of the Washington Accord, which would facilitate the mobility of engineering graduates and professionals from Pakistan in the international market. Full membership of the Washington Accord for Pakistan is likely after two years, which would bring its academic programmes, curriculum and syllabus, examination and evaluation system at par with international standards and revise its accreditation system to fully make it result-oriented. However, after becoming a provisional member of the Washington Accord, other signatory member countries would provide mentoring support to Pakistan, while PEC would also be able to participate in the accreditation activities of member countries. In terms of this agreement, each registering body accepts the accrediting processes of the others. The membership of the Washington Accord is recognition of the quality of engineering education offered in a country and an avenue to bring it into world class category.

NETWORK OF ACCREDITATION BODIES OF ENGINEERING EDUCATION IN ASIA

NABEEA was formally established on August 8, 2007 at the first General Assembly meeting in Penang, Malaysia. It aims at exchanging information of the engineering education and the accreditation system among the countries/economies in Asia, identification of the similarities and dissimilarities, and to seek for the harmonization of the accreditation systems. A natural consequence of this activity is to reach to some kind of stronger agreement of substantial equivalency. From that stage on wards it is expected that each member will assure the mutual equivalency of the engineering education.

MEMBERS

NABEEA comprises of members and the associate members. Its Members are the accreditation agencies and engineering education bodies who play an active role to enhance, not only in their own jurisdictions but also in the greater Asian region, the quality of engineering education through accreditation for engineering education. Whereas, its Associate members are engineering organizations who dedicate their knowledge and services for the betterment of the engineering profession. So far accreditation bodies of ten countries have joined NABEEA as full members and six engineering bodies as associate members. It is strongly hoped that the groups from other countries will join NABEEA for the grading-up and development of the better engineering education and for the promotion of mutual cooperation for better accreditation systems in Asia. The detail of NABEEA's Members and Associate members is as under:

MEMBERS

Sr. No	Country	Accreditation body for Engineering Education
1	KOREA	Accreditation Board for Engineering Education of Korea *
2	BANGLADESH	Board of Accreditation for Engineering and Technical Educ ation
3	THAILAND	Council of Engineers, Thailand
4	MALAYSIA	Engineering Accreditation Council*
5	TAIWAN	Institute of Engineering Education Taiwan*
6	SINGAPORE	The institution of Engineers, Singapore*
7	JAPAN	Japan Accreditation Board for Engineering Education*
8	PAKISTAN	Pakistan Engineering Council
9	PHILIPPINE	Philippine Technological Council
10	INDIA	National Board of Accreditation
	* NABEEA Council Member	

ASSOCIATE MEMBERS

Sr. No	Country	Engineering Professional Body
1	CHINA	Chinese Ta ipei APEC Engineer Monitoring Committee (CTAEMC)
2	KOREA	Korean Professional Engineer Association(KPEA)
3	MALAYSIA	The Institution of Engineers, Malaysia (IEM)
4	JAPAN	The Institution of Professional Engineers, Japan(IPEJ)
5	MALAYSIA	Malaysian Society for Engineering & Technology (MSET)
6	PHILLIPINE	Philippine Association for Technological Education (PATE)

PROJECTS OF NABEEA:

Since its inception, different members have been working out three projects of fundamental significance. Accreditation Board for Engineering Education of Korea (ABEEK) has worked out the Rules and Procedures of NABEEA. Institute of Engineering Education Taiwan (IEET) has prepared the Glossary of Terminologies for Accreditation of Engineering Education, meant to formulate a common understanding and practice of accreditation for engineering education. These two projects were defined as Level-1 Projects of NABEEA. The institution of Engineers, Singapore (IES) has prepared the Report on Issues in Engineering Education Accreditation in Asian Jurisdictions; categorized as Level-2 Project. This will serve as an effective mechanism to showcase the characteristics of the members' accreditation systems and their engineering profession. Two projects are under progress namely, "Harmonization of the accreditation systems" (categorized as Level-3) and "Recognition of substantial equivalence of accreditation system (categorized as Level-4). Meanwhile, NABEEA continues to develop more projects that are of key concerns of its members. Collectively, these projects demonstrate that NABEEA is a learning organization and a source for information, improvement and mutual cooperation.

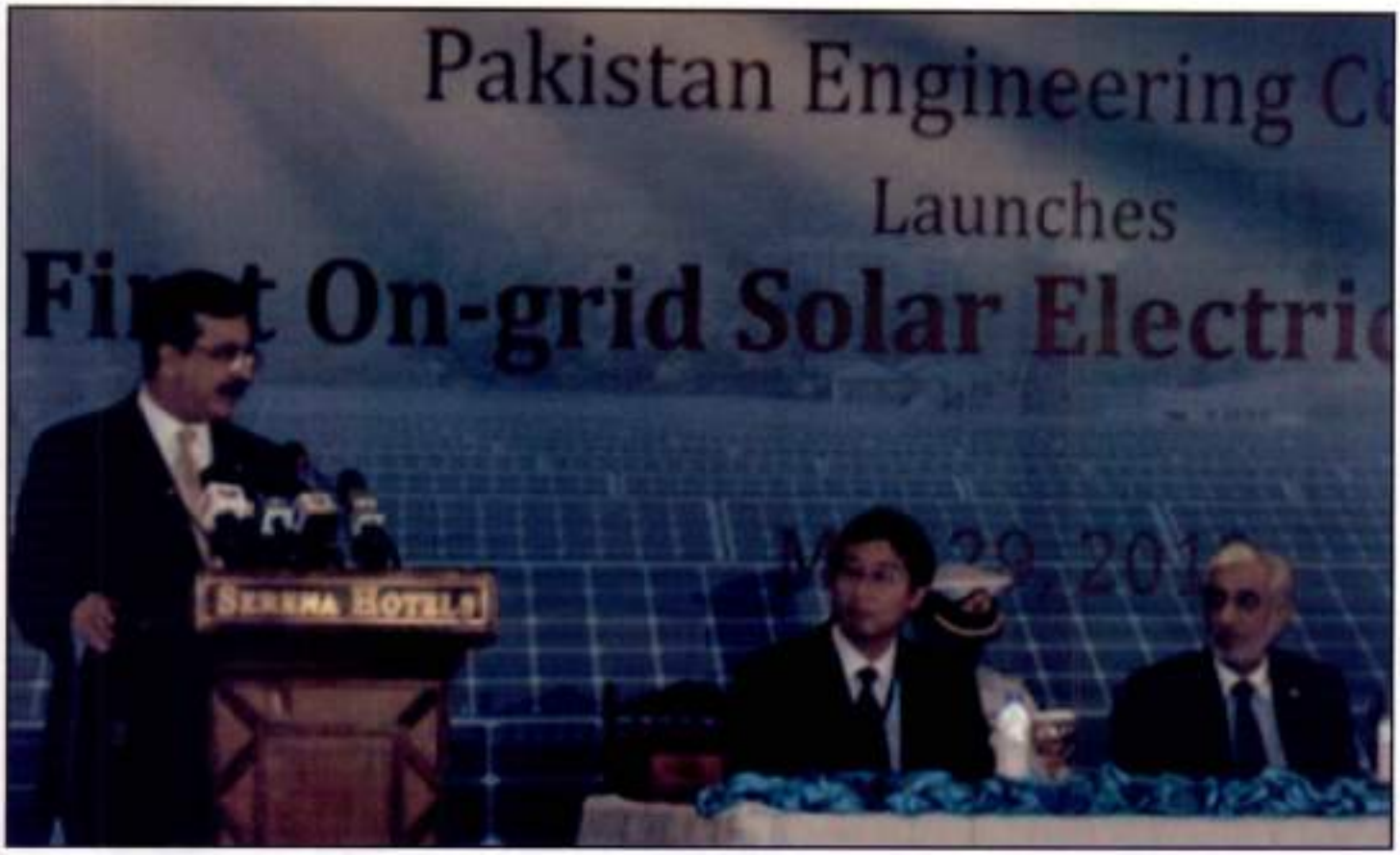
PAKISTAN ENGINEERING COUNCIL TO HOST NEXT NABEEA COUNCIL MEETING

It will be a privilege for Pakistan to host the next General Assembly and Council meeting of NABEEA tentatively scheduled at Islamabad, Pakistan in the year 2013 alongwith training/workshop pertaining to OBA based Accreditation System for mutual benefits. It is hoped that this exclusive event may provide an excellent mentoring opportunity among NABEEA economies, especially those who are provisional signatories of Washington Accord i.e. Pakistan, India and Bangladesh to learn and prepare for the full signatory status of WA. Further, in support of one of the main objectives of NABEEA, this event will be first of its kind, in any of the member countries to harmonize the accreditation systems of leading member countries and to bring it to internationally accepted and practiced systems. Most of the member organizations have shown their willingness to participate in NABEEA-2013 Islamabad meeting/ workshop. It may be mentioned that Pakistan, Bangladesh, Japan, Korea, Malaysia, Philippines, Singapore, Thailand and Taiwan are the members of NABEEA.

PAKISTAN ENGINEERING COUNCIL

PROPOSED SERVICE STRUCTURE FOR ENGINEERS

IMPROVED SERVICE STRUCTURE



The efforts of the newly elected Governing body of PEC under its dynamic Chairman bore fruit when acknowledging the role of engineers in the development of Pakistan, the honourable PM of Pakistan took following decisions during his visit to PEC HQs, Islamabad.

a. Approved the implementation of five tier service structure and time scale promotions for the Engineers throughout the country.
b. Directed the concerned authorities to work on the appointment of engineers as head of engineering organizations
c. Also directed the concerned authorities for establishment of engineering academy in each province for the professional development and capacity building of engineers.

In the light of, guiding principles approved by the Honorable PM, the Pakistan Engineering Council has worked out a service structure for engineers under the active leadership of Chairman Syed Abdul Qadir Shah, the same is being actively pursued and followed up with the concerned authorities for implementation. The salient features of the proposed service structure of the engineers are as under:

TITLE OF RULES RELATING TO SERVICE STRUCTURE

These rules may be called the National Engineering Service (Appointment, Promotion and Transfer) Rules.

APPLICABILITY

The service rules shall apply to all the engineers employed in Ministries, Divisions, Sub-ordinate offices and attached departments of Federal Government where engineering subject is being dealt or professional engineering work is being performed, and where National Pay Scales are applicable.

APPOINTING AUTHORITY

The appointing authority of the table below shall be competent to make appointment to the various posts in the basic pay scales specified in the table.

Sr. No.	Basic pay scale of posts (BPS)	Appointing Authority
1	Posts in basic pay scale-20 and above or equivalent.	Prime Minister
2	Posts in basic pay scale-17 to 19 or equivalent.	Secretary of the Ministry or Division concerned.

INITIAL APPOINTMENT

Initial appointment to the National Engineering Service in Basic Pay Scale 17 or equivalent, shall be made on the basis of competitive examination and interview to be conducted by the Federal Public Service Commission according to the various engineering disciplines or specific requirement of the requisitioning agency. The promotion criteria will be as under:

Sr. No	Scale	Length of Service	Minimum Qualification
1	BPS-17	-	Graduate engineer
2	BPS-17 to BPS-18	5 years	Graduate engineer
3	BPS-18 to BPS-19	12 years	Graduate engineer plus Mid-career Eng./ Management training
4	BPS-19 to BPS-20	17 years	Graduate engineer plus Senior Management Course
5	BPS-20 to BPS-21	22 years	Graduate engineer plus Master in relevant Engg./ Management plus National Management Course or equivalent OR 25 years service as Graduate engineer plus National Management Course or equivalent
6	BPS-21 to BPS-22	25 years	After fulfilling conditions for BPS-21

COMPOSITION OF POSTS AT ONE TIME

The National Engineering Service shall possess the following distribution of posts at various stages;

Sr. No	Scale	% of strength
1	BPS-17	40%
2	BPS-18	27%
3	BPS-19	18%
4	BPS-20	11%
5	BPS-21	3%
6	BPS-22	1%

HEADS OF ENGINEERING DEPARTMENTS

It shall be ensured that the officers of National Engineering Service be appointed or posted including their heads in all relevant Ministries, Divisions, Sub-ordinate offices, attached departments but not limited to the followings;

1. Ministry of Water and Power
2. Ministry of Housing and Works
3. Ministry of Communications
4. Ministry of Petroleum and Natural Resources
5. Ministry of Production
6. Defense Production Division
7. Ministry of Industries
8. Ministry of Railways
9. Ministry of Science and Technology
10. Planning and Development Division
11. Ministry of Information Technology and Telecom
12. Ministry of Climate Change
13. Ministry of Food Security and Research
14. Aviation Division
15. Any other(s) relevant position(s).

CAPACITY BUILDING AND TRAINING

For the capacity building and trainings there shall be a national level academy for the engineers, namely; Engineering Academy of Pakistan (EAP) which shall function under Pakistan Engineering Council. Federal Government shall provide one time grant for its establishment and infrastructure development. Besides, this academy shall also provide engineering management trainings to the engineers. Similarly, there shall be campuses of academy at Provincial Headquarters to cater the needs of engineers placed in the provinces. Upon initial appointment there would a mandatory training of six months; of which first half shall comprise of Management (Admin. and Finance) component and other half shall be specialized training in the relevant cadre or group.

For feedback and comments

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COURSES CONDUCTED BY PEC

All professionals including engineers require continuous updating of knowledge, state of the art skills and identification of new applications. Pakistan Engineering Council with its objective of introducing and ensuring Continuing Professional Development amongst its growing community of professional engineers regularly conducts short courses in addition to many other academic and professional activities.

SEISMIC DESIGN & DETAILING

Pakistan Engineering Council (PEC) organized a one day short course on Seismic Design & Detailing on 10th September, 2012 at PEC Branch Office, Quetta. The purpose of this course was to enhance the awareness of engineering community about seismic resistant construction.

Prof. Dr. Sarosh Lodi, a Civil Engineer and presently working as Dean Civil Engineering and Architecture at NED University of Engineering and Technology, Karachi delivered the lecture on the subject. Engineers from various cities of Balochistan participated in the course.

TOTAL QUALITY MANAGEMENT

Under the Continuing Professional Development (CPD) programme, a one day short course on Total Quality Management was organized on 15th October, 2012 at PEC Headquarters, Islamabad.

Engr. Abdul Rauf Sheikh, Registrar, Pakistan Engineering Council (PEC), welcomed the participant engineers and shared the initiatives of PEC to bring its registration and accreditation at par with international standards. Prof. Engr. Ali Sajid, PhD, TI, Faculty & Founding Director of Institute of Business and Management, UET Lahore was the resource person for the course. Around 70 Registered and Professional Engineers from public and private sector organizations attended the course.

THE BUILDING SERVICES DESIGN PROCESS AND DESIGN CONSIDERATIONS

A short course on "HVAC - The Building Services Design Process and Design Considerations" was organized by Pakistan Engineering Council under Continuing Professional Development Program (CPD). The course was conducted at NED University of Engineering and Technology, Karachi on 24th September 2012.

The subject course was designed to introduce and train the Engineers about the "Building Services Design Process" with special emphasis on 'HVAC Design Considerations'. The course content covered an overview of the entire design process including interactions with clients, users and project managers. HVAC Design Considerations were covered in detail.

ENERGY AUDITS TOOLS & TECHNIQUES

In the last few decades, the energy scarcity has become one of the major issues in the world. The issue becomes more serious especially for the developing countries, where the indigenous resources are insufficient to meet the national needs. Present spate of energy crisis in Pakistan is the worst this country has ever faced in its entire history.

An energy audit is an inspection, survey and analysis of energy flows for energy conservation in a building, process or system to reduce the amount of energy input into the system without negatively affecting the outputs. In Pakistan, presently, there is little knowledge of Energy Audits among technical professionals, Energy Service Companies (ESCOs) and energy audit firms. ENERCON has, therefore, planned to establish an energy audit tools display center at ENERCON for the demonstration, training and awareness of technical professionals, ESCOs and energy audit firms for measuring & quantifying the energy losses in industrial, transport, building and agricultural sector.

In this connection, a short course was organized by Pakistan Engineering Council in collaboration with ENERCON on September 18, 2012 at PEC Headquarters Islamabad. The purpose of the course was to enhance the awareness and train our engineer's about Energy Audits and its techniques.

Engr. Abdul Rauf Sheikh, Registrar, PEC, welcomed the participants and briefed them about the energy initiatives taken by PEC. Engr. Asad Mehmood, Certified Trainer on Green Productivity & Energy Efficiency, having plenty of energy audit and assessment experience was the resource person and engineers, industrialists, students and faculty members from various organizations participated in the one day short course.

RENTAL SERVICES OF PORTACABINS

ALL KIND OF CONSTRUCTION MACHINERY

CRANES

PILING AND FOUNDATION EQUIPMENTS

BULLDOZERS

MOTOR GRADERS

ROLLERS

EXCAVATORS

TRANSIT MIXERS

BATCHING PLANTS

CONCRETE PUMPS

DIESEL GENERATORS FOR RENT.

AIR COMPRESSORS

ASPHALT PLANTS

DUMP TRUCKS

HARDWARE TOOLS

PORTACABINS

KSTARLINE PORTACABINS

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E-mail: kalwarali@yahoo.com, www.kstarline.com
Contact: +92-300-2511802, +92-333-3673318

NEW INITIATIVES OF PR COMMITTEE OF PEC

The PR Committee of PEC under the enterprising and dynamic leadership of its convener Mr. Mukhtar Sheikh who is also Vice Chairman from Sindh and with the kind support of Chairman PEC, has taken many new initiatives for the welfare of engineers. It is hoped that these will be of paramount interest to all Engineers irrespective of gender and age. The PR Committee will be keen to get comments, suggestions and feedback with respect to each of these initiatives mentioned below:

INTRODUCTION OF SMART CARD

PEC has introduced a smart membership card for Engineers of Pakistan. Efforts are under way to get concessions for the holders of this card from as many as 200 outlets like hotels, shopping centres, airlines, Cineplex's, clubs, swimming pools, gyms etc.

To start with agreements have been made with leading hotels of Pakistan like Pearl Continental Hotels, Regent Plaza and Beach Luxury. Now, the holder of this card would be entitled for following concessional rates at these hotels:

1. Regent Plaza and Beach luxury hotel Room Rs.5,000/= plus Tax including breakfast, dinner, pick & drop and free internet + gym facilities.
2. Pearl Continental Hotel:Room Rs.5,000/- + Tax including breakfast, pick & drop and free internet + gym facilities.

As already mentioned the number of outlets, where this card will fetch substantial concessions will soon rise very high. The idea is to attain a level where holding a PEC card becomes an honor and pride for the holder. An arrangement is also being made whereby the Pakistani Engineers serving abroad can apply for the card on line and the card can be delivered at their door steps. Till 28th February 2013 the lifetime membership smart card can be got from any PEC Branch/ Liaison/ Head office on concessional payment of Rs. 1500/- without any arrears.

LIAISON WITH ENGINEERING UNIVERSITIES

It has been decided by the Chairman PEC Engr. Syed Abdul Qadir Shah that Engineering Universities and Engineering students will be taken in to the loop by PEC through active liaison. As a fist step, a section by the name of University Corner has been created in this magazine. Articles were invited from all universities and few selected once have been published. A focal person of PEC is being nominated in each engineering university out of amongst the students. He / She will be the representative of respective university for collecting and sending articles, news and views to the editor of the magazine. Provision of PEC membership facility to the final year students at their doorsteps is also being planned. The Chairman PEC has also directed the PR committee members to visit engineering universities and give presentations about aims and objectives of PEC to the students and try to create their ownership for PEC which is their own organisation.

