

FORTNIGHTLY ENGINEERING REVIEW

GOLDEN JUBILEE

REVIEW 5

The voice of engineers

1975 - 2025

Founded by Najam ul Hassan (Marhoom)

Vol. 51 No. 02 January 16-31, 2026 Ph: +92-21-32215961-2
 info@engineeringreview.com.pk

www.engineeringreview.com.pk

PAKISTAN'S MOST POPULAR CHOICE Since 1975

CHOOSE WISE CHOOSE RIGHT

POPULAR

PROUDLY EXPORTING TO UK | UAE | KSA

www.popularpipesgroup.com
 +92-42-111-11-8782



HSK78G 2MW Lean Burn Gas Generator
 44.2% Electrical Efficiency

Energy Solutions (Pvt.) Limited
 customercare@espk.com | www.espk.com | 111-222-ESL (375)

linkedin.com/company/the-engineering-review

Karachi Development Package

Sindh Govt-FWO Partnership Aims to Redefine Urban Project Delivery

By Manzoor Shaikh

The Sindh government's decision to forge a long-term partnership with the Frontier Works Organization (FWO) for the development of Karachi marks a significant shift in how major urban infrastructure projects are planned and executed in the province.

The move is being viewed by engineers and

urban planners as an attempt to address long-standing issues of delayed completion, cost overruns, weak coordination, and governance gaps that have historically plagued development schemes in Karachi.

Sindh Chief Minister Syed Murad Ali Shah approved the Karachi Transformation Plan while presiding over a joint meeting of the FWO, the local government department, and the Karachi Metropolitan Corporation (KMC) at the CM House. The meeting was attended by senior provincial

officials, including Local Government Minister Nasir Hussain Shah, Karachi Mayor Barrister Murtaza Wahab, the Chief Secretary, Commissioner Karachi, and Finance Secretary, while the FWO delegation was led by its Director General, Major General Abdul Sami.

Under the plan, the Sindh government announced a one-time grant-in-aid of Rs84.796 billion for 523 development schemes in Karachi, alongside Rs26.282 billion approved under the federal PSDP for Karachi-related projects. Additionally,

six priority infrastructure projects worth Rs10.72 billion have been identified for immediate execution to ease traffic congestion, improve connectivity, and strengthen urban mobility.

These include rehabilitation of the M-9 to Malir-15 corridor via Jinnah Avenue and Shahrah-e-Faisal, construction of an underpass at Malir Halt, a flyover from Airport Road to Star Gate, road rehabilitation from Y-Junction to Machli Chowk in Hawksbay, and the construction of a flyover at Sohrab Goth—Karachi's main inter-

city gateway.

According to the chief minister, the partnership with FWO is intended to ensure "quality, speed, and transparency," with all major projects to be designed and executed at international standards.

Engineers believe this long-term collaboration has two primary drivers. First, Karachi's development projects have frequently failed to meet timelines due to weak inter-agency coordination, poor governance, encroach-

Contd on page 2

Focusing on Universities: Adapting to Changing Times

2026 Part 1

Please See pages 5-8

GM Cables & Pipes (Pvt.) Ltd.

Pakistan Standards

WE KNOW YOUR SAFETY



UAN: 111-222-369 www.gmcables.com gm cables and pipes

Sigma elektrik www.sigmaelektrik.com



Approved By

LAHORE

Low Voltage Products

ZELKON electric

Jawad electric

Sole Distributor of Sigma Elektrik in Pakistan

Lahore Electric Market
 14- Brandreth road, Lahore
 04237641116-7
 +92 321 8061111
 Info@jawadelectric.com

IEC RoHS CE TÜVRheinland ASTA

CHINT POWER | **POWER zone**

TIER 1

INVERTER & ENERGY STORAGE MANUFACTURER*

COMMERCIAL ESS 125 (kW) - 261 (kWh)
COMPACT ESS LV & HV Modular Lithium Ion ESS
INVERTER 6 - 20 (kW)

042-111-111-087



BILAL SWITCHGEAR ENGINEERING (PVT.) LIMITED

SWITCHING ON RELIABILITY SINCE 1978

LV TYPE TESTED ABB SWITCHGEAR

System Pro E Power

- Fully type tested for Conformance to IEC-61439 1 & 2.
- Rated Current: up to 6300A.
- Form of Segregation: Form-1 to Form-4b.