ACCOMMODATION FACILITY

To facilitate the stay of its members, PEC has planned to build room accommodation facilities in the form of Messes, hostels, rest houses at commonly visited stations like the Federal and Provincial Capital as well as recreational places like Murree, Northern areas, Fort Manro etc. The members would be entitled to avail these rooms at very nominal charges. In this context, the map of a multi storied building in Karachi has already been prepared and the construction work will start soon.

HEALTH INSURANCE TO THE REGISTERED MEMBERS

PEC has signed a memorandum of understanding with the United Insurance Company of Pakistan for providing health insurance to its members. The coverage rates are as under:

Coverage Scheme-1

a.	Premium per member	Rs 4700/-
b.	Health Insurance limit per member	Rs 250,000/-
c.	Room rent	Rs 2800/-
d.	Maternity (Annual Limit)	Rs 15,000/-(normal)
e.	Maternity (Annual limit)	Rs 25,000/-(C-Section)
f.	Personal Accident	Rs 100,000/-

Coverage Scheme-2

a.	Premium per member	Rs 8700/-
b.	Health Insurance limit per member	Rs 400,000/-
c.	Room rent	Rs 5,000/-
d.	Maternity (Annual Limit)	Rs 20,000/-(normal)
e.	Maternity (Annual limit)	Rs 40,000/-(C-Section)
f.	Personal Accident	Rs 100,000/-

DEVELOPMENT OF ENGINEERS CLUB IN MAJOR CITIES

On the pattern of Gymkhana and Islamabad Club, an Engineering Club will be constructed in the major cities. The Karachi chapter of PEC has taken a lead in this regards and negotiations are underway with the concerned authorities for procurement of appropriate land on lease. Once the land is obtained a state of the art club facility will be constructed on it.

INTRODUCTION OF "BEST FINAL YEAR PROJECT AWARD" IN ENGINEERING UNIVERSITIES

A handsome cash award will be given to the "Best Final Year Project" on regular basis. This will give rise to a healthy competition amongst the young engineers.

ACADEMY OF ENGINEERS TO GIVE EMPLOYMENT TO YOUNG ENGINEERS

To provide temporary employment to the fresh Graduates and to prepare them for in coming tests and interviews for regular jobs in different engineering departments within or outside the country, Academy of Engineers will be made in major cities. Fresh Graduates will be paid reasonable salaries and will also be parted training which will help them in getting good jobs in their near future.

REGULAR HOLDING OF SOCIAL EVENTS

PEC feels that one of the reasons for the pitiful condition of the Engineers community in Pakistan is lack of opportunities where they can meet regularly and exchange views. To overcome this shortcoming the Governing Body has decided to promote a culture of socialization. At least one social gathering will take place in each major city in a year.

INTERACTIVE WEBSITE AND FACEBOOK

Under the special instructions of the Chairman PEC, the website is being made interactive and Facebook account of PEC has been opened. It is believed that these two steps will help in getting much needed feedback on the working of PEC and will also result in minimizing the communication gap between PEC and its members.

PEC RADIO AND TV CHANNELS

In order to improve communication between the engineers and PEC, to project the role being played by engineers, constructors and operators and to highlight the problems faced by this very important community of Pakistan efforts are being made to get a license for a radio and TV channel from PEMRA. In this connection the PR committee along with the convener Engr. Mukhtar A. Sheikh met the PEMRA Chairman Mr. Abdul Jabbar. Response of PEMRA authorities was found quite encouraging. In view of that a sub-committee was immediately formed to prepare and submit the feasibility report to PEMRA within 30 days.

CREDIT CARD FACILITY FOR PROFESSIONAL ENGINEERS OF PAKISTAN

Pakistan Engineering Council (PEC) represents over 150,000 engineers serving within the country, as well as, abroad and is responsible for their welfare as well. The Chairman PEC Syed Abdul Qadir shah has shown keen desire that distinguished financial institution may be approached and requested to offer an attractive and exclusive credit card package for those professional engineers who are registered with PEC. In this context undersigned visited your office and discussed the issue in detail.

In compliance of the advice of the Chairman PEC, the convener PR Committee Mr. Mukhtar Sheikh took up the matter with the Chief Executive of Bank Al falah and held two rounds of talks. A procedure is being worked for offering an attractive and exclusive credit card package to registered professional engineers through PEC.

INTERNSHIP TO FRESH ENGINEERS THROUGH PEC

At present there are over seventy Engineering universities and colleges which are registered with PEC. Around ten thousand Engineers pass out from these institutions every year. PEC feels that for optimum utilization of the talents of these fresh graduates there is a need that before they start their professional carrier they are imparted practical training commonly termed as internship. In this context the convener PR committee Mr. Mukhtar A. Sheikh held successful meeting with the CEO of Siemens Pakistan. The renowned multi - national company agreed to provide substantial number of internship quota for fresh engineers of Pakistan through PEC.

GRAND ANNUAL DINNER

The Karachi Chapter of PEC took the lead by organizing the Eid Milan party in October 2012 which was attended by over a thousand members. The Honorable Minister of Religious Affairs Syed Khurshid Ahmad Shah was the Chief Guest. A massive "lucky draw" involving innumerable prices including Hajj and Umra ticket was arranged. Minister for religious affairs Syed Khursheed Ahmed Shah graced the occasion as chief guest. While addressing the massive gathering of engineers, he highlighted and appreciated the role being played by the engineers in the national development and growth. He assured the audience that the government was fully aware of their significance and will not leave any stone unturned in giving them a status which would be commensurate with their role in the national development. Engr. Mohsin Ali Khan won the price of a return ticket to Dubai where as Engr. Liaqat was the luckiest participant as he won the Hajj ticket and Dozens of other participants also won valuable prizes through the lucky draw.

For feedback and comments
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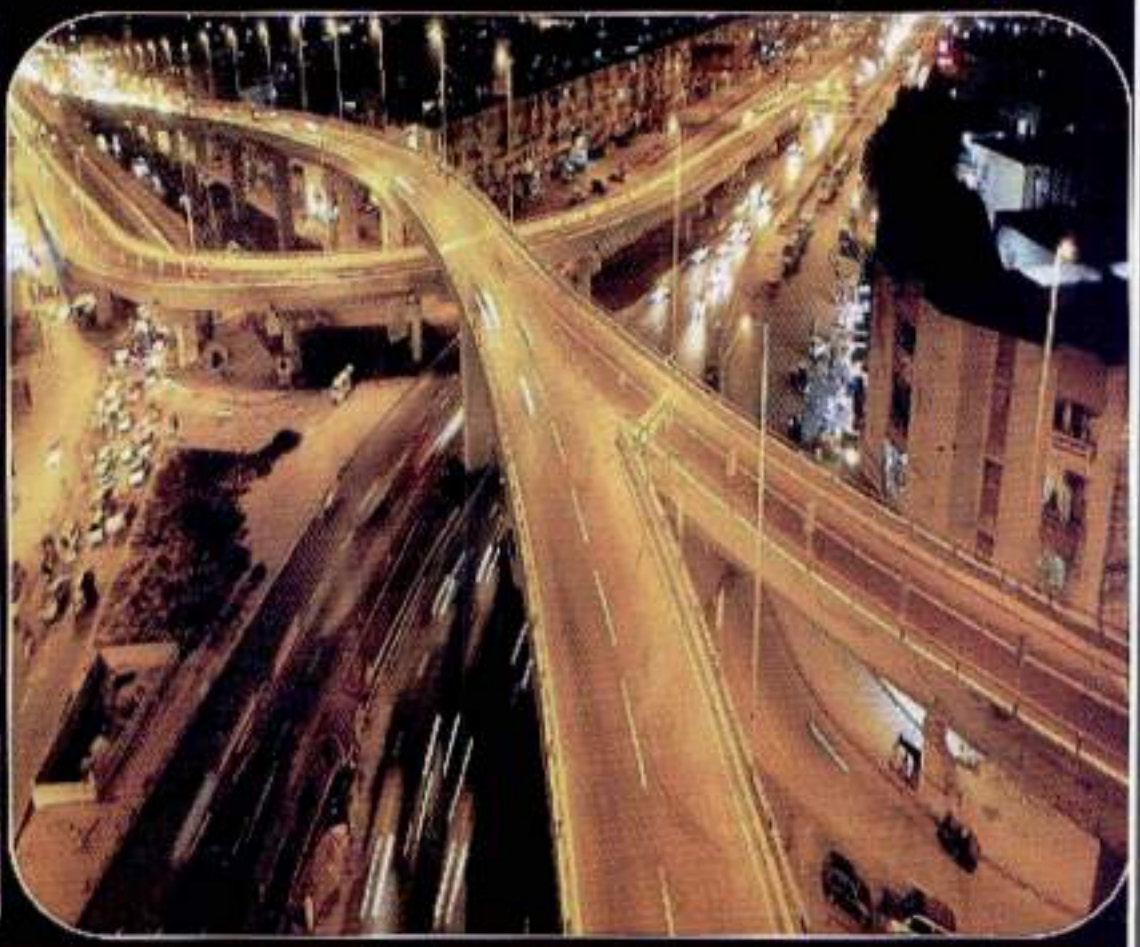

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ENGINEERS OF PAKISTAN WHO ROSE TO EMINENCE

One of the objectives of PEC Magazine is to bring to lime light those engineers who distinguished themselves through their performance not only in the field of engineering but also as Administrators. The world knows about Dr. A.Q. Khan on account of his achievements in the field of engineering but not many knows about likes of Engineer Ali Arshad Hakeem who before reaching the age of fifty years has successfully headed two very important organizations of the country namely NADRA and FBR. This section will introduce such outstanding and brilliant engineers of the country.

Editor

ENGR. DR. A. Q. KHAN

Engr. Dr. Abdul Qadeer Khan is more popularly known as Dr. A. Q. Khan. He is a nuclear scientist and a metallurgical engineer. Founded and established the Kahuta Research Laboratories (KRL) in 1976, he was both its senior scientist and the Director-general until his retirement in 2001. He was born in Bhopal, India (then British Indian Empire) into a Pashtun, but Urdu-speaking family in 1936. His father Dr. Abdul Ghafoor Khan was an academic who served in the Education Ministry of the British Indian Government and after retirement in 1935, settled permanently in Bhopal State. After the partition in 1947, the family migrated from India to Pakistan, and settled in West-Pakistan. He studied in Saint Anthony's High School Lahore, and then enrolled at the D.J. Science College Karachi. In 1956, he attended Karachi University and obtained a B.S. degree in Metallurgy in 1960 and subsequently got the internship at the Siemens Engineering.

After the graduation, he was employed by the Karachi Metropolitan Corporation and worked as a city inspector of weight and measures. In 1961, he went to West Berlin to study Metallurgical engineering at the Technical University Berlin. In 1967, Dr. Qadeer Khan obtained an engineering degree from Delft University of Technology in the Netherlands , and a Doctorate in Metallurgical engineering.

In December 1974, Dr. Khan travelled to Pakistan and met the then Prime Minister Mr Zulfikar Ali Bhutto. He highlighted the importance of Uranium and advocated the development of the atomic bomb using the highly-enriched uranium. In the spring of 1976, Abdul Qadeer Khan joined PAEC and became part of its enrichment division. Soon Dr.Qadeer Khan became incharge of the enrichment programme and renamed the project as Engineering Research Laboratories (ERL). Keeping in view the significance of the project a new site was selected at Kahutta which had prestige of having being the dangerous mountainous area. In 1981, the ERL itself became fully functional institution, processing the level of reactor-grade to weapons-grade production and manufacturing the first long metal rods of the fissile core. In 1983, Dr. Abdul Qadeer Khan was made Director of ERL by the then President of Pakistan and ERL was re-named after his name as AQ Khan Research Laboratories. The continued as head of A.Q. Khan Research laboratories till his retirement in 2001

ENGR. MUNIR AHMAD KHAN

Engr. Munir Ahmad Khan was born in Kasur, Punjab on 20th May 1926. After completing his early education in a local high school in Lahore, Engr. Munir Khan passed the university entrance exams, and enrolled in the Department of Science of the Government College University in 1942. In 1946, he received his double B.Sc. degree in Physics and Mathematics. During his Bachelor's education, he also won an Academic Roll of Honor, and subsequently in 1949, he earned a B.Sc. Degree in Electrical engineering from Punjab University. From 1949–51, Engr. Munir Khan served as an assistant professor of undergraduate mathematics in the University of Engineering and Technology (UET). In 1951, he travelled to the United States on a Fulbright scholarship and Rotary International Fellowship where he earned an M.S. in Electrical engineering in 1952 from North Carolina State University.

In 1953, Engr. Munir Ahmad Khan began post-graduate research work at the Illinois Institute of Technology which continued until 1956 during which time he also received preliminary training in atomic energy. In 1956, he was selected for the Atoms for Peace Program and participated in the Nuclear Engineering training program of the International School of Nuclear Science and Engineering (ISNSE), at the North Carolina State University and the Argonne National Laboratory, Illinois where he earned a M.Sc. in Nuclear engineering.

Engr. Munir Ahmad Khan served as the chairman of Pakistan Atomic Energy Commission (PAEC) He became the chairman of the Board of Governors of the International Atomic Energy Agency from 1986–87 and made a strong case for Pakistan's peaceful development on nuclear energy. His notable achievements as Chairman of PAEC include the establishment of the first international physics conference in Pakistan; indigenous development of nuclear weapons design, fabrication and testing infrastructure; promoting research in science and technology in the country; the development of the nuclear fuel cycle facilities which produced nuclear fuel for the *Kanupp-I* after an embargo was placed on Pakistan after 1974, and uranium hexafluoride for the uranium enrichment program; and setting up of the plutonium program at the Khushab Nuclear Complex, and the New Laboratories reprocessing plant.

ENGR. ABDUL REHMAN HYE

Engr. Abdul Rehman Hye is considered the father of Institutional Architecture in Pakistan. He was born on December 17, 1919. He was an architect and a pioneer of institutional architectures in Pakistan. After graduating from Sir J.J. College of Architecture, Bombay in pre-partition India, A.R. Hye travelled to UK and received his architecture degree from the University of Edinburgh in 1951 and was admitted to the membership of the Royal Institute of British Architects (RIBA). In Europe he got an opportunity to witness first-hand the reconstruction of Europe. This experience influenced his architecture and his philosophy, and once he returned home he specialized in using indigenous resources to provide maximum comfort. He used natural ventilation, strategic placement of windows, courtyards and overhangs and used wind flow in some designs to provide natural protection against harsh exterior climate conditions. Those days he was one of the few qualified architects in his newly independent country. In 1950s, early in his career, Engr. Hye became the Chief Town Planner of the port city of Chittagong. In this capacity, he was responsible for working on the master plan of Chittagong Township and Cox's Bazaar. He also worked as Architect Planner in Dhaka.

In 1958, he moved to West Pakistan, and joined the Government in 1959 to become the first Chief Architect of the Government of West Pakistan. He was responsible for the architectural design of all government buildings in the cities and towns of West Pakistan, including Karachi, Lahore,Rawalpindi, Peshawar, Quetta, Multan, Jhelum, Bahawalpur, Sialkot, Gujrat, Mardan, Faisalabad, Sahiwal, Hyderabad, Mianwali, and Kalabagh. He remained in this key position until West Pakistan was broken into four provinces, after the resignation of President Ayub Khan. Thereafter, he was asked to become the Chief Architect of the Government of Punjab, the largest of the four provinces.

From 1967 till 1971, Engr. Hye acted as the "Chief Architect" for the Generals Combatant Headquarter (GHQ), designing the entire GHQ buildings and associated areas for the military's staff services. Based in Lahore, he remained in that position until his retirement from government service in 1981. Many of his designs were built in the early 80's after his retirement.

As Chief Architect of West Pakistan and Punjab, his designs included colleges, schools, polytechnic institutions, hospitals, housing schemes and townships. During this period, he designed more buildings than any other architect of his era in Pakistan. The best known of his projects is the Bahawalpur Medical College, now renamed Quaid-e-Azam Medical College, in Bahawalpur. His projects also included many Tehsil Hospitals.

His buildings were constructed before air conditioning became commonplace in the region. Thus, his designs are adapted to their conditions, and are an example of "tropical architecture". The buildings incorporated strategically placed windows and overhangs, and relied on natural ventilation to moderate the extremely hot climate. Bold overhangs and courtyards are characteristic of his designs. These overhangs provided natural shade to the exterior walls of the building, protecting it from intense heat during summer, and acting as a barrier to winter cold winds, which are characteristic of the climate of inland Pakistan. His early designs had bold linear features which in later stages included more traditional arches in his design for climate control. In addition to architecture he was committed to education. He was successful in setting up schools in areas where landowners opposed them as they were afraid people would revolt against their tyranny after receiving education.

ENGR. SHAHID BUKHARI

Engr. Shahid H. Bokhari was born on January 17, 1952 in Lahore, Pakistan. He is a renowned researcher in the field of parallel and distributed computing. He received his B.Sc. in Electrical Engineering from the University of Engineering and Technology, Lahore in 1974. He then received his M.S. and Ph.D. in Electrical and Computer Engineering from the University of Massachusetts and Amherst in 1976 and 1978, respectively. He was with the Department of Electrical Engineering, University of Engineering and Technology, Lahore, Pakistan from 1980 to 2005 where he held the position of a Professor. At the time of his retirement in 2005, Bokhari was the only IEEE/ACM Fellow and the only Pakistani ISI Highly Cited Researcher resident in Pakistan.

Engr. Bokhari has been associated with the Institute for Computer Applications in Science & Engineering (ICASE) at NASA Langley Research Center in Hampton, Virginia, where he spent a total of about seven years as a visiting scientist or consultant over the period 1978-1998. Other institutions that he has been associated with as a researcher include the University of Colorado (USA), Stuttgart University (Germany), University of Vienna (Austria), and the Electromechanical Laboratory in Tsukuba, Japan.

For feedback and comments

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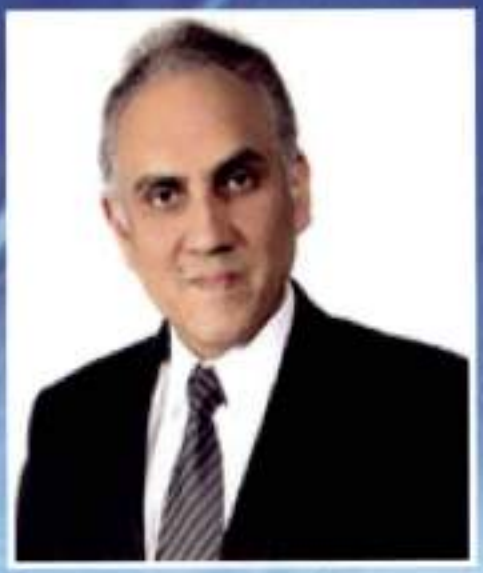


ENGR. ALI ARSHAD HAKEEM

Engr. Ali Arshad Hakeem holds a degree in Electrical Engineering, Business Administration and Law and believes in an optimistic change through innovation in various Business and economic ventures. He has a dynamic professional background in both public and private sector organizations of Pakistan as well as abroad. He started his carrier as a Civil Servant after doing CSS in 1990. He also served in Pakistan's Central Board of Revenue for ten years at Senior Management positions and has been closely involved with Business Process Outsourcing Operations, Computerization of Land Records and Automation of Customs Process in Pakistan. He resigned from service in 2002 and joined private sector. On the basis of his rich experience gained in the field of Data Mining in next years, he was appointed as Chairman NADRA on August 12, 2008 and until leaving in July 2012 he steered NADRA to excellence in performance and service standards, while innovating into new service products of national importance.

His versatile experience had brought many value additions and a completely service oriented vision to NADRA. In June 2012, he was made chairman Federal Board of Revenue. He has started his chairmanship with a vision to expand the canvas of Trade facilitation across the country through modern technology, optimum utilization of human and material resources, through introducing an effective tax structure and tariff realization by mitigating complexity in the business processes of both Pakistan Customs Service and Inland Revenue Service of Pakistan.

IMPORTANT NATIONAL ENGINEERING ORGANIZATIONS

The Engineering organizations are playing vital role in the national development and growth. Who can ignore the significance of WAPDA, Pakistan Telecommunication (Pvt) Ltd, Sui Northern, Sui Southern, OGDCL, Pakistan Steel, NESPAK, PWD, Highways department etc etc in the progress and prosperity of the country. In order to highlight their capabilities and key areas of their performance introductory articles about three engineering organizations will be included in this section and in the subsequent editions.

Editor

PAKISTAN STEEL

Pakistan Steel is located at 40km south east of Karachi in close vicinity to port Muhammed Bin Qasim. It is a costal site which lies on the National Highway and is linked to the railway network. Spread over an area of 18,600 acres (29 square miles) with 10,390 acres for the main plant, 8070 acres for the township and 200 acres for the water reservoir. It is Pakistan's largest industrial complex having a production capacity of 1.1 million tons of steel.

BACK GROUND

Pakistan Steel Mills Corporation was established as a private limited company in the year 1968 with the objective of constructing and running Steels Mills at Karachi in the first instance, and later at other places in Pakistan. In 1969 the newly set up Pakistan Steel Mills Corporation concluded an agreement with the Soviet Union for the preparation of a feasibility report on the proposed steel mills at Karachi. Subsequently in January, 1971 Pakistan and the U.S.S.R signed an agreement under which the latter agreed to provide techno-financial assistance for the construction of a coastal – based integrated steel mills at Karachi.

FOUNDATION STONE

The foundation stone for this most vital and by far the biggest Public Sector Project of the country was laid on 30th of December, 1973 by the former Prime Minister of Islamic Republic of Pakistan Shaheed Zulfiqar Ali Bhutto . The project did not only require construction of the main production units but also a host of infrastructure facilities involving unprecedented volumes of work and expertise. Component units of the steel mill numbering over twenty and each a big enough factory in its own First plant commissioned was the Coke Ovens and By Products Plant coming online first and the Galvanizing Unit last. Commissioning of Blast Furnace Number 1 was done on the 14th of August, 1981 marked Pakistan's entry into the elite club of iron and steel producing nations. The project was completed at a capital cost of Rs. 24,700 million on 15th of January 1985.



DIMENSIONS OF THE PROJECT

The enormous dimensions of the project can be visualized from the construction inputs which involved the use of 1.29 million cubic meters of concrete, 5.70 million cubic meters of earth work (second to Tarbela Dam), 330,000 tons of machinery, steel structures and electrical equipment. Its unloading and conveyor system at Port Qasim is the third largest in the world and its industrial water reservoir with a capacity of 110 million gallons per day is the largest in Asia. A 2.5km long sea water channel connects the sea water circulation system to the plant site with a consumption of 216 million gallons of sea water per day


STEEL RELATED PRODUCTS

Pakistan Steel Mills has specialized in the production of flat steel products including, billets, slabs, hot rolled coils, cold rolled coils, galvanized sheets/coils/formed sections and corrugated sheets. Its constant efforts in continuous improvement and quality management have resulted in accreditation in ISO 9001, 14001, 17025, SA 8000 and OHSAS 18001.

OTHER PRODUCTS

Pakistan Steel not only involved in production of quality steel products but is also producing vide range of other high tech products as shown below:

ELECTRONICS SERVICES

Electronic Development Cell of Pakistan Steel is engaged in designing and development of indigenous electronic instruments/systems by employing modern micro-controller based digital electronics for the replacement of outdated/obsolete equipment and for enhancement of existing instrumentation and automation of various production units.

These instruments includes temperature instruments for various furnaces, flow indicators for the measurement of Gas, Liquid and Steam, batch/hopper weighing for the preparation of blend of different materials, conveyor belt weighing scales for online weighing of raw materials transported through conveyor belts, weighing platform scales used for weighing of finished product upto 15 tones, process control instruments for length/speed/width measuring, sheet centering, sheet detection, coil diameter measuring, level measurements, jumbo process data display, panel meters etc.

ELECTRICAL SERVICES

Pakistan Steel offers broad range of electrical services including rewinding of induction motors upto 320 KW, DC motors upto 180 KW, LT high-speed motors, hand grinders, vibrator coils, control circuit transformers, blowers, vacuum machines and brake coil of cranes upto 180 tons capacity. It also offers overhauling facility for HT motors upto 800 KW and power transformers upto 1600 KVA.

METALLURGICAL SERVICES

Pakistan Steels has metallurgical production facilities that include moulding machines, electric are furnace, cupola furnace, induction furnace, crucible furnace, shake-out grid, shot blasting machine and tumbling barrels. It can manufacture medium & large sized shape castings & ingots with ferrous and non-ferrous materials as per the cast standards, produce silica sand castings, cast blanks, spare parts for cement factories, sugar mills, railways etc.

MECHANICAL SERVICES

The mechanical services offered by Steel Mills can be broadly categorized into three types I.e. erection/ installation, manufacturing/ fabrication & repair/ maintenance. It has the capability to help in erection/installation of different mechanical plants, structural equipments, overhead bridges and gantry cranes. It can carry out execution of major repairs, preventive maintenance; shut downs of industries and plants. It can also carry out fabrication of ducts, pipe bending, GI corrugated sheet for roofing, fans, blowers and impellers etc as well as repair/ maintenance of overhead bridge cranes, gantry cranes, weighbridges & cargo/ passenger lifts.

DOWN STREAM INDUSTRIES

The downstream industries have had significant impact on the national economy. They have contributed towards capital formation of over Rs. 2300 million (US$ 50 million), have provided direct/ indirect employment opportunities to over 5000 persons, have introduced new technologies like manufacturing of large dia spiral welded pipes, seamless pipes, slag cement, slag wool etc and have effected import substitution of around Rs. 4 billion (US $ 89 million) per annum. In the long range the establishment of more and more downstream industries, wherever located, has a boosting effect on Pakistan's industrial economy. It will result in the development of steel based high value added high-tech industries and meet the growing needs of engineering goods. This in its wake would bring about rapid increase in consumption of steel.

ENVIRONMENTAL POLLUTION

Steel Making is an enterprise which by its very nature tends to contribute to Environmental Pollution: nevertheless the Pakistan Steel Plants and the residential area of Steel Town give the impression of a green island. Special efforts have been made to ensure this. Even, old and worn-out buildings are repaired, repainted and given a fresh look. The cleanliness of the entire area is nothing less than exemplary. To reduce pollution and to beautify the surroundings, delightful parks full of greenery dot the landscape trees and plants are planted and pruned regularly every year. The management has endeavored to ensure that the Staff Members not only have a clean and neat workplace, but also clean, healthy and pollution - free environment in the nearby residential areas.

NATIONAL ENGINEERING SERVICES OF PAKISTAN (NESPAK)

NESPAK is Pakistan's premier consultancy organization. Its international stature is well established and it enjoys the reputation of being one of the top engineering consultancy organizations in Asia and Africa and is ranked amongst the world's top 200 consulting firms. It was established in 1973 as a private limited company by the Government of Pakistan. The objective of its creation was to create a pool of talented engineers, attain self-reliance in engineering consultancy and replace foreign consultants. The company has achieved these objectives to a large extent. NESPAK is registered with a number of international funding agencies such as IBRD, ADB, IDB, etc.

HUMAN RESOURCE

NESPAK has on its rolls some of the best professionals in various fields of engineering. It has also been able to attract a large number of Pakistani experts from abroad. NESPAK is thus able to offer the services of highly qualified and experienced professionals. At present, NESPAK has a staff strength of 4207 employees including 3096 highly qualified engineers, architects, planners, geologists, economists and other professionals.

MANAGEMENT

The Company is managed by a Board of Directors comprising a Chairman, a Managing Director and 11 other Directors. The day-to-day functions of the Company are looked after by the Managing Director assisted by Executive Vice Presidents, Vice Presidents/ Division Heads. Various divisions headed by Vice Presidents/ General Managers are broadly divided into project management and specialty groups. The project management divisions are responsible for management of projects and the specialty divisions are centers of excellence for various disciplines.

SERVICES OFFERED

NESPAK offers a broad spectrum of expert consultancy services ranging from conception to completion and operation of development projects. The scope of these services covers prefeasibility and feasibility studies, surveying and mapping, investigations, design, tender and contract documentation, construction/ installation supervision, contract management and post-construction services. NESPAK, having expertise in almost all engineering disciplines, specializes in the fields of power and mechanical; water and agriculture; architecture and planning; highways, bridges, airports and seaports; environmental and public health engineering; engineering for industry; heating, ventilation and air-conditioning; information technology and geographical information systems (GIS).

ACHIEVEMENTS

To date NESPAK has undertaken 3306 projects out of which 2828 are domestic and 478 are overseas projects located in Afghanistan, Azerbaijan, Bahrain, Bangladesh, Benin, Cameroon, Chad, Comoros Island, Dominica, Ethiopia, Gambia, Ghana, Guinea, Iran, Iraq, Kazakhstan, Kyrgyzstan, Libya, Nepal, Nigeria, Oman, Pakistan, Qatar, Saudi Arabia, Senegal, Sierra Leone, Somalia, Sudan, Syria, Tajikistan, Tanzania, Thailand, Turkey, Turkmenistan, U.A.E, Uzbekistan, Yemen. The cumulative cost of the projects undertaken by NESPAK is US $ 193 billion. The Company's success lies in the hard work of its highly skilled employees and commitment to quality in every facet of its operation. It was this commitment that led it to become the first engineering consultancy organization in Pakistan to obtain ISO 9001 QMS certification in 1998. Another landmark has been achieved by NESPAK in its endeavors towards quality, through conversion of the existing ISO 9001 Quality Management System to the latest version of the standard viz. ISO 9001:2000 and subsequent award of Evergreen Certificates in December 2003.

NESPAK WINS A DAM PROJECT IN NIGERIA

NESPAK in joint venture with H P GauffIngenieure GMBH and Co Germany has won engineering supervision of Obudu Dam Rehabilitation work in Nigeria.Obudu dam is in Cross River State in the south east of Nigeria. It is an Earthfill structure with a height of 18m, total creast length of 425m and storage capacity of 4.2 million cubic metres. It is a multipurpose dam and was commissioned in 1999 for use in farm irr igation, fishing, potable water supply and also for recreational and tourism purposes.

HEAVY MECHANICAL COMPLEX (TAXILA)

Background:

Heavy Mechanical Complex (HMC), Taxila was established under 3rd. Five Years Plan, by WPIDC, to implement government's industrial policy to shift emphasis from consumer goods to capital goods manufacturing industry. It started its operations in December 1971.The project was implemented with the co-operation of government of People's Republic of China.

Later in February 1977, Heavy Foundry & Forge (HFF) was established to produce heavy castings and forgings, to supplement the engineering industry for intermediary goods/ raw materials. Heavy Foundry & Forge was merged with Heavy Mechanical Complex in 1990. In early 2006 Government decided to privatize HMC and EOIs were invited but later this decision was reversed and HMC was de-listed from privatization due to its strategic importance as heavy engineering industry.

Facilities:

The facilities in the company are unique and largest in the country, under one roof, which are;

- Design centre for undertaking plant engineering & equipment design.
- Steel foundry capable to produce single piece casting of up to 32 tons and ingot of 50 tons..
- Cast iron & non-ferrous foundry, capacity to produce single piece CI casting of 28 tons.
- Hydraulic press with 3,150 tons press for producing free forgings up to 35 tons a piece from 50 tons ingots.
- Die forging shop with capacity for making die forgings of up to 150 Kg.
- Elaborate heat treatment shops with car bottom and shaft furnaces.
- Fabrication shops with facilities for handling jobs of up to 100 tons a piece.
- Machine shops equipped with all types of machine tools for turning, milling, boring, planning, gear cutting etc. With handling capacity of jobs up to 50 tons weight a piece.

Quality assurance:

HMC has in-house quality assurance facilities manned by highly skilled professionals. HMC was pioneer engineering industry in obtaining the following international quality certifications.

- ISO 9000 Certification
- Certification for ASME stamps U, U2, S, PP & R for manufacture of pressure vessels, power boilers, pressure piping under ASME codes.
- Lloyds of UK certification as manufacturer of 1st. class fusion welded pressure vessels.

Products development & diversification:

Prior to the establishment of HMC, there were no heavy engineering industry in the country and dearth of qualified professionals in the field of design, manufacturing/ production engineering. On establishment of HMC a large number of engineers, technicians and workers were trained in design and manufacturing fields, initially in China and later at HMC during initial years of production. The original production program was chalked out in association with Chinese experts on the basis of then requirements of the country and technology available with them. This included equipment for sugar & cement plants, packaged boilers, electric overhead cranes and static road rollers. However, over the years HMC has attained capability for design and manufacture of larger module plants and machinery.

Sugar plants is an excellent example, where starting from know-how for 1500 tcd plant, HMC has now developed in-house capability for design, manufacturing, installation & commissioning of green field plants up to 12,000 tcd capacity without involving any foreign assistance. HMC has brought Pakistan on the map of sugar plants exporting countries as well by exporting four complete sugar plants.

Further capabilities have been developed for design & manufacture of high pressure industrial steam boilers up to 140 tph capacity; cement plants up to 5,500 tpd capacity; overhead & gantry cranes up to 250 tons lifting capacity. Process equipment like pressure vessels, heat exchangers, columns & towers and skid mounted units for oil & gas industry; equipment for thermal power plants; mechanical equipment for hydro power plants including small turbine runners.

It is worth mentioning that HMC undertook the project for design, manufacture, installation of a penstock of 4 meter diameter for Malakand-III hydropower plant, first such project by a local company, besides supplying 40 small hydro power units to northern area.

Besides meeting the domestic market demand HMC has also exported sugar plants, clinker grinding & packing plant and packaged boilers to Bangladesh, Indonesia, Ethiopia, Sudan, asphalt plant to Kenya; overhead cranes to Ghana; irrigation system gates to Sri Lanka and heat recovery boiler to Saudi Arabia.

Major achievements:

HMC has been able to meet the objects of its establishment to a great extent which can be summarized as follows;

- Developed engineering concepts and quality culture in the local engineering industry.
- Supplied number of plants and equipment for establishment of industry in the country, thus reducing foreign dependence and saving of foreign exchange.
- Dissipated technical know-how, resulting in development of many local engineering industries.
- Export of complete plants and capital engineering goods.

Future plans:

Keeping in view the country's energy needs HMC has been assigned the task to develop local capabilities for design and manufacture of hydro, thermal and renewable energy power plants and oil & gas processing and refining plants with in the country. The plan includes the following two projects, which are under implementation;

- **Establishment of a Design Institute,** especially for energy sector plants, by up-grading existing design centre at HMC, Taxila. The project involves development of facilities and human resources in design & engineering of power generation and oil & gas processing plants.
- **Establishment of turbines and power plants equipment manufacturing facility** by up-gradation of existing facilities at HMC, Taxila. New workshops for producing refined grade degasified steel, hydraulic press shop for very heavy forgings, heavy fabrication and CNC machine shop for manufacturing hydro, thermal and renewable power plants including hydro, steam & gas turbines.

These projects are aimed at to develop local capabilities for design and production of the following energy sector plants within the country;

- Hydropower plants
- Thermal power plants
- Wind turbines for power generation
- Power generation from municipal waste and biomass
- Coal gasification plants for domestic use gas and power generation
- Oil & gas processing plants

Both the projects were approved by ECNEC in 2011 and implementation work has been started.

UNIVERSITY CORNER

Chairman PEC Engineer. Syed Abdul Qadir Shah has given special instructions to the PR Committee that in order to create ownership of PEC amongst Engineering Universities and Engineering students, they may be given coverage in PEC magazine. Accordingly the section of "University Corner" was made part of the magazine. This will include articles of students, interviews of outstanding performers and news relating to the Universities.

Editor

SIR SYED UNIVERSITY OF ENGINEERING AND TECHNOLOGY

Sir Syed University of Engineering and Technology has been sponsored by Aligarh Muslim University Old Boys' Association of Pakistan, Karachi. It was set up through Sindh Government Ordinance No. XII of 1993 dated 6th October, 1993 and the Charter granted by Governor of Sindh on 8th October, 1993. The Act was passed by the provincial Assembly of Sindh on 17th September, 1995 and assented by Governor of Sindh on 16th October 1995, and published in the Gazette as "Sir Syed University of Engineering and Technology, Act 1995 - Sindh Act No. X of 1995".

The Association decided to establish a high class University of Engineering and Technology as a Centre of Excellence offering instructions of International Standard with integrated programmes dealing with the fast growing technologies of the world with courses designed to produce qualified personnel of high caliber specializing in new technologies needed in developing countries. This objective is in line with the Government policy of inducting the private sector for promoting Education in Engineering and Technical subjects at graduate and post-graduate levels.

In its first phase, the University has been established on a plot of 15 acres in Block-5 of Gulshan-e-Iqbal on Main University Road. For future expansion, a plot measuring 200 acres has been acquired on link road.

Within a short span the University has achieved a commendable position. It is now the member of "International Association of Universities" and "Association of Commonwealth Universities". Another worth mentioning fact is, that Sir Syed University of Engineering and Technology represented on the "Governing Board" of "International Association of Universities" through its Vice Chancellor who was, one of the members of this board. The board has forty members representing different parts of the world and advises UNESCO on higher education.

VISION

Sir Syed University has been founded to advance the cause of technological education in Pakistan because the University realizes that to get a befitting place in the world community Pakistan must have a technologically strong society.

AIM

The University aims to keep the Aligarh Spirit alive and follow the vision of the great Reformer and Educationist Sir Syed Ahmed Khan.

WHY STUDY AT SSUET?

The SSUET experience goes far beyond the classroom. Its programs are structured so that every activity enhances not only student learning but individual development as well. Character building is considered to be an integral aspect of its programs, as learning without personal integrity is of little value to the individual and the society. It strives to offer world-class academic programs that are relevant and meaningful in the context of society and heritage. Its commitment is to give students the best possible educational experience by providing them with a challenging learning environment which will prepare them for a rewarding and fulfilling career.