Manufactured under license by ABB.

BUSBAR TRUNKING SYSTEM WAVEPRO — ABB

Certified by KEMA-KEUR to latest standard IEC 61439-6 and IEC 60331-1 for fire proofing.

ABB MV TYPE TESTED SWITCHGEAR

Manufactured under license by ABB.

www.bilaleng.com | UAN: +92- 42-111 19 19 19
 Lahore | Karachi | Islamabad | Faisalabad | Multan

Head Office / Factory: 11KM, Raiwind Road, Lahore Park Stop, Lahore, Pakistan

Meet Our New Consulting Editors

For the past 50 years, Engineering Review has consistently drawn upon the knowledge and expertise of leading professionals across diverse fields of engineering, science, and technology.

These respected experts have supported us in clarify-

Their contributions will complement the continued guidance of Dr. Bhawany Shankar Chaudhry, Engr. Khalid Pervez, and Engr. Farhat Adil, whose mentorship and support remain invaluable to Engineering Review.

Engr. Abul Islam is the Founder and President/CEO of AI Engineers, Inc. (AIE), a multi-disciplined consulting engineering firm ranked

40 years of professional experience, he has successfully led major infrastructure projects across the United States, including bridges, highways, airports, transit systems, and utilities.

Dr. Shahneela Zardari is the Chairperson of the Software Engineering Department at NED University of Engineering & Technology, Karachi. An accomplished academic and researcher, she

diverse audiences. Her work reflects a deep commitment to advancing software engineering education and mentoring future professionals.

Mahmood Nawaz Shah is a progressive farmer based in Tando Allah Yar, Sindh, and the driving force behind Genuine Delight Farms (GDF), a family-owned agri-produce enterprise cultivating sugarcane, wheat, mangoes, onions, bananas, cauliflowers, and other crops. GDF is a reputed exporter of fruits and vegetables from Sindh. He

from George Washington University, USA, he remains actively engaged in agricultural policy, governance, and public sector reform discourse.

Dr. Tariq Soomro is the Rector of the Institute of Business Management (IoBM), Karachi, and brings extensive experience in higher education, teaching, research, and academic leadership. Over the years, he has been associated with universities and colleges in a wide range of academic and

emerging digital technologies, reflecting his readiness to lead innovation in academia.

Mariam Durrani is a seasoned brand builder and business writer with over 18 years of senior management experience across consumer durables and FMCG sectors in Pakistan, Indonesia, and Singapore. She currently serves as Director, Marketing and Brands at Pakistan Cables Ltd., having previously held key roles at



ing complex issues and have played a vital role in keeping ER firmly on the path of professional and responsible journalism.

We are pleased to announce that four more distinguished professionals have agreed to join our team as Consulting Editors, further strengthening our intellectual depth and editorial vision. We take this opportunity to introduce them to our readers.

among ENR's Top 500 Design Firms. With a workforce of over 400 professionals, AIE enjoys a strong regional reputation for excellence, quality, and innovation. Engr. Islam is deeply committed to employee development, fostering a culture of teamwork, transparency, and leadership. Five years ago, he established AI Engineers Pakistan, contributing meaningfully to Pakistan's engineering industry. With more than

specializes in software engineering, requirements engineering, risk management, and economics-driven software engineering. With nineteen years of full-time teaching and research experience, she has made significant contributions to academic leadership and curriculum development. Dr. Zardari is widely recognized for her strong communication skills and her ability to convey complex technical concepts clearly to

also serves as Director Marketing, Sales, and Strategic Planning at Sindh Mango Growers & Exporters (Man-gorio). Shah sits on the boards of the Trade Development Authority of Pakistan (TDAP), Pakistan Horticulture & Export Board, and Hisar Foundation, and currently serves as Senior Vice President of the Sindh Abadgar Board. With over 25 years of professional experience and advanced degrees

administrative roles. His expertise spans academic planning, curriculum development, programme design, student evaluation, enrolment processes, career counseling, and supervision of research projects. Dr. Soomro has also organized numerous conferences, seminars, and research forums. His areas of specialization include GIS, networking, databases, distance education, e-commerce, bioinform-