The University offers bachelor's degree programmes in the following disciplines:

1. Electronic Engineering
2. Telecommunication Engineering
3. Computer Engineering
4. Biomedical Engineering
5. Civil Engineering
6. Computer Science

TEACHING FACULTY, LABORATORY AND ALLIED STAFF

1. 107 Well qualified faculty members with PhD, MS and BS degrees from reputed National and International Universities
2. The department is utilizing services of More than 40 quality Laboratory Staff who are well trained as per guidelines given by the PEC
3. In-House Maintenance Workshop is available for repair of Lab equipment with qualifies repair Engineers and Technicians.
4. Adequate office support is available in the department.

QUALITY ASSURANCE:

1. Quality of the graduated student from an institution is judged by employment in reputed organization and acceptance in institution of repute for higher studies.
2. Graduates of Electronic Engineering Department are working in all well known companies and organizations.
3. They are accepted in good institutions at home and abroad including USA and European countries

ACHIEVEMENTS AND HONORS IN YEAR 2012

1. 1st and 2nd position in ROBOCOM'12 National Glory and qualified for Techfest IIT Bombay, Mumbai India. (Largest Science and Technology festival).
2. 1st and 3rd prize at "My Karachi" expo exhibition held by Karachi Chamber of Commerce and Industries.
3. 1st prize in project competition held at Mehran University.
4. 1st and 2nd prize at "SEE'12" in project competition Held by PAF-KIET.
5. 1st prize at "All Pakistan Science Fair" held by GIKI.
6. 1st and 3rd prize at "Young Leaders Festival" held at expo centre.
7. 1st prize at "PROCOM.net'12" in Hardware Exhibition held at FAST.
8. 1st price at NED university in Oct 2012.
9. 2nd and 3rd price in Re-Engineering Pakistan Project Exhibition at Expo centre.

CONCLUSION:

Within a very short period of time, a credible Electronic Engineering education infrastructure with strong focus on new technology and high quality output has been established.

INSHAH ALLAH the current growth rate is everlasting and Sir Syed University of Engineering & Technology will continue to play a major role in national Engineering education programme.

For feedback and comments
sheikhmukhtar@hotmail.com, engrhab@gmail.com, mohsin_alikhan@hotmail.com

LAHORE COLLEGE WOMEN UNIVERSITY

Lahore College for Women University is an independent women's university in Lahore, Pakistan, founded as a women's college in 1922. One of the oldest female institutions of Pakistan. The university has approximately 15,000 students and a teaching faculty of more than 450. It admits students at the intermediate, bachelors level master's and Ph.D.levels. Lahore College Women University is moving forward

with a great deal of energy to achieve its Vision 2020 and take its place as a leading women university of the world. Unprecedented growth in the area of electrical engineering during the past few decades has impacted almost every area of human life. Developments in digital Electronics, Signal Processing and Communications have heralded the age of information Technology. Sophisticated digital hardware combined with novel control algorithms has directly contributed to the landing of probes on distant planets as well as efficient operation of massive industrial units. Keeping in view the current needs, LCWU is trying to provide students with best possible knowledge in this field with a lot of emphasis on its practical applications. Its Department of Electrical Engineering successfully obtained Accreditation with Pakistan Engineering Council (PEC) in 2007, 2008, 2009 and 2010 and ISO 9001:2000 certification in 2006.

CELEBRATION OF 'ENGINEERS DAY' 2ND OCTOBER, 2012

It is the third time the history when Engineers throughout the world were celebrating the Engineers Day that is ***"IEEE Day"*** on 2nd October, 2012. Electrical Engineering Department Lahore College for Women University also celebrates ***"IEEE DAY"***. The celebrations were followed by seminars which were conducted by the IEEE Lahore Section's Executive Committee members Mr. Maroof Raza, Mr. Mehran Khizar, Ms. Sahar Sultan and Mr. Sulman Farukh. Seminars were about mentoring of students, building leadership qualities in them and also make them familiar with the new projects and forums of IEEE.

Respected Dean Faculty of Engineering and Technology Prof. Dr. Farhat Saleemi, Head of the Department Dr. Intesar Ahmed and students of Electrical Engineering Department were present at the event. Honorable chief guest Mr. Amir Chaudhary DG-IT Pakistan Information Technology Board (PITB) introduce role of PITB and also provided useful information regarding Plan platform for the young student business entrepreneur. His information is helpful for the students to involve themselves to utilize their technical knowledge in the practical life of professional engineers.

FINAL YEAR PROJECT EXHIBITION HELD ON 25TH OCTOBER, 2012

The project exhibition of Final year electrical engineering student was held on 25th October, 2012. The exhibition was inaugurated by Dean Faculty of Engineering and Technology Prof. Dr. Farhat Sleemi and Head of Electrical Engineering Department Prof. Dr. Intesar Ahmed. Panel of Examiners for the project exhibition were the prominent professors from U.E.T Lahore and its Kala Shah Kako Campus. Chairman Electrical Engineering Department UET KSK Prof .Dr Muhammad Kamran and Prof Dr. Sohail Aftab Qureshi, Prof. Dr. Tahir Izhar and Prof.Dr. Asgar Saqib from UET Lahore highly appreciate the quality of the project and facilities in the laboratories provided by the Lahore College for Women University. They also guide and advise the students regarding improvements in technical knowledge for future advancements in the projects.

INDUSTRIAL & MANUFACTURING ENGINEERING

M.UZAIR AHMED KHAN
NED UNIVERSITY OF ENGINEERING & TECHNOLOGY

WHAT IS INDUSTRIAL ENGINEERING??????

The American I nstitute of Industrial Engineering (AIIE) has defined "concerned with the design ,improvement and installation of integrated systems of people, materials, equipments and energy".

Industrial engineers figure out how to do things better. They engineer processes and systems that improve quality and productivity. They work to eliminate waste of time, money, materials, energy and other commodities. This is why many industrial engineers end up being promoted into management positions.

Many people are misled by the term industrial engineer. It's not just about manufacturing. It also encompasses service industries.

WHAT doeS INDUSTRIAL ENGINEER do??????

I will simply say that an Industrial Engineer finds a Better Way...

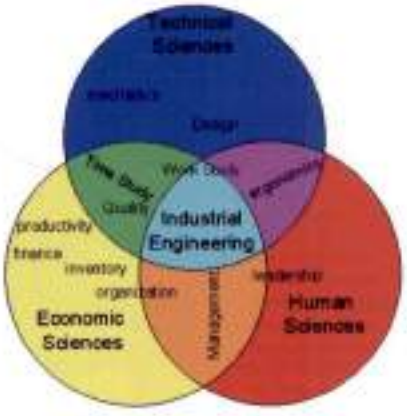
- A better way to make a product faster and easier.
- A safer way.
- A less expensive way.
- To examine and analyze to find better ways to solve the problem.

Industrial Engineers make processes better in the following ways:

- More efficient and more profitable business practices
- Better customer service and product quality
- Improved efficiency
- Increased ability to do more with less
- Making work safer, faster, easier, and more rewarding
- Helping companies produce more products quickly
- Making the world safer through better designed products
- Reducing costs associated with new technologies

WORK ENVIRONMENT

Depending on their tasks, industrial engineers work both in offices and in the settings they are trying to improve. For example, when observing problems, they may watch workers on a factory floor or staff in a hospital. When solving problems, they may be in an office at a computer looking at data that they or others have collected.



SCOPE:

Industrial Engineering has a wide scope in manufacturing and automation field. Industrial engineers work in all branches and industries in which products are manufactured in industrial processes. Employment opportunities are to be found in mechanical and plant engineering, in automobile engineering, in power-generating, in the electrical industry, in the precision engineering industry, in the chemical and pharmaceutical industry, in the textile industry, the paper industry, iron and steel industry, food and semi-luxury foods and tobacco industry ETC.

The great thing about being an industrial engineer is that you are qualifed to work in almost any industry you want. Industrial engineers work in entertainment,healthcare, shipping, fnance, electronics, manufacturing, technology, food and beverage or just about any other industry you can imagine.

Why should I become an industrial engineer?

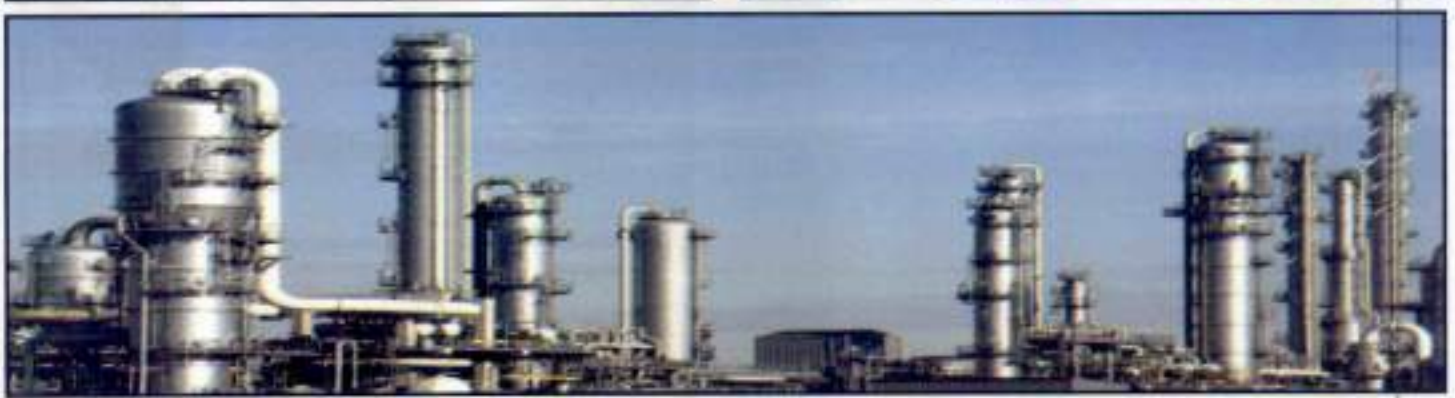
So you can make existing & new products ...

01. Better...Safer...Healthier
02. Easier to use
03. Use less energy
04. Cost less to make,
05. Cost less to buy
06. Improve the world around you
07. You Can become an industrial engineer if!!!
08. You enjoy knowing how things work?
09. You think of new or better ways to do things?
10. You take things apart and put them back together with fewer parts?
11. You like puzzles?
12. You like to figure things out?

CONCLUSION

So, I can conclude the article by saying that there are a number of things industrial engineers do in their work to make processes more efficient, to make products more manufacture able and consistent in their quality, and to increase productivity.

No matter how talented you are, how polished your skills may be, how successful a family you belong to, your future will depend entirely on you and you alone. Industrial and Manufacturing, or Mechanical, or Aerospace, or whatever discipline you choose to pursue, it will only **enable** you to be successful, the will to achieve the best is what would guarantee success. Good Luck!



ENGINEERING MARVELS

HAMMAD ABDUL LATIF MENDHRO
NED UNIVERSITY

Since the past 1000 years, the world has seen dramatic and evolutionary changes which in turn helped the human race progress towards greater stability and triumph, but we simply cannot be fascinated by the pages of history and neither by some hero or genius, it's those structures, paintings and architecture that inspires an individual, and makes him realize his importance and responsibility to leave a mark on the sands of time, it is something more beautiful than art and has more rhythm than poetry or music, it doesn't make you feel anything but a sense of pride that I stand before these structures like they stood through the test of time, giving you hope and courage to add another chapter of glory, not to your tribe or country but to the human race, so let me take you to a ride that just might take your breath away about the engineering marvels that shaped our future.

WELCOME TO THE SPACE AGE:

Travelling into space and seeing what is beyond earth is the dream of every little child and that might become possible, the picture I show you is the international commercial space station established in new Mexico, where people who dreamt of going to space will have their dreams come true. The airport has a runway about two miles long with futuristic terminal hangars and an operations headquarters that are dome-shaped. A spokesman for the airport express workmanship airport space will be completed in a few months. The plan later this year will already be completed. Virgin Galatic's first flight is planned to be carried out in 2013.

CERN'S LARGE HADRON COLLIDER:

Imagine particle colliding nearly the speed of light and creating the scenarios of big bang once again on planet earth, it is certainly the most advanced and complex piece of equipment ever built on this planet, its sheer size and complexity is a feat that cannot be comprehended.

CALL IT THE HUBBLE TELESCOPE OF INNER SPACE.

The Large Hadron Collider, located 300 feet underneath the French-Swiss border, is the world's biggest and most expensive particle accelerator. It is designed to accelerate the subatomic particles known as protons to energies of 7 trillion electron volts apiece and then smash them together to create tiny fireballs, recreating conditions that last prevailed when the universe was less than a trillionth of a second old.

INTERNATIONAL SPACE STATION (ISS):

According to the original Memorandum of Understanding between NASA and RSA, the International Space Station was intended to be a laboratory, observatory and factory in space. It was also planned to provide transportation, maintenance, and act as a staging base for possible future missions to the Moon, Mars and asteroids. In the 2010 United States National Space Policy, the ISS was given additional roles of serving commercial, diplomatic and educational purposes.

FIFTH GENERATION JET FIGHTERS:

Fifth-generation aircraft are designed to incorporate numerous technological advances over the fourth generation jet fighter. The exact characteristics of fifth generation jet fighters are controversial and vague, with Lockheed Martin defining them as having all-aspect stealth even when armed, Low Probability of Intercept Radar (LPIR), high-performance air frames, advanced avionics features, and highly integrated computer systems capable of networking with other elements within the theatre of war for situational awareness. The only currently combat-ready fifth-generation fighter, the Lockheed Martin F-22 Raptor, entered service with the U.S. Air Force in 2005.

USAF F-22 Raptor launching an AIM-120 AMRAAM missile. A F-35C Lightning II test aircraft flies in February 2011

PALM JUMEIRAH:

Up until recently there were only a few man-made wonders that could be seen from the International Space Station- like the Great Wall of China and the Great Pyramid of Giza. Today astronauts can also behold another beautiful creation of man- the artificial island of Palm Jumeirah in Dubai. The creation of this paradise on earth, this place of luxurious hotels and expensive villas, is estimated to have used 7 million tons of rock and 94 million cubic meter.

BURJ KHALIFA

Dubai's goal is to always set the lever higher and higher with its urban masterpieces. And it does it with style. Open in January 2010, Burj Khalifa is the world's tallest building with its 2,717 feet and 160 floors. The building has a residential part, a hotel and even a mosque. The building was originally named Burj Dubai, however it was named in honor of Sheik Khalifa bin Zayed Al Nahyan (the Sheik of Abu Dhabi) who helped Dubai financially with its enormous debt problems.

HUAWEI TECHNOLOGIES - TWELVE YEARS OF CONTRIBUTION TO TELECOM ENGINEERING IN PAKISTAN

COMPILED BY: NIGHAT GUL HUAWEI

It is a leading global provider of commercial telecom networks. Established in 1987 in Shenzhen, Huawei's products and solutions are deployed in over 140 countries and are supporting the communication needs of one-third of the world's population. The company is currently serving 45 of the world's top 50 telecom operators. Through its dedication to customer-centric innovation and strong partnerships, it has established end-to-end capabilities and strengths across the carrier networks, enterprise, consumer, and cloud computing fields. Contributing to the sustainable development of society, the economy, and the environment, Huawei creates green solutions that enable customers to reduce power consumption, carbon emissions, and resource costs.

PRODUCT LINES

Operators

Solutions

- Arpu Up
- Broader+Smarter
- Costs Down
- Go Greener

Services

- Business Consulting
- Network Integration
- Assurance & Managed Services
- Learning Services
- Global Delivery

Products

- Fixed Access
- Radio Access
- Core Network
- Transport Network
- Data Communication
- Application & Software
- Storage & Network Security
- OSS
- Energy & Infrastructure

Enterprises

Products

- Networking
- UC&C
- IT Infrastructure
- Security

Solutions

- Networking
- UC&C
- Data Center
- Networking
- IT Solutions
- Security

Industries

- Government
- Finance
- Electric Power
- Education
- Transportation
- Healthcare
- Logistics
- Energy
- Commerce & SMB
- Broadcast & Television

Consumers

- Mobile Phones
- Tablets
- Mobile WiFi
- Data Cards
- Gateways
- Set-top Boxes
- Broadband
- Modems
- Digital Photo Frames

HUAWEI IN PAKISTAN

Huawei took off its business initially in Pakistan in 1998, and formally established its subsidiary, Huawei Technologies Pakistan (Pvt.) Ltd. in 2001.Now after more than 10 years of great efforts, Huawei unceasingly accumulated its capability in order to provide telecom products and services in product lines like Wireless Network, Fixed Network, Optical Network, Software & Service, Datacom, Terminals and Enterprise solutions. Based on predominant ability of pre-sales supporting and after-sales service, Huawei has become Pakistan's largest telecom equipment and solution provider; meanwhile, it is the only vendor who has established in-depth cooperation with all the mainstream operators from both public and private sectors in the country.

CONTRACTORS AN ASSET FOR PAKISTAN AND PEC

There are more than 60,000 contractors/constructors registered with PEC. These are contributing meaningfully towards National Development. In acknowledgment of their role introduction about three such organizations will be included in this section in the coming editions .

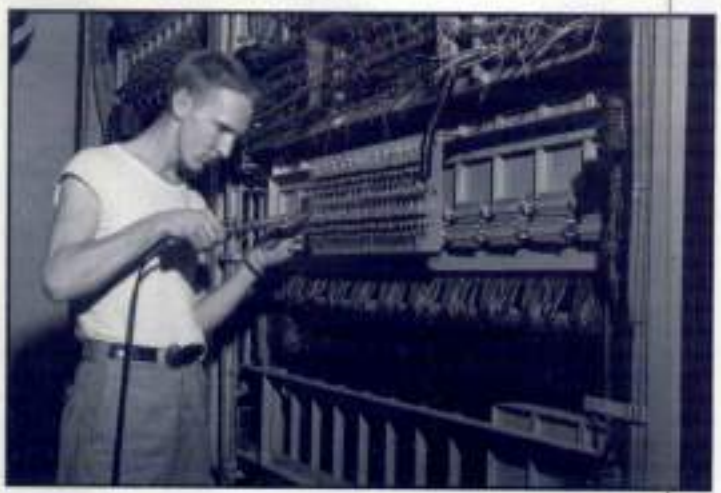
Editor

HUAWEI ROLE IN LOCAL ENGINEERS DEVELOPMENT

Being a leading telecom equipment and solution provider, Huawei has currently provided employment to approximately 700 engineers in Pakistan out of which around 100 employees are Chinese. Although the equipment is being manufactured in China, Huawei local engineers are foremost in designing the solutions for its customers and foresee the

implementation and launching of networks. The company CEO is Eng. Gengsimeng. The initial years of Huawei Pakistan saw a majority of Chinese Employees who supervised the local staff. However, over the last five years, the Huawei strategy is moved to localization of Human Resource, which means that local Engineers are being trained to overtake the top management positions of the company. Currently, the deputy CEO is Engineer Ahmed Bilal Maqsood. The PMO Director and all the Project Directors are also local Engineers who are running the teams consisting of both local and Chinese members. On the Technical Solution Development side, the process of localization is under process. Such changes reflect Huawei strong contribution in developing and grooming the local engineering talent.

The local employees are being trained locally as well as overseas. The Chinese team members, who are part of Huawei Pakistan, have work experience of not only China but also other foreign countries. This helps in giving a sort of global exposure to Local Engineers while still working within Pakistan boundaries. The expert Local engineers are being given opportunities for work in other Middle Eastern Huawei companies. This helps in career development of local engineers as well as the overseas experience is also utilized again in Pakistan once new technologies are introduced.



CONTRIBUTIONS TO EDUCATION & TECHNOLOGY DEVELOPMENT

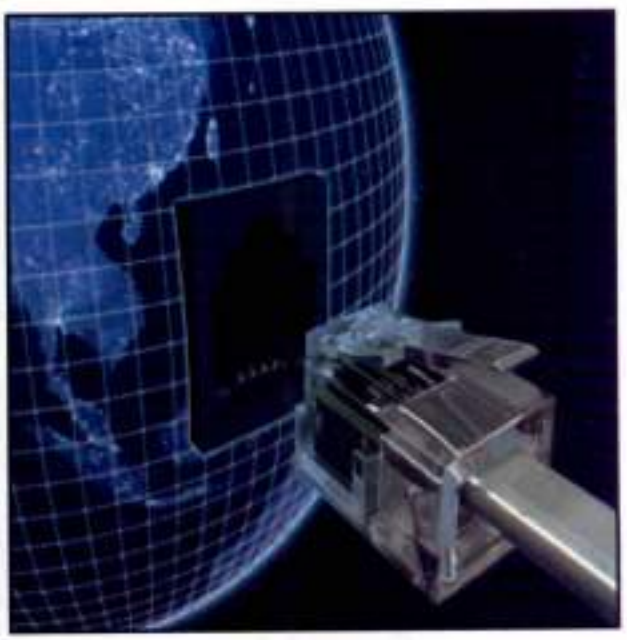
Huawei Pakistan is always working on contributing to the sustainable development of the local community and entire industry chain through various approaches. From 2002 to 2011, Huawei donated latest telecom equipments in the total price of USD 8,170,000 to UET Lahore along with USD100,000 which was donated in the name of development fund. Huawei and UET Lahore established a Joint IT Center and Training Center wheremore than 4000 local people benefited under this personnel training program over years.

Huawei Pakistan has also supported National University of Science and Technology (NUST), Islamabad to set up Datacom and Cloud Computing Lab. Besides direct coordination with Universities, Huawei is always at forefront to arrange Seminars for better understanding of the upcoming technologies in Telecom Sector. Such Seminars are attended by members of PTA and customers Technical members. Some demonstrations are open to all, whereby engineers belonging to various organizations can see and learn more about Telecom industry. Some of the key events organized by Huawei Pakistan are:

- Sponsored World Telecom Day Function in 2010 and 2011.
- Sponsored "Demand on 3G and Beyond" seminar in 2010.
- Huawei Enterprise Solution Road Show campaign in 2010.
- Hosted Huawei Broadband Road Show in 2011.
- Set up Huawei Green Energy Solution Demo in 2011

Huawei over a short span of ten years have grown into a top market leader in telecom sector. With the expectation of 3G in near future and development of the new product lines, there are more opportunities for the Telecom industry and Local Engineers Development. Huawei looks forward for more progress with the help of the strong Engineers of Pakistan.

Note: Huawei is thankful to PEC for providing opportunity to express our role in Engineering Sector.



DEEP ROCK DRILLING (PVT.) LTD. PAKISTAN

INTRODUCTION

(Leading Drilling & Mineral Exploration Company of Pakistan)

Till late 90s, the Mineral Exploration, in the private sector, in Pakistan had not been developed to any level of sophistication. Baring a few lukewarm attempts by some Chinese company, it was only the government agency like Geological Survey of Pakistan (GSP) being capable of undertaking any meaningful mineral exploration and drilling.

However, when the coal exploration, in the world famous Thar Coal Field, was started by Government of Sindh through Sindh Coal Authority in late 90s and the first decade of the century, this grand opportunity was held by DRD (Deep Rock Drilling Pvt. Ltd.) to build a highly technical and professionally competent platform for mineral exploration in the private sector in Pakistan. With its rich background in the drilling operations for the development of ground water, generally in the entire Pakistan and specifically in the Sindh Province, DRD was very well poised to undertaking first the non-coring and ultimately the highly sophisticated core drilling. With time and hard work DRD has developed a highly trained team of manpower and state of art equipment for serious and sophisticated drilling. The scope of operation of DRD now extends to a long list of minerals like coal, barite, lead & zinc, copper & gold and iron ore.

DRD is the only Company who has made achievements in Thar Coal Field by way of exploring over 670 sq. km out of the vast over 1200 sq. km field opened for the exploration by Sindh Coal Authority and drilling over 100,000 cumulative meters with over 95% of core recovery. Besides, DRD has also produced Internationally Vetted Report for "EXPLORATION OF COAL RESOURCES IN THAR DESERT". The entire Exploration and Report Writing of all the Thar Coal Field Blocks (III-B, VII, VIII, IX, X, XI, and XII) was completed earlier then completion time mentioned in the Contract Agreements with Sindh Coal Authority.

DRD is committed to work in a safe and healthy environment. It is our earnest endeavor to complete all minor and major jobs/ tasks within allotted time and achieve 'zero tolerance' in the following areas:

- Injuries to Employees
- Mechanical Upholds
- Time Losses
- Environment Impact
- Financial Losses

DRD is the first company in private sector of Pakistan to achieve 120,000 LTI hours. While we are very proud of our achievements and records, nonetheless, we are determined to continuously move upwards in our health and safety management system which encompasses training of staff, adherence to procedures, and flow of information, risk assessment and ensuring to take corrective and precautionary measures. Comprehensive health and safety policy, for the last two decades, have given DRD's, international and local clients a firm base to place their trust in the company and its employees/equipment. Recognizing the technical and logistic capabilities of DRD, our company has been selected by some Major European Companies in the mining sector for Technical Exploration and important dewatering operations essential for the open pit mining.

Our technical and operational affiliation and association is extended to the following respected local and International Institutes.

DRD provides complete range of drilling services for the exploration of metallic and nonmetallic minerals: Like Mineral Exploration Drilling, Resource Confirmation Studies, Sampling of Rocks and Minerals, Geological Logging, Hydro geological Studies, Construction of Deep Water Wells & Injection Wells and Dewatering Open Pit Mines.

We are now eventfully busy in undertaking major exploration Projects in other mineral sectors in other parts of the country and beyond. Not only have we received serious inquiries from some Middle East and African Countries but we are discreetly looking for the opportunities in multifarious locations. Indeed our vision and mission now demand that we look beyond the frontiers and seek off shore engagements.

RM GULISTAN ENGINEERS & CONTRACTORS (PVT) LTD.
A MULTIDISCIPLINE CONSTRUCTION COMPANY

R.M. GULISTAN Engineers & Contractors (Pvt) Ltd. (RMG), an independent company commenced its practice in 1956. With the change in focus from a purely contracting company, to a one stop multidisciplinary construction and project development company, a new image was necessary.

RMG was converted into Private Limited Company in October 1997, an old and experienced company with a new focus to meet the challenges of 21st century but retaining the expertise, experience, knowledge and resources which were built up over many years.

The company links different elements of the construction industry to provide good quality and cost effective production within time to its Clients.

INTRODUCTION

R.M. Gulistan Engineers & Contractors (Pvt) Ltd., offers comprehensive multidisciplinary services in engineering construction, project management and estate development to Clients throughout the country and abroad. Clients include governments, commercial organizations, financial institutions and private investors etc. The company is registered with all development agencies

WE ARE

- Professional
- Independent
- Multidiscipline

Having a team of experts capable of handling large projects. Wherever possible, RMG works in close collaboration with the leading experts and consultants.

The firm's strength lies in the ability to understand different elements of construction management, advance technology and experience. The combination of the latest technology with long established conventional techniques enables RMG, to arrive at successful results with technical standards appropriate to the project in hand.

TURNKEY PROJECTS

Where necessary, we act as turnkey contractors for integrated estate development, industrial or building projects, bringing together the wide range of products and expertise required to bring such projects to an operational and a production stage. Where required, on-going management of such projects is undertaken.

PROCUREMENT AND SUPPLY

RMG, offer s a wide range of procurement services to the Clients and also to support technically challenging projects in remote areas of the country.

Humanitarian Crises Relief Efforts, Development Program Depicted in Relief Worker's Story

Author Ali Syed Azhar is a fighter and his battles are recorded in this memoir, Struggle in Life. He worked for United Nations missions to save humans who have been dispossessed, and displaced, in danger of being killed for political and economic reasons. Also included in the true story are the efforts in saving the parts of humanity visited by natural disasters and socioeconomic neglect and people starving in tent cities, often hoping that rival violent armed groups play their glory dramas far away.

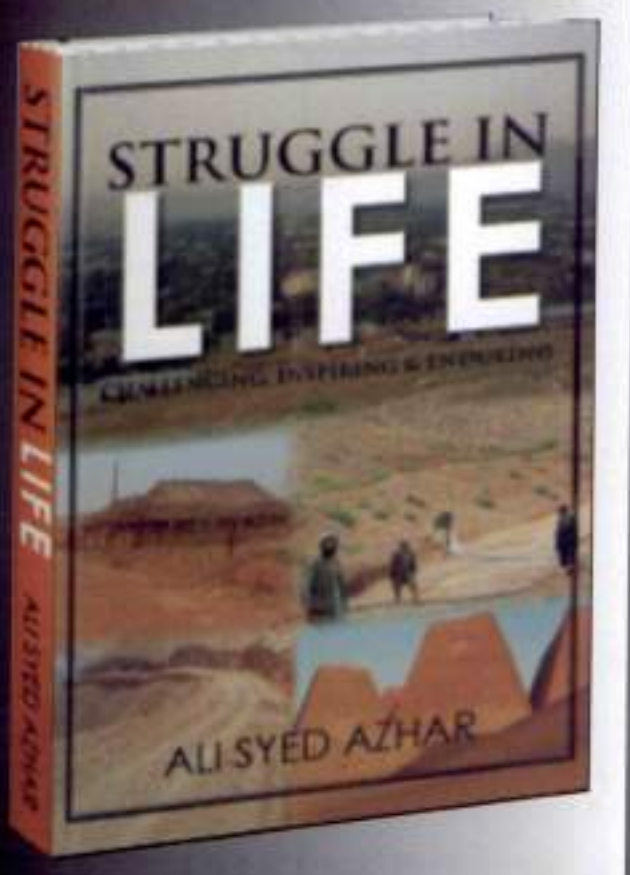
Struggle in Life is about the United Nations (UN) and other humanitarian agencies in action on a global scale. Their efforts could be found at all the places that have been visited by war, pestilence, famine, flood, earthquake and storms. Today it represents tens of thousands of men who work through fire, rain and artillery salvoes for setting up the structures that can sustain those who are without the means and resources. It includes brief account of travel experience through different countries in Europe, North America, Africa and Asia. All in all, Struggle in Life is a highly readable account of conflict-torn, victimized humanity and the relief efforts put up to help them come through the struggle alive, with the basic needs to sustain a modicum of human dignity.

About the Author: He worked in Afghanistan, Darfur Sudan, Haiti, Philippines, WFP Rome, West Africa SOS Kinderdorf Switzerland and British Council Khartoum Sudan. He was awarded distinctions from USG Humanitarian Affairs and Executive Director DHA New York USA.

"In general, it is well written and interesting; the overall quality is good. Most of the Chapter headings are in French, it is interesting as they are intelligible too." *Peter Constable Maxwell*

"The book provides an insight to the hardship and insecure work environment in war torn countries. A guide book as he shares local customs, political and social architecture and lives of ordinary people in these places" Blue ink

Struggle in Life Challenging Inspiring Enduring by Ali Syed Azhar www.struggleinlife.net Special offer for professionals valid up to 28 February 2013 nuary 2013. Soft back: Pak Rupees 1250/- (including free postage) US$ 28/- (including global postage) ISBN 978-4797-2379-9. Available on large book stores in the country. PO/DD or Cross Cheques to 58 Street 39 F-10/4 P.O. Box 2398 Islamabad F: 0514422331 email: azharali62@gmail.com.



ENGINEERING WONDERS OF THE WORLD

This section has been developed in the light of special instructions of Vice Chairman Sindh/Convener PR Committee and the Chief Editor Mr. Mukhtar A. Shaikh. He desired that information about past and present wonders of the world relating to different fields of engineering may be included in this PEC Magazine. This section will include information about three such wonders in each edition of the magazine.

Editor

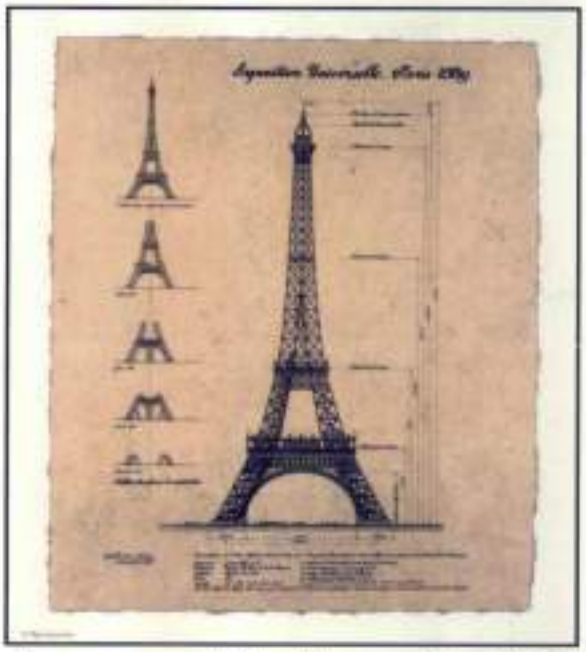
EIFEL TOWER

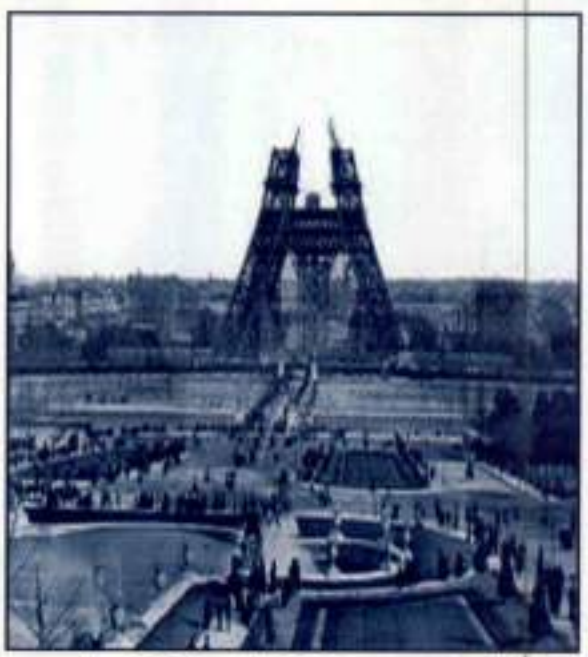
As strong as iron yet as delicate as lace, the Eiffel Tower is the romantic symbol of Paris. It is one of the most famous structures in the world. It was named after Alexandre Eiffel whose team of engineers designed it. Eiffel Tower has been called a technological masterpiece in building-construction history. Built in commemoration of the French Revolution, it is one of the world's premier tourist attractions. It has been compared to the Great Pyramid of Giza and St. Peter's Basilica in Rome. The tower is located on the Left Bank of the Seine River, at the northwestern extreme of the Parc du Champ de Mars, a park in front of the École Militaire that used to be a military parade ground.

The tower was built for the Paris Worls's Fair in 1889. When the French Government was organizing this event, a competition was held for designs for a suitable monument. Over 100 designs were submitted, and the World's Fair Committee selected the conception of a 984 foot (300 meter) open-lattice wrought iron tower. This design was the creation of Alexendre-Gustave Eiffel. He was a renowned French civil engineer who specialized in metal construction. His previous works included an iron bridge at Bordeaux, the 540 foot (162 meter) Garabit viaduct, the moveable dome at the observatory in Nice, and the framework of the Statue of Liberty in New York Harbor. Eiffel startled the world with the construction of the tower. In contrast to such older monuments, Eiffel's tower was completed in a matter of months with a small labor force. He made use of advanced knowledge of the behavior of metal arch and metal truss form under loading, including wind forces. His results started a revolution in civil engineering and architectural design. With the completion of the tower, Eiffel earned the nickname, "magician of iron."

DESIGN FEATURES

The tower is built of puddled iron (very pure structural iron), and weights 7300 metric tons. It is extremely light. The tower actually weighs less than the air that surrounds it! If a scale model of the tower one foot (30 cm) high were constructed, it would weigh only as much as a nickel (seven grams)! The four pillars supporting the tower are aligned to the points of the compass. You can use the tower as a reference to find you way in Paris. Another unique feature is the tower's base. The four semi-circular arches required elevators to ascend on a curve. The glass-cage machines were designed by the Otis Elevator Company of the United States. These elevators provide visitors a fantastic view as they ride to the top of the tower.





DIMENSIONS

This tower's dimensions are remarkable. The current height of the tower is 1069 feet (320.75 meters), which is about the equivalent of a 105-story building. It weighs 7000 Tons , involved 2.5 million rivets It was constructed in a short time of two years (1887-1889). It has a total number of 1652 steps. it is actually painted in three different shades of color. The darkest tone used at the base of the building, and the brightest – at the top. The levels accessible to the public are at heights of 189 feet (57.63 meters), or 19 stories; 380 feet (115.73 meters), or 38 stories; and 896 feet (273 meters), or 89 stories. The base of the tower covers a square area of 328 feet (100 meters) on a side.

MOVEMENT IN WIND

The tower moves in the wind. On days with high, gusting winds, the wind can reach speeds in excess of 100 mph (160 kph) at the summit of the tower. Visitors can feel the tower swaying gently at the summit. The magnitude of the sway in the tower, under worst-case conditions, is about six inches (15 cm). There is no danger of the tower being damaged by wind-induced movement since it is designed to withstand movements easily five times beyond those produced by the highest winds ever recorded. Today, the movements are monitored by a laser alignment system. The tower also leans very slightly in bright sunlight, as one side is heated by the sun and expands slightly.

EIFFEL AND HITLER

Before the surrender Paris to the Germans during the Second World War, the French have committed sabotage on the Eiffel Tower. They knocked out the elevator, so that the enemies could not enjoy the city views. But Hitler was not too lazy to climb the tower by foot. Elevators were repaired in 1944, and all the soldiers of the Allied were allowed to go freely at the top.