Philip Morris International, PT HM Sampoerna, Dadex Eternit, and Berdex. Mariam is also Director of Academic Studies at Karachi School of Business Leadership and a visiting faculty on Marketing and Brand Management. An MBA gold medalist and Certified Board Director, she is a published poet, business columnist, and advocate for CSR, diversity, and work-life balance. ■

Karachi Development Package

Contd from page 1
ments, and unresolved utility relocation issues. These delays often inflate project costs, disrupt daily life for commuters, and ultimately

damage the government's credibility.

Second, with elections approaching, the government is under pressure to demonstrate visible and substantive development. Faster execu-

tion, better construction quality, and timely completion are seen as politically crucial areas where FWO's reputation for disciplined project management and rapid construction gives the govern-

ment confidence.

Engineers point out that coordination with civilian utilities and removal of encroachments are among the biggest causes of delays in Karachi. The presence of a non-civilian executing agency like FWO is expected

to significantly reduce such bottlenecks, even if they cannot be eliminated entirely. FWO's operational structure, they argue, allows for quicker decision-making and enforcement, which is often difficult in purely civilian-led projects.

However, the partnership has also raised concerns within professional circles. Some senior engineers warn that large-scale involvement of FWO in the Karachi Development Package could

Contd on page 7

Engineering Bazar

Engineering Review 5

Urethane Systems & Products Corporation
(A Member of the Product Group of Companies)
OUR RIGID POLYURETHANE FOAMS
HOT & COLD INSULATION APPLICATIONS
are widely used in Building and Constructions because of its High Strength & Energy Saving, Void-free, Heat & Sound insulation, Water & Moisture resistance.

PLEASE CONTACT US FOR:
SPRAY FOAM applications over walls & roofs.
SANDWICHED PANELS for pre-fabricated structures
PIPE INSTALLATIONS & HVAC DUCTINGS
www.theproductgroup.com/urp
www.facebook.com/uspcpk
0300-2374459, 0333-2480659

C&M AUTOMATION (PVT) LTD.
SIEMENS REGIONAL DESIGNATED SYSTEM INTEGRATOR
C-188, Sector 31-D, P&T Society, Korangi Industrial Area, Karachi-74800, Pakistan
Tel: +92-21-35070751, 36018006, Mob: 0301-8241504
E-mail: cnmautomation@pakplc.com Web: www.pakplc.com

SERVICES
- Energy Management
- PLC Troubleshooting & Repair
- Automation Panel Building
- Instrument Commissioning & Integration
- Data-Logging & Monitoring Systems
- Plant Commissioning Support
- Migration from Obsolete Control

PRODUCTS
- PLC's, PAC's and HMI's
- SCADA Software
- Remote I/O and Data Acquisition
- Isolated Transmitters/Signal Converter
- VFD's, Servo and Motion Control
- Motors and Switchgear
- Industrial Communication Gateways

FOOD GRADE PVC & PUR HOSES
piab

- FREE OF PHTHALATES
- SMOOTH INTERIOR WALLS
- PROVIDE FOR OPTIMAL FLOW
- THE HOSE IS SUITABLE FOR ALL TYPES OF AIR AND FUMES AND TO TRANSPORT DUST AND POWDER

For Details Please Contact:
NETWORK TRADE MARKETING
Ph: +92-21-36707233 - 36608964; Cell: +92 300 8299153
E-mail: ntmpiab@gmail.com Website: www.ntmpk.com

Thermocouples
Type: J, K, T, R, S,....others
RTD: DIN PT-100
IEC, BS, JIS standards.
Standard & made to order
Sizes/ shapes.
Shortest delivery time

TOHO Japan
Micro Processor Based Programmable Controllers and Recorders PID, Auto Tuning, user selectable inputs

TTM-004 TRM-10-C

PAPERLESS RECORDER
Features:
◆ 1 to 34 channel recordings.
◆ Multi input Thermocouple/RTD / DC Voltage / Current.
◆ Monochromatic / Colour /LCD Display.
◆ RS-232 communication / Ethernet.