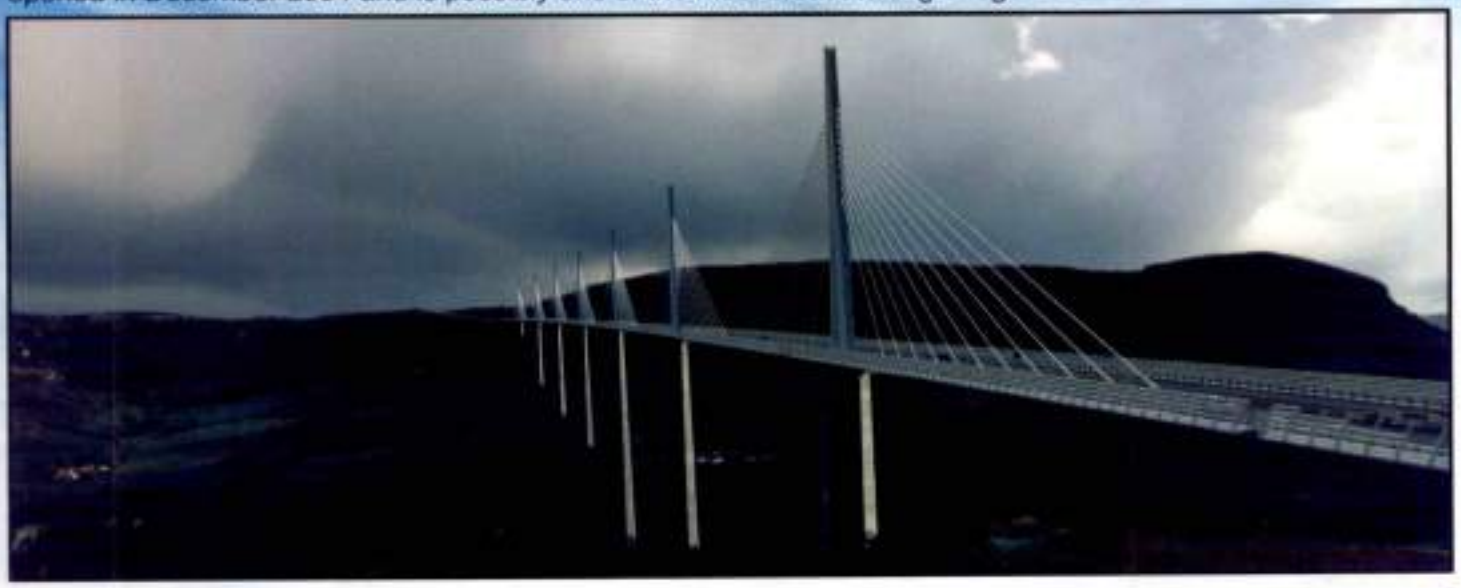
TRIBUTE FROM EDISON

Thomas Edison visited the Eiffel Tower, and was extremely impressed by it. He wrote in the guest book: "Monsieur Eiffel, engineer, builder of great brave and extraordinary creations of modern engineering from someone who is respected and admired by all engineers, including the Great Engineer of the Lord God. Thomas Edison."

(Research by Editor)

MILLAU, FRANCE: A MIRACLE OF EQUILIBRIUM

The Millau Bridge is in southern France and crosses the River Tarn in the Massif Central Mountains. It was designed by the British architect Lord Foster and at 300m (984 feet) it is the highest road bridge in the world, weighing 36,000 tons. The central pillar is higher than the famous French icon, the Eiffel Tower. The Bridge was opened in December 2004 and is possibly one of the most breath taking bridges ever built.

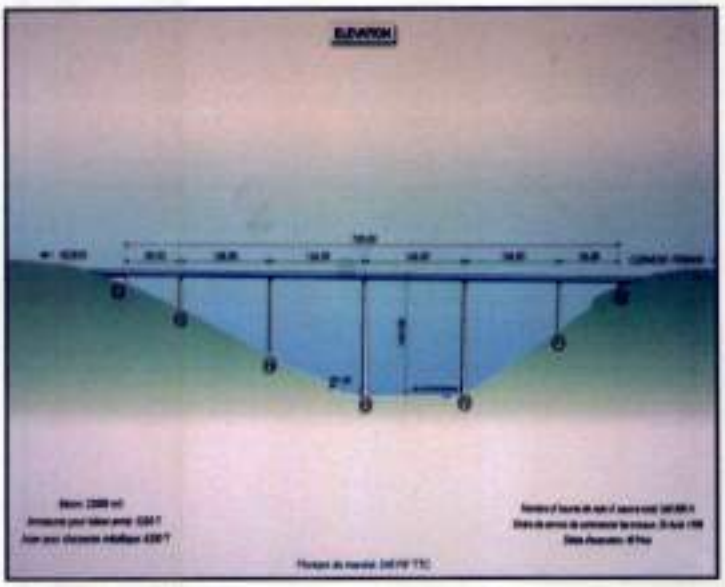


The bridge towers above the Tarn Valley and the aim of Lord Foster was to design a bridge with the 'delicacy of a butter fly'. Lord Foster designed a bridge that enhances the natural beauty of the valley, with the environment dominating the scene rather than the bridge. The bridge appears to float on the clouds despite the fact that it has seven pillars and a roadway of 1! miles in length. On first sight, the impression is of boats sailing on a sea of mist. The roadway threads through the seven pillars like thread through the eye of a needle.

It was opened by President Jacques Chirac. In his speech he praised the design saying that it was a 'monument to French engineering geniuses and 'a miracle of equilibrium'. It was entirely privately financed and cost 394 million Euros (272 million pounds, 524 million dollars). The aim is to cut the travelling time to southern France, removing the bottle neck at Millau, through the completion of the motorway between Paris and the Mediterranean.

DESIGN FEATURES

First, the towers were built in the usual way, with steel reinforced concrete.
The road way was built on either side of the valley and rolled into position, until it met with precision in the center. This technique had never been tried before and it carried engineering risks. However, it proved to be an efficient method of deploying the roadway.



The bridge took only three years to complete with new engineering techniques being employed. The traditional method of building a cable stay bridge involves building sections of the deck (roadway) and using cranes to put them in position. Because of its height, 900 feet above the valley floor, a new technique had to be developed. First, the towers were built in the usual way, with steel reinforced concrete. The road way was built on either side of the valley and rolled into position, until it met with precision in the center. This technique had never been tried before and it carried engineering risks. However, it proved to be an efficient method of deploying the roadway.

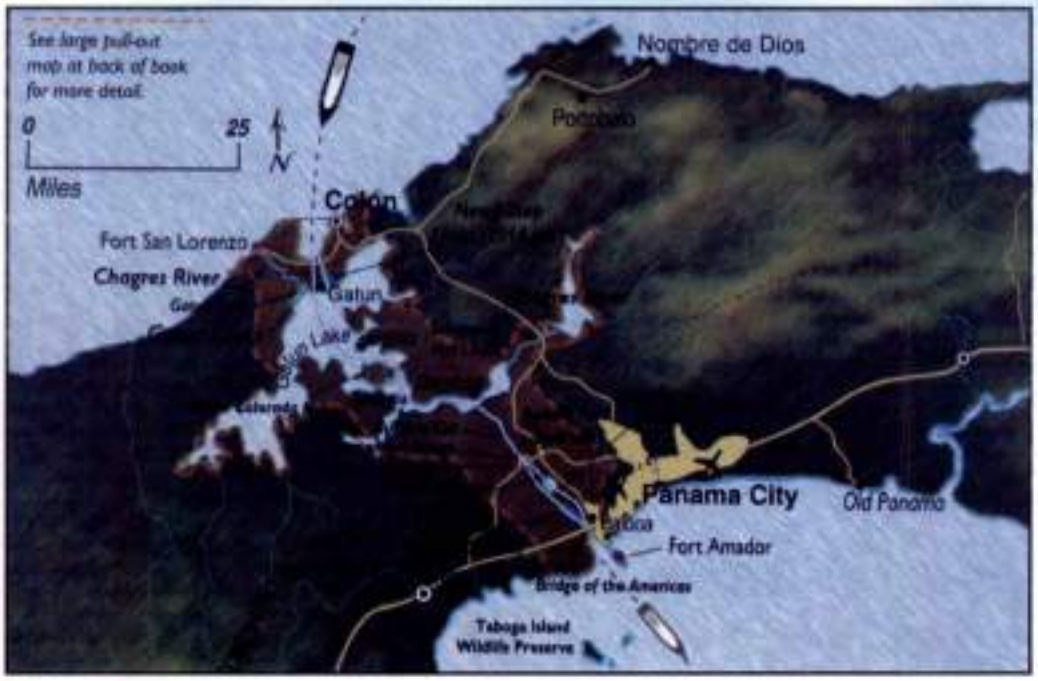
DIMENSIONS

Length of bridge is 2,460 m with tallest point of 343 meters. It provides two-lane dual highway; suspended almost 250 m (820 ft.) above Tarn River. It was completed in 39 months utilizing 36,000 metric tons of steel and 206,000 metric tons of concrete. The construction cost was around $ 400 million.

(Research by Editor)

PANAMA CANAL

Very few human endeavors have ever conceded to change the face of the planet on which we live as did the successful completion of the inter-oceanic Panama Canal. Earlier projects had only managed to build up or tear down existing geographical features - the pyramids of Egypt, the Great Wall of China, the trans-continental railroads - but none had ever even aspired to accomplish something so incredulous as splitting the continents. The Panama Canal is a 77 kilometer canal in Panama that connects the Atlantic Ocean to the Pacific Ocean, saving almost 8,000 miles on a trip from New York to San Francisco. By shortening the route and reducing the cost of transportation between the two oceans, the Panama Canal allows for lower-cost imported goods and commodities in many part of the world. The American Society of Civil Engineers has named the Panama Canal one of the seven wonders of the modern world for good reason.



At the Panama Canal, the difference between the average sea level of the Atlantic Ocean and Pacific Ocean is about eight inches higher on the Pacific side. Ships of immense size are lifted up by the system of locks to get to Lake Gatun, and then they are lowered by the system of locks at other end, down to the other ocean. It may be mentioned that **Gatun Lake** is a large artificial lake which forms a major part of the Panama Canal, carrying ships for 33 km of their transit across the Isthmus of Panama. The lake was created between 1907 and 1913 by the building of the Gatun Dam across the Chagres River. At the time it was created, Gatun Lake was the largest man-made lake in the world, and the dam was the largest dam on earth. With the creation of the lake many hilltops became islands. The biggest and best known of them is Barro Colorado Island, home of the world famous Smithsonian Tropical Research Institute (STRI).

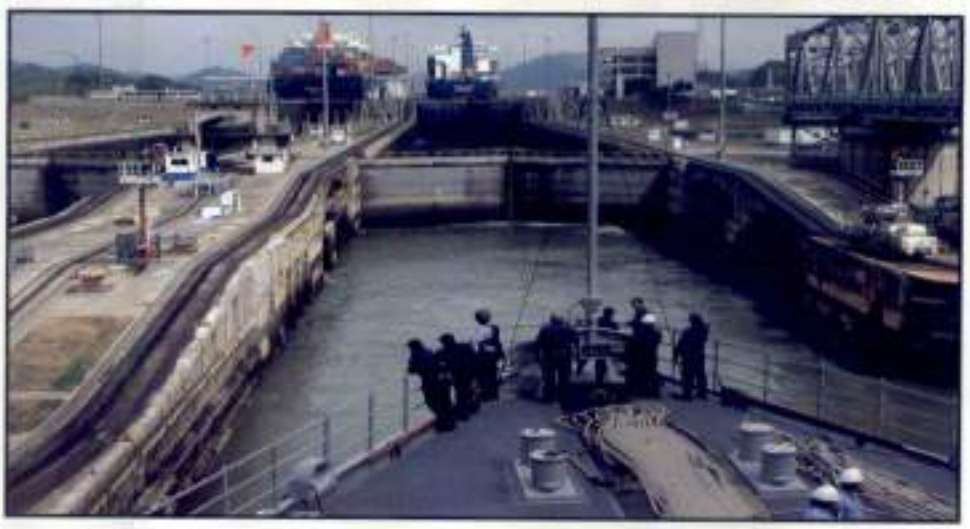
The idea of a path between North and South America is older than their respective names. No real progress,

FRENCH OWNERSHIP TO US OWNERSHIP

other than ideas and brainstorms, was made until the nineteenth century, when a French individual Ferdinand de Lesseps who had earlier developed the Suez Canal, which joined the Mediterranean and Red Seas in 1869, and substantially reduced sailing distances and times between the West and the East decided to undertake a similar project to connect Atlantic and Pacific at Panama. Work began in 1882 but from that point on the construction company of Lesseps got plagued by troubles and finally in 1903 the canal zone was sold to USA.

CONSTRUCTION UNDER US AUTHORITIES

On May 6th, 1904, the US President Theodore Roosevelt appointed John F. Wallace Chief Engineer of the Panama Canal Project. However, it often took months for orders for equipment to reach the isthmus. Fed up



with the time it was taking for even the simplest necessities to reach the area, Wallace went back to the States and resigned from job. The second Panama Canal Chief Engineer was John Stevens. Soon Stevens also began to dislike working at the canal, he too resigned. He was replaced by an army engineer Lieutenant George Washington Goethals who finally completed the herculean task.

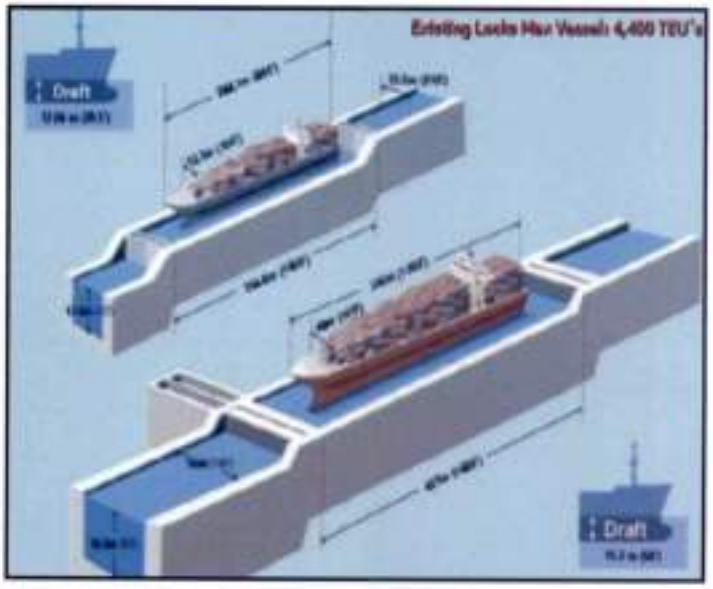
DIFFICULT EARTH WORK

The Panama Canal construction required massive earth worth. It involved digging of a channel 50 miles in length and 30 feet below sea level stretching from the Atlantic Ocean to the Pacific coast. The canal had to be dug out of the largest mountain in the path, which was one of the smallest mountains on the isthmus. The French had floundered at Culebra because they had attempted to maintain a certain slope at the sides -an angle that became impossible to hold. The heavy Panamanian rainfall caused mudslides year round until a very gradual slope was attained by the massive steam-shovels working almost twenty-four hours a day. All told, 96 million cubic yards of dirt were removed from the Cut, 30 million of that being soil deposited in the bottom of the Cut by landslides. Dynamite was the tool of choice for loosening the rocky ground- over 19 million pounds of explosives were used in the Cut alone- and only eight fatalities resulted.

LOCK SYSTEM

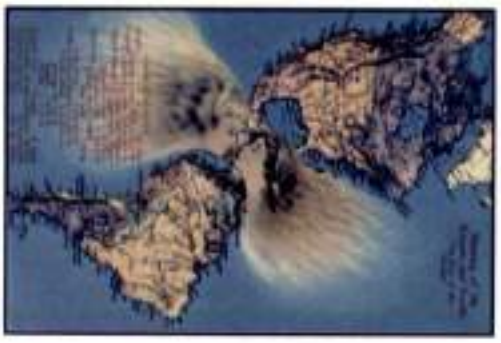
The Panama Water Lock System is considered one of the greatest engineering services undertaken at that time, purporting to the needs of the ships to save transit-time compared to the 8 thousand mile journey around South America.

There are a total of 12 sets of locks in the Panama Water Lock System, among which only six massive pairs of locks are used by ships for transiting. Each of this water locks are 1,000 feet long and 110 feet wide and is to be filled or emptied in less than 10 minutes. Each pair of lock gates takes two minutes to open. A fender chain, weighing around 30,000 pound, at the end of each lock prevents ships from ramming the gates before they open. Water flows from artificial lakes through 18 feet wide culverts and is not allowed to be pumped into and out of the locks. Ships are pulled with the help of electric towing locomotives, called "mules", by cable through the locks. On an average, ships require six of such mules, three on each side. The canal locks together raise ships from sea level to a height of about 26 m (85 ft).



ENGINEERING MARVEL OF 20th CENTURY

The canal was completed in August of 1914, under budget by twenty-three million dollars. The Panama Canal was, is, and shall remain the terrain engineering marvel of the 20th century. Never before nor since has any project accomplished the feats of mastering the elements, of engineering and construction, or of future planning as has been done at Panama. After 87 years of continuous service, it continues to be as useful as the day it became operational.



(Research by Editor)

MISCELLANEOUS ARTICLES RELATING TO ENGINEERING

The section will include articles on different topics written by qualified engineers registered with PEC. Out of innumerable articles received from engineers, seven have been selected and made part of this first edition of PEC magazine.

Editor

"SAARC ENERGY COOPERATION AND CHALLENGES"

By

ENGR. G. R. BHATTI

While inaugurating Fourth SAARC Energy Ministers' Meeting at Ruposhi Bangla Hotel on September 15, 2011, Prime Minister Sheikh Hasina called upon the SAARC nations to work collectively and undertake practical collaborative initiatives to address 'energy' crisis to ensure sustainable development of the region. She added "My sincere expectation remains that you would not only consider and discuss on the broader policy issues, but would also try to take a few practical shared measures to solve energy problems in the region," She also said: "Such initiatives, either on bilateral or sub-regional or regional basis, should be such that would help our countries to address the short and medium term challenges in provisioning of energy to our masses."

"Combined vision and joint efforts at Public and the Private sector level can mitigate the impact of climate change and cooperation in energy sector can help south Asia for its transformation from energy constraint to energy surplus region." This was stated by Prime Minister of the Kingdom of Bhutan while inaugurating two-day Conference on Climate Change and Energy Cooperation in South Asia organized by SAARC Chamber of Commerce &Industry at Paro, Bhutan on April 21-22, 2012.

The views of two leaders of the region are sufficient for the masterminds sitting at the helm of affairs in SAARC to deliberate and take firm decisions on the issue of power crisis in South Asian Region and suggest best possible measures for energy cooperation to meet the challenges.

ENERGY POTENTIAL IN SAARC REGION

Pakistan and India are very rich in Coal reserves and if exploited fully can be used to overcome the menace of energy crises in the region. In Pakistan alone 184 Billion Tons Coal is available through which 100,000 MW Electricity can be generated for 100 years. In the coming decade, coal would be the leading primary energy source of South Asia.

India and Pakistan are also rich in Hydropower as well as in Solar and Wind Power, if tapped properly with public private partnership with the connectivity efforts of SAARC Chamber of Commerce and Industry, the energy can easily be traded within the SAARC member states to end the crisis. Nepal and Bhutan have resource potential of 43,000 MW and 30,000 MW Hydropower but due to shortage of funds as well as non

availability of modern technology and insufficient trained man power they are unable to harness this potential which otherwise can be their major source of income by exporting to neighboring countries. Dam Locations in Bhutan and Nepal are shown bellow.

Power Generation Scenario of SAARC Countries is given in the following Table which shows the hydro power potential of the region.

TABLE

Country	Total Installed Capacity (MW)	Installed Hydro Generation Capacity (MW)	Total Hydro Generation Potential (MW)
Afghanistan	370	198	23,000
Bangladesh	5,719	230	330
Bhutan	1,506	1,480	30,000
India	147,402	36,648	148,701
Maldives	185	0	0
Nepal	687	628/714	43,000
Pakistan	20,219	6,555	59,208
Sri Lanka	2,644	1,207	2,000
Total	178,732	46,318	306,239

From above table it can be seen that alone hydro power potential in this region is more than the total projected power requirement which is around 300,000 MW. The Solar Energy is growing very rapidly, it must be pursued rigorously so as to avoid any gap in the field, and region is so rich. Afghanistan, Pakistan and India receive abundant solar irradiation of the order of over 2 KWh/m2 and 3,000 hours of sunshine a year. The current market of Solar Energy products is in billions of dollars and if appropriate measures are adopted, region cans hub leadership in this technology. Global Solar radiation distribution is given in the following map, including SAARC region.

Present Energy Consumption Composition

Natural Gas dominates Bangladesh's energy mix accounting for 68% of the total energy consumption. India depends heavily on coal that accounts 50% of total energy consumption. Afghanistan, Maldives, Nepal and Sri Lanka heavily rely on oil. Bhutan has the highest share of hydro power accounting for 70% of the total energy consumption. Pakistan has a mixed bag of energy consumption which diversifies among oil products-27%, natural gas-55% and hydro and others-18%

PER CAPITA CONSUMPTION OF SAARC COUNTRIES

Table bellow shows the country wise population, electricity generation and energy consumption whereas the graph bellow shows per capita consumption of Electricity (KWh/person) of the Region.

Country	Population	Electricity Generation (Gwh)	Electricity Consumption (Gwh)	Average Consumption (kwh/person)
Maldives	394,999	169	542	1372
India	1,210,193,422	1,920,792	905,974	749
Pakistan	177,100,000	90,400	68,550	387
Sri Lanka	20,238,000	9,507	7,885	370
Bhutan	708,427	2,000	184	260
Bangladesh	142,319,000	39,100	23,940	168
Nepal	26,620,999	2,511	2,525	94.85
Afghanistan	29,835,392	754	231	7.74

ENERGY RING

Energy demand in SAARC member countries is growing at the rate of over 8.0 per cent a year, a pace that is far in excess of the region's capacity to meet.

Since there is huge potential for energy trade among the SAARC member countries, as such, all countries in the region subscribe to the need of introducing energy trade on as soon as possible for supporting infrastructure to grow the economy for affecting the elevation of prosperity of masses. This will also help in further industrialization in the region through establishment of Central Dispatch Center and Transmission System. The transmission system is necessary for the transportation of power and the central dispatch center is must for distribution of power as per requirement of each country on agreed tariff.

CONCLUSION

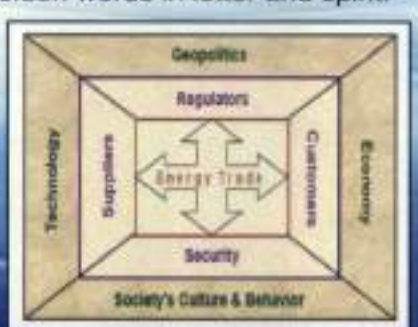
In the energy sector this region has tremendous opportunities and sites available for Dams for Hydro Power, adequate resources of oil and gas and plenty reserves of Coal for Thermal Power, maximum sunshine for Solar Power and sufficient wind speed for Wind Power but we only lack in will power by political leadership.

If the public of SAARC member states unites with honesty and is serious in ending mutual conflict between different countries and for synergetic efforts to explore the resource potential, the respective governments will have to change attitude and direction which will encourage the investors to finance the viable projects in any member state. This will not only change the destiny of general public but will also make the region an example for developing countries and we can also export the extra power to neighboring non-SAARC member states.

In first phase the investors can finance the feasible projects in states where there is no disturbance e.g. Hydro Power Projects in Bhutan and Nepal under swap mechanism or share on investment, from where 73,000 MW electricity can be generated and traded to other member states.

In the second phase huge potentials of coal in India and Pakistan can be exploited along with other environment friendly resource potentials i.e. Solar and Wind in all member states but for all this full commitment and will power is the prerequisite and that Regional economic prosperity should take precedence over political compulsion.

As stated earlier there are numerous challenges even then we can overcome with willpower and commitment to change the fate of our respective nations with sincerity, seriousness and with synergy. In this regard let me cite the message of King of Bhutan, His Majesty Jigme Khesar Namgyal Wangchuk , quote "Throughout my reign I will never rule you as a King. I will protect you as a parent, care for you as a brother and serve you as a son. I shall give you everything and keep nothing; I shall live such a life as good human being that you may find it worthy to serve as an example for your children" , unquote. I pray Almighty Allah that the leaders of other SAARC nations may also follow these golden words in letter and spirit.



FINANCIAL SERVICES TO CONSTRUCTION INDUSTRY

It goes without saying that the construction industry, a Rs. 2000 billion enterprise in Pakistan, has failed to evolve, qualitatively, commensurate with its size and consequential importance in Pak Economy. Resultantly, an industry that should have been exporting 5 billion dollar worth, annually, to Middle East, Central Asia, Africa etc. and in the process accruing collateral benefits like a substantial increase of employment to Pakistani workers, their remittances, introduction of our businesses to new markets etc. is instead, importing contractors from China, Korea, Bosnia, US, Europe and what not.

Among other things one major cause of this malady is failure of supportive financial services (we use the term loosely to include banking, insurance, leasing etc.) to develop, courtesy our regulators.

The greatest hindrance in the way of capacity expansion of our constructors is their limited ability to raise bonds. Under the present State Bank regulations, any bond or guarantee issued by a bank has to be 100 percent collateralized. For an industry whose assets are mostly mobile plant and equipment or receivables from clients, both not acceptable as collateral, this puts severe restrictions on industry's ability to provide collateral. The alternative to bank guarantee is bond by insurance companies. Unfortunately this avenue has dead ends due to shortage of insurance companies with requisite rating and limited capacity of bonding in the companies that enjoy the requisite rating. In a recent meeting between CAP and WAPDA, the WAPDA Chairman lamented that even though WAPDA was willing to accept insurance bonds, as permitted by PEC Standard Bidding Documents, insurance companies have expressed their inability to issue the bonds for the WAPDA projects because of the size. This leaves the field open for foreign constructors who can get their bonds, even bank guarantees, against indemnity written on their company letter head.

For an industry that is the largest sector of our economy, after agriculture, considered most effective vehicle for economic growth and has substantial foreign exchange earning potential, this state of affairs should not be tolerated by our facilitatory / regulatory agencies, SBP and SECP.

Unfortunately, our banks and insurance companies do not appear to have the expertise, or the desire to address this difficulty of the construction industry. This lack of expertise is causing them to miss a lucrative business opportunity. Worldwide with proper risk management insurance companies make substantial profits from this sector. May we request SECP and SBP to take the initiative, in the national interest and start a dialogue on the subject. Insurance Association of Pakistan (IAP) may also deem it advisable to explore this avenue on behalf of its members. While we are at it, SBP can also look at housing finance, or lack of it and SECP can also look at failure of REIT initiative launched by it same 5 years ago.

NETWORKED DIGITAL HOME

ENGR. MUHAMMAD AHMAD- MANAGER BROADCOM, CALIFORNIA

Imagine you could simultaneously watch or record your TV programs wirelessly on yourLaptop, or listen to your favorite songs using TV in your bedroom by accessing music files stored on a PC in your main floor. Wirelessly control and watch high-definition recorded programs from any room of the house. It all sounds futuristic fantasy, isn't it? But now with all the latest technological advancements, this has become a reality: ***Networked Digital Home***.

This is a picture of a Networked Digital Home. This digital home has a broadband internet and a home network. There are many devices from both PC and Consumer-Electronics world are connected on this network. These devices from two different worlds are seamlessly bridged and able to communicate with each other.

With this network, user could watch TV programs wirelessly on PC, and use Bluetooth-enabled mobile phone to control the AV applications on a PC, and play back PC-stored music, photo or movie files on a TV, and much more.

The explosion of digital technology in recent years has empowered today's tech-savvy consumer to stay home and entertain themselves from the content. They will be very happy to do just that. Discovering the fun and satisfaction associated with enjoying entertainment through these devices such as PC, TVs, audio systems, DVD players, mobile systems, game consoles, digital cameras etc. However, it becomes less fun and even frustrating sometime when it comes to manage the enormous amount of digital content generated or used by these disparate devices.

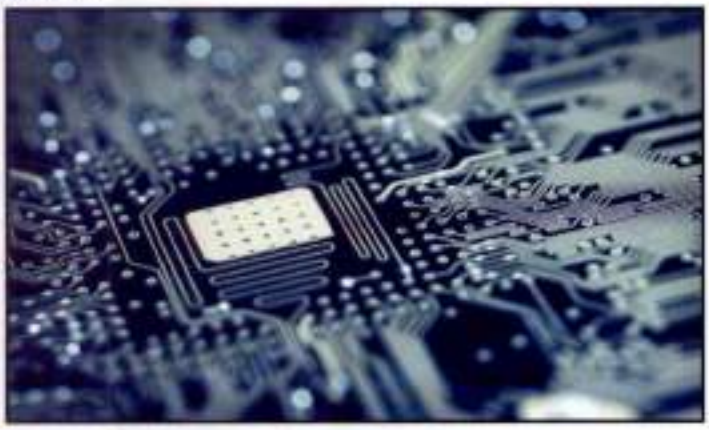
Consumers have been moving and storing digital media content on PC hard drives for years, however, the pace accelerated with the spread of broadband internet and downloadable audio and video content. Once

the media was stored on a hard drive, it became apparent that there was no easy way to transfer the stored digital media files to a stereo or home entertainment system, short of setting up a computer next to a music system and connect them together using audio-video cable.

Consider a simple case, where a consumer wants to share a short video of his daughter taken on his mobile phone. In order to display the video on his widescreen TV, he needs to first email that video clip to himself. Then, leaving his guests, he must turn on the PC, open his email, download the video and save it as a file. After hunting for a USB drive or a memory card, he copies the file. Carrying the drive back to the living room, he must plug it into TV or a digital receiver and the using the device's interface, locate the video file and display it. In addition to disrupting the conversation that sparked wanting to share the video, this type of content transfer process consumes too much time, even if it goes smoothly. As a result, this casual sharing of video content is not often thought of as a reasonable option. This is due the fact that typically the computers are located in bedrooms or home offices, away from home entertainment systems. Home entertainment systems are generally located in a more central location, where the whole family can enjoy. As a result, transferring digital media content stored on PC to entertainment systems has always been problematic.

This is the value proposition that ***Networked Digital Home*** offers consumers: seamless and effortless sharing and control of digital content across multiple display/source devices. This lets the consumer to share content in one single step: streams a copy of video wirelessly from mobile phone to TV. User can even freeze or fast forward the video using the remote control menu on the mobile phone. There are endless use cases where true home networking brings a lot of value to the consumer. Another popular application is the wireless tethered photography, where a user can move the photo sessions from the viewfinder to images that jump right onto the tablet screens – while shooting. Instantly view images and share and collaborate work with remote colleagues over the wide-area network. User can also remotely control the ISO, shutter speed of the DSLR cameras and photo shoot from hard-to-reach areas.

Simplifying the control and sharing process of digital content means freeing the consumers from having to be aware of where the content is stored. Consumer will not long consider his home network as a chaotic collection of different devices scattered throughout the house that are too complex to configure and use. ***Networked Digital Home!s*** vision is that every device in the house has an access to all appropriate content, no matter where it resides on the network. It is like that every device is a window on to consumer's entire library of digital content. And when accessing the content becomes a matter of seconds rather than minutes and when it doesn't matter if the content is stored on a PC hard-drive, or mobile phone or streaming off the internet, consumers can effortlessly enjoy the content whenever and wherever they please.



PAKISTAN STEEL PROMOTNG INDIGENIZATION OF IRON ORE

ENGR. MOHSIN ALI KHAN
PAKISTAN STEEL

Iron Ore and Coal are the basic raw materials required for production of iron and steel. Pakistan Steel was totally dependent on the import of raw materials. The process of Indigenization of Iron Ore was commenced in the light of direction of, the then Chairman Pakistan Steel Maj. Gen. ® Muhammad Javed as a result of which Indigenization Department was established In 2008 to arrange local iron ore for utilizing at Pakistan Steel. During the last four years more than 800,000 MT of local iron ore worth Rs.8 Billion (approx)has been mined out and sold to Pakistan Steelby local iron ore suppliers. Pakistan Steel has also acquired mining leases of iron ore sites at Kullikoh (Dalbandin), Balochistan for arrangement of iron ore at its own. Besides, Pakistan Steel has also acquired iron ore leases of private iron ore lease holders for mining operation and supply of iron ore to Pakistan Steel against payment of royalty charges on per MT basis to lease holder for the mined tonnages. Since August 2010, the date of establishment of Captive Mining Department, 54,354 MT iron ore has been arranged through captive mining operations.

So far, the iron ore mining is restricted to the Province of Baluchistan on a small scale and the private lease holders by adopting the crude mining methods. The limited transportation facility is also a bottleneck in the development of mining activity. The cost of transportation is abnormally high which render its production as unfeasible. Mining of iron ore from Khyber Pukhtoon Khaw further impracticable due to higher transportation cost because of far distant location for Pakistan Steel and the narrow severely meandering roads (metalled/unmetalled/ shingled) on highly rugged mountain terrain upto the iron deposits. The lack of infrastructure such as electricity and water supply facilities has also intensified the negative impact on development of mining industry in Pakistan.

The following measures are needed to be taken for development of mining industry in Pakistan ultimately to boost up the national economy:

i. Infrastructure be developed for easy approach, working facilities and transportation to various feasible mine sites in different areas of Pakistan.
ii. Quetta Zahidan rail track be up-graded for transportation of iron ore from Chagai District, Balochistan to Pakistan Steel on economical grounds.
iii. Mechanized & proper mining is needed to be carried out for economical mining on large scale to avoid the wastage of minable reserves.
iv. Either the Government of Pakistan should impose ban on export or heavy taxes to be levied on export of iron ore to discourage the individual lease holders/investors.
v. Award of good quality iron ore leases be restricted to Government Organizations and the end users like Pakistan Steel for their own use rather than its award to any individual.
vi. Iron ore leases be cancelled from the name of those lease holders who are not carrying out mining operations.
vii. The iron deposit of Pakistan needs to be beneficiated by the technology for increase in 'Fe' content and decrease in unwanted chemical constituents and of mined ores.
viii. DRI, De-sulphurization and Pelletization plants be installed on mines mouth for up-gradation of iron ore.

For feedback and comments
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WHEEL - THE MOST IMPORTANT INVENTION OF ALL TIME

ENGR. SALEEM BAIG
PAKISTAN STEEL

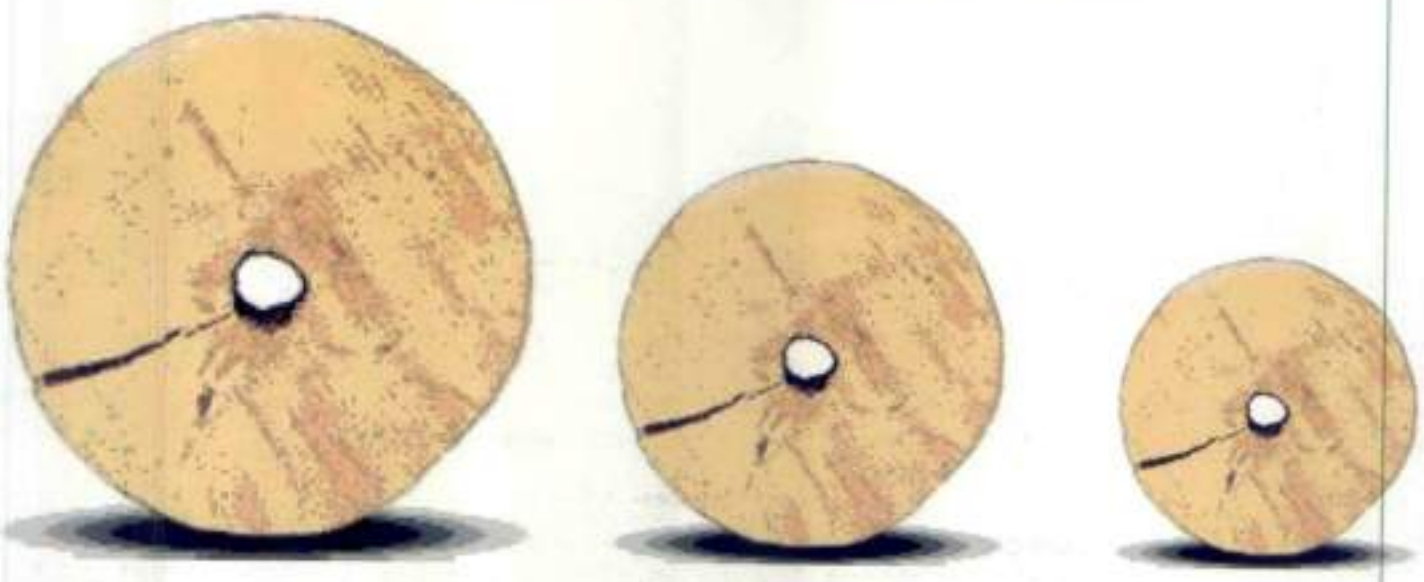
A **wheel** is a circular component that is intended to rotate on an axial bearing. The wheel is one of the main components of the wheel and axle which is one of the six simple machines. Wheels, in conjunction with axles, allow heavy objects to be moved easily facilitating movement or transportation while supporting a load, or performing labor in machines. Wheels are also used for other purposes, such as a ship's wheel, steering wheel, potter's wheel and flywheel.

Common examples are found in transport applications. A wheel greatly reduces friction by facilitating motion by rolling together with the use of axles. In order for wheels to rotate, a moment needs to be applied to the wheel about its axis, either by way of gravity, or by the application of another external force or torque.

The invention of the wheel is probably the most important invention of all time. Without the wheel, the world simply wouldn't exist as we know it. The invention of the wheel was at the root of the Industrial Revolution, although it would take a long time to get there.

It is a mystery as to who invented the very first wheel. Credit is given to the ancient Mesopotamian culture of Sumer in about 3500 B.C. This is where the oldest known wheel has ever been found. It is believed to have been invented much earlier, however.

This wheel was believed to have been made by the Sumerians. It was made of planks of wood joined together. The picture below briefly describes the stages of development of the wheel.



Stage one: Early men placed rollers beneath heavy objects so that they could be moved easily.

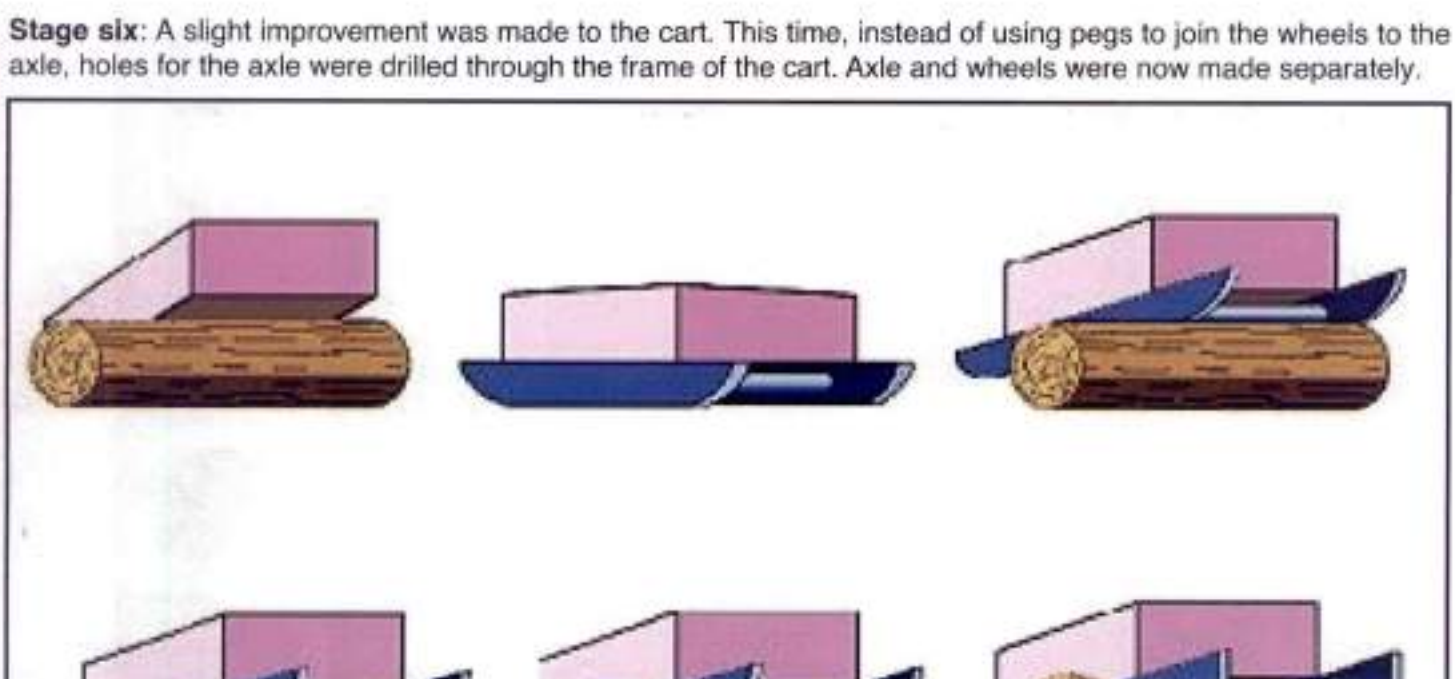
Stage two: Early men began to place runners under a heavy load, which they discovered would make it easier for the load to drag. This was the invention of the sledge.

Stage three: Men began to combine the roller and the sledge. As the sledge moved forward over the first roller, a second roller was placed under the front end to carry the load when it moved off the first roller. A model of a sledge with such rollers is in the Smithsonian Institution.

Stage four: Soon, men discovered that the rollers which carried the sledge became grooved with use. They soon discovered that these deep grooves actually allowed the sledge to advance a greater distance before the next roller was needed to come on!

Stage five: The rollers were changed into wheels. In the process of doing so, wood between the grooves of the roller were cut away to form an axle and wooden pegs were fastened to the runners on each side of the axle. When the wheels turn, the axle turned too in the space between the pegs. The first wooden cart was thus made.

Stage six: A slight improvement was made to the cart. This time, instead of using pegs to join the wheels to the axle, holes for the axle were drilled through the frame of the cart. Axle and wheels were now made separately.



The very first use of this essential invention was as potter's wheels. A potter's wheel seems like an unimportant invention. However, the creation of pottery was very important in the advancement of mankind. Pottery vessels allowed humans to transport food and especially water. This made them not as dependent on living right next to a water source.

The Sumerians improved upon the wheel by using it as transportation on their chariots around 3200 BC. Later, ancient Egyptians also used wheeled chariots. The wheel was furthered improved on later by the Egyptians,

who made wheels with spokes, which could be found on Egyptian chariots of around 2000 BC. Over in Ancient India, chariots with spoked wheels dating back to around 1500 B.C. were also discovered. The Greeks too, adopted the idea of wheel-making from the Egyptians and made further improvements to it. Later, during the time of the Roman Empire, the Romans too engaged themselves in wheel-making and produced the greatest variety of wheeled vehicles. They had chariots for war, hunting, and racing, two-wheeled farm carts, covered carriages, heavy four-wheeled freight wagons and passenger coaches The spoked wheel was a huge advancement in the development of the wheel. It is still used today.

The wheel is at least part of the concept in most modern inventions. There are many modern inventions that came into fruition with help from the ingenious wheel. The wheel is probably the most important mechanical invention of all time. Nearly every machine built since the beginning of the Industrial Revolution involves a single, basic principle embodied in one of mankind's truly significant inventions. It's hard to imagine any mechanized system that would be possible without the wheel or the idea of a symmetrical component moving in a circular motion on an axis. From tiny watch gears to automobiles, jet engines and computer disk drives, the principle is the same. Without the wheel, there would be no automobiles, no airplanes, no space launches, and no turbine engines.

The invention of the wheel helped bring about the Industrial Revolution. Because of the wheel's invention, steam engines, railroads, and factories were able to be built. If the inventor of the wheel were alive today, he or she would receive a Nobel Prize.

COILED TUBING –BRINGING NEW EXTENSIONS IN OIL AND GAS INDUSTRY

ENGR SYED MUHAMMAD QASIM ALI

WHAT IS COILED TUBING?

Coiled Tubing (CT) has been defined as any continuously-milled tubular product manufactured in lengths that require spooling onto a take-up reel, during the primary milling or manufacturing process. The tube is nominally straightened prior to being inserted into the wellbore and is recoiled for spooling back onto the reel. Tubing diameter normally ranges from 0.75 in. to 4 in., and single reel tubing lengths in excess of 30,000 ft. have been commercially manufactured. Common CT steels have yield strengths ranging from 55,000 psi to 120,000 psi.

HISTORY

The development of coiled tubing as we know it today dates back to the early 1960's, and it has become an integral component of many well service and workover applications. While well service/ workover applications still account for more than 75% of CT use, technical advancements have increased the utilization of CT in both drilling and completion applications. The ability to perform remedial work on a live well was the key driver associated with the development of CT.

COILED TUBING FIELD APPLICATIONS

The use of CT has continued to grow beyond the typical well cleanout and acid stimulation application. This growth can be attributed to a multitude of factors, including advances in CT technology and materials as well as the increased emphasis on wellbores containing a horizontal and/or highly-deviated section. The CT application list (below) is provided as a "thought-provoker", to illustrate additional operations where CT could be of benefit in your future field work.

APPLICATIONS

* CT Drilling
* Fracturing
* Deeper Wells
* Pipeline/Flowline
* Well Unloading
* Cleanouts
* Acidizing/Stimulation
* Velocity Strings
* Fishing
* Tool Conveyance
* Well Logging (real-time & memory)
* Setting/Retrieving Plugs

COILED TUBING BENEFITS

While the initial development of coiled tubing was spurred by the desire to work on live wellbores, speed and economy have emerged as key advantages for application of CT. In addition, the relatively small footprint and short rig-up time make CT even more attractive for drilling and workover applications. Some of the key benefits associated with the use of CT technology are as follows:

* Safe and efficient live well intervention
* Rapid mobilization and rig-up
* Ability to circulate while RIH/POOH
* Reduced trip time, resulting in less production downtime
* Reduced crew/personnel requirements
* Cost may be significantly reduced

LOOKING TO THE FUTUURE

All the world operators and service companies are using coiled tubing for a range of tasks that would have been inconceivable only a few years ago. As larger diameter tubing and the availability of the hardware needed to handle it become more widespread, even more services will be devised and the current ones improved. For example, conventional Directional CT Drilling techniques will be replaced by Geosteering. CT Completion system will be refined and cost reduced. Logging with CT will become more extensive. Rigless well workover operations will become increasingly widespread.

IMPORTANCE OF BIOMEDICAL ENGINEERING

ENGR. FARWA QAMAR

BIOMEDICAL ENGINEERING:-

Bio-Medical Engineering combines Engineering expertise with medical needs for the enhancement of health care. It is a branch of Engineering in which knowledge and skills are developed and applied to design and solve problems in biology and medicine. Students choose Bio Medical Engineering to be service to people; for the excitement of working with living systems; and to apply advanced technology to the complex problems of medical care. The Bio Medical Engineer is a health care professional, a group that includes Physicians, Nurses and Technicians. Bio Medical Engineer may be called upon to design instruments and devices, to bring together knowledge from many sources to develop new procedures or carry out research to acquire knowledge needed to solve new problems.

Ultrasound representation of Urinary bladder(black butterfly-like shape) a hyperplastic prostate.An example of engineering science and medical science working together.

SIGNIFICANCE:

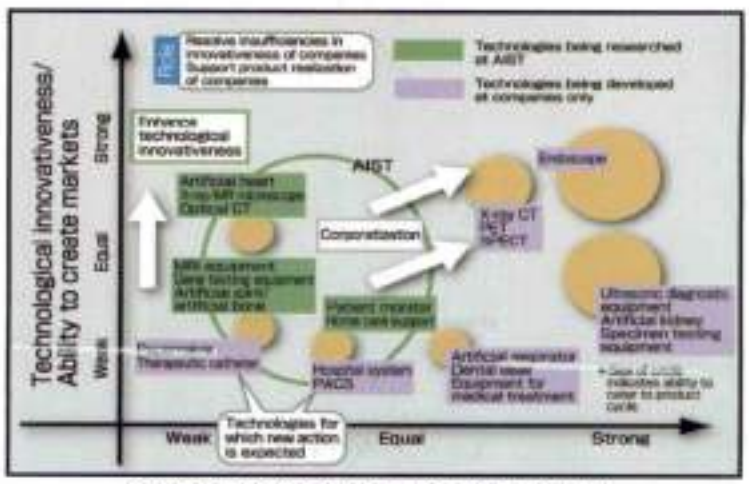
The 21st century is rightfully called the Biological Century. More technological breakthroughs in the medical and industrial spheres are expected with heavily funded research programs underway in most countries of the world. Developments in the fields of biology and medicine, such as human genome sequencing and research to create cell and organ functions, have led to a critical change in many industrial segments and strengthened the medical engineering profession. Although the traditional areas of engineering and other technology innovations will continue, more new opportunities will arise in biomedical engineering and in the fields of biology, medicine, health and delivery of health care.

An MRI scan of a human head, an example of a biomedical engineering application of electrical engineering todiagnostic imaging. Click here to view an animated sequence of slices.

The emphasis in biomedical engineering is on finding solutions by researching, testing, and applying medical, biological, chemical, electrical, and materials information. Biomedical engineers are employed by hospitals, pharmaceutical companies, medical device and testing companies, government agencies, universities, and medical schools.

BIOMEDICAL CENTRURY

The 21st century has been labeled as the "Biological Century" with the expectation of profound implications to future technological breakthroughs both in the medical and other industrial sectors. While some of the traditional areas of biomedical engineering and its technology innovations will continue to flourish, we will face new challenges and greatly enhanced opportunities. Meeting these challenges and capitalizing on the new opportunities will make biomedical engineering the cornerstone for future technological advances with applications to research in biology and medicine, to health and to the delivery of health care. Biomedical engineering is increasingly critical for the future of basic research and for the translation of research results to the commercial health care sector. Finally, because of the projected increase in the health care sector there is a pressing requirement for accelerated development of human resources to meet the demands of new industries. This calls for an increase in the number of educational programs world-wide. In addition, since biomedical engineering is a truly interdisciplinary field, there is a need for a new approach to the educational process of the young generation of biomedical engineers that will fully integrate engineering, biology and medicine.



The role of biomedical engineering in the future.

VIEWS COMMENTS SUGGESTIONS

For continuous improvement of any system a feedback mechanism communicating back the flaws is a must. Without any such mechanism improvement process first slows down and then comes to a standstill. PEC Magazine is a product which will be disseminated amongst one lakh fifty thousand engineers, over seventy engineering universities and more than sixty thousand contractors. This section of the magazine is thus the most important one as it will serve as feedback mechanism not only with respect to its own quality but also with respect to the performance of PEC. Few selected views/comments received have been included in this edition.

Editor

EDITOR OF PEC MAGAZINE

In this day and age it is imperative that we have a platform where free exchange of ideas can take place as well as information about the rapid development around us is provided that caters to all facets of industry to which PEC members belong. I would like to congratulate PEC for taking the initiative on the idea of creating a platform for PEC members to keep them abreast of the industry developments, information on the past, present and future projects and being the voice of PEC members to exchange ideas and technologies among other things. I believe such an effort was needed for a long time. Now that it has taken a final form, I would like to express my wishes and hope for an outstanding success in the future.
Thanks

Javed Tufail
B.S. Civil Engineering UET, Lahore
M.S. Env. Engineering, UC Boulder, Colorado

Dear PEC,

I am writing on behalf of Prof. Dr. Samina Amin Qadir, Vice Chancellor, Fatima Jinnah Women University (FJWU), Rawalpindi. Belated thanks for your mail of October 26, 2012. Please accept heartiest congratulations from FJWU on the latest landmark initiatives taken by the PEC. Please convey Dr. Qadir's appreciations to PEC Chairperson, Syed Abdul Qadir Shah, and Vice Chairperson, Syed Mukhtar Shah. The Department of Software Engineering at FJWU will ensure to take full benefit of this great opportunity for knowledge sharing. Please consider FJWU as one of the first subscribers of the PEC Magazine.
Regards

Prof. Dr. Naheed Zia Khan
Dean Faculty of Science &Technology
at FJWU

Dear PEC,

Please accept Eid wishes from our side. It is indeed heartening to see you mail as input form the contractors & firms will definitely bring useful contributions to the PEC Magazine in particular. I have seen the proposed sections and all sections seems relevant to our present needs however I would like to add/ suggest that if following sections are added then this may add interest;

1. Engineering & Economic Development - This section should give facts & figures as and the role of engineering sector in country's development. This is very important aspect PEC is never consulted in major development decisions whereas in other countries Engineering bodies are always remain on board for mega project. So this section must be included.
2. Alternate Energy Resources and Its Importance in future Development-
3. Role of Water reservoirs in country development & economy.
4. Important world engineering news.

Sir, these are few suggestions but this does not mean that no work is being done what ever work is being done is commendable but what is needed is to make things better and better.

Thanks & best regards,

Engr. Naveed Mahmood
CEO WIZTECH

Dear PEC,

For candidates who have earned their degrees outside United States and are pursuing licensure for engineers and surveyors such as Professional Engineering (PE) are required to have their credentials evaluated by a non-profit national organization (NCEES - National Council of Engineering and Surveying). However, if the degree is acredited by the Engineering Accredition Commission of ABET (the Accredition Board for Engineering and Technology), then the credential evaluation is NOT required. ABET accredits over 3,100 programs at more than 670 colleges and universities in 24 countries. But among them Pakistan is not included. The list of the countries can be found on ABET's site – http://main.abet.org/aps/Accreditedprogramsearch.aspx It would be highly beneficial for those students who have earned their degrees from Pakistan if PEC can play its role to get their schools registered with this organization.

Regards,

Mrs. Faiza Ahmad
Graduation from UET Taxila
AM, District Government, California, USA

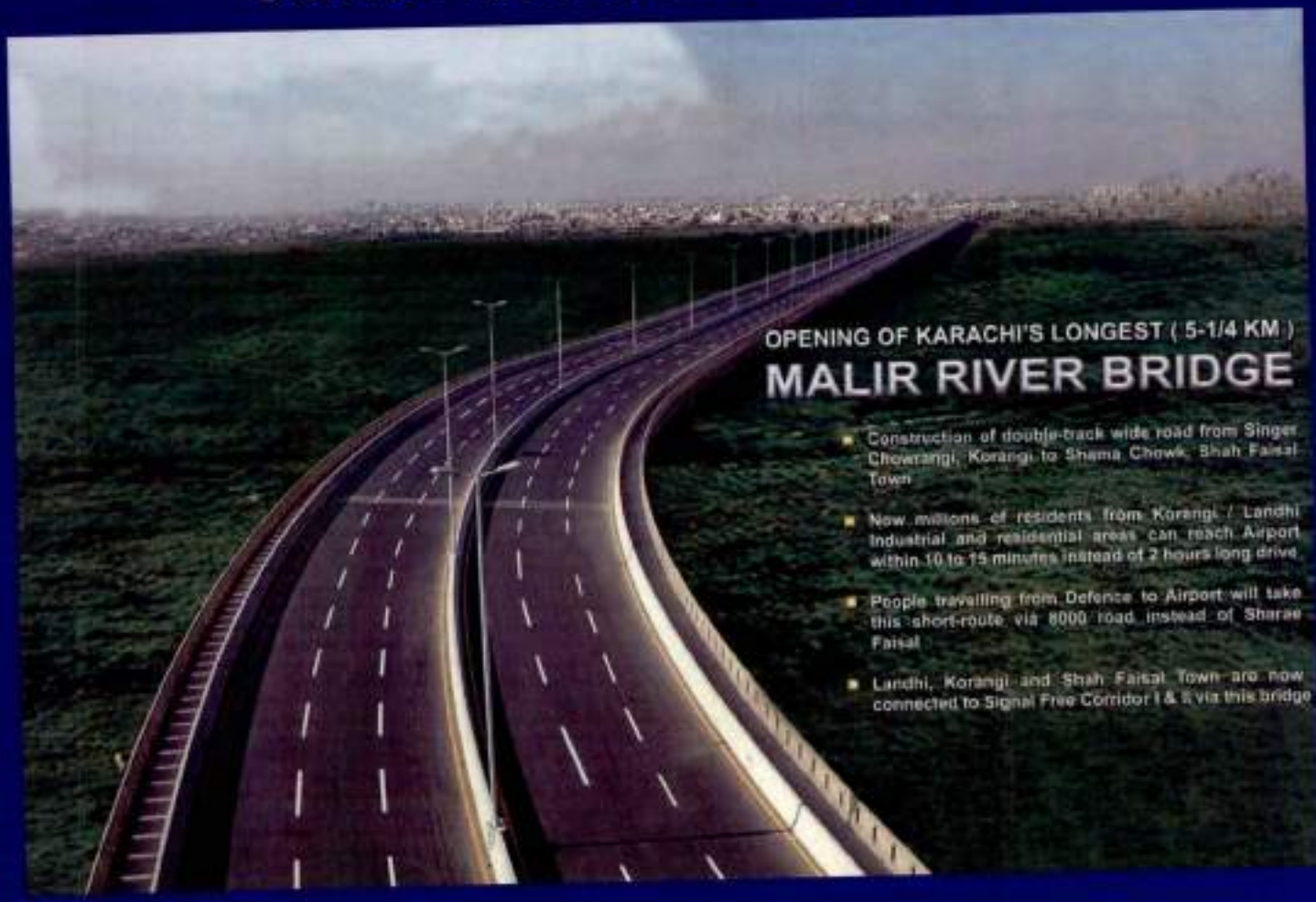
Dear Engr. Habib Ahmad Sahib

Asalam u Alaikum, You and Sheikh Sahib have made the PEC a vibrant council and your input have been appreciated on many forums. Sheikh Sahib's lively function on the eve of Eid Millan at Karachi, with little cost to PEC is the glaring example.

Regards,

Engr. Usman Babai

AGHA
CONSTRUCTION COMPANY



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