Thermcraft
Phone: (021) 3272 0757, Fax: (021) 3277 1108;
E-Mail: thermcraft@gmail.com Website: www.thermcraft.com.pk

FOIF
Approved by PTA

The latest technology in GNSS RTK System,

One can now do topographic surveys much faster than ever before (5 to 10 time faster) with FOIF A30 GNSS RTK System. Project cost may be equivalent to Total Station survey or little less. The range of FOIF GNSS RTK System is 30km in radius. Accuracy: Horizontal : ± 10mm+1 PPM (part per million) Vertical : ± 20mm+1 PPM (part per million) This accuracy of GNSS System is more than 1/2 second Total Station.

GRM G.R.MIRZA & CO.
Land Surveying and Navigational Products
Plot No. C-6, Sector V-1, Gulshan -e- Maymar, off: Super Highway Karachi.
Ph: 021-36350500, 36350230
Email: grmirza@grmiza.co Website: www.grmirza.co

"When you aim for perfection, you find out it is a moving target."
- George Fisher

Fortnightly Engineering Review
The Voice of Engineers

(021) 32215961-62 - 32632567
info@engineeringreview.com.pk
engineeringreview@yahoo.com
www.engineeringreview.com.pk

Years of Committed Service

Pipes & Fittings
uPVC, PVC, PE, PPR



ISO 9001: 2015 CERTIFIED

PELIKAN PIPE INDUSTRIES (PVT) LTD.
Karachi: Ph: 021-32571593, 32581390;
info@pelikanpipes.com.pk

FORTNIGHTLY

ENGINEERING REVIEW GOLDEN JUBILEE

5
ENGINEERING REVIEW
1975-2025

The voice of engineer

FOOD GRADE piab

PVC & PUR HOSES

- FREE OF PHTHALATES
- SMOOTH INTERIOR WALLS PROVIDE FOR OPTIMAL FLOW
- THE HOSE IS SUITABLE FOR ALL TYPES OF AIR AND FUMES AND TO TRANSPORT DUST AND POWDER

For Details Please Contact:

NETWORK TRADE MARKETING

Ph: +92-21-36707233 - 36608964; Cell: +92 300 8299153
E-mail: ntmpiab@gmail.com Website: www.ntmpk.com

PEC Expands GET Placement Program with 15 New Industry Partners in Karachi; Total Partners Surpass 45



The Pakistan Engineering Council (PEC) has signed Memoranda of Understanding (MoUs) with 15 additional organizations in Karachi under its flagship Graduate Engineer Trainee (GET) Placement Program, significantly expanding a nationwide initiative aimed at strengthening practical training and employability of young engineers.

With the latest signings, the total number of partner organizations under the GET Placement Program has risen to 45 across Pakistan. Earlier, PEC had entered into partnerships with 14 leading organizations in Islamabad as part of the same initiative. The program was launched under the leadership of PEC Chairman Engr. Waseem Nazir as a cornerstone of the Council's broader reforms to modernize engineering education and professional development.

The MoU signing ceremony was held at a local hotel in Karachi and was led by Chairman PEC Engr. Waseem Nazir along with his team. Former PEC Chairman Engr. Abdul Qadir Shah, senior engineers, industry leaders, and representatives of partner organizations were also present.

successfully practiced in the medical profession.

The newly signed partner organizations include Yunus Textile Mills Limited, Karachi Shipyard & Engineering Works Ltd., Karachi Port Trust (KPT), Pakistan Airports Authority, Pakistan Cables Limited, Pakistan Machine Tool Factory, Naval Research & Development Institute, Inbox Business Technologies Limited, Harbin Electric International, Dewan Cement Limited, Alsons Industries (Pvt.) Ltd., Cynergico, DHA City Karachi, H. Nizam Din & Sons Ltd., and MAK Power International (Pvt.) Ltd.

Addressing the ceremony, PEC Chairman Engr. Waseem Nazir said the GET Placement Program had taken nearly one year and around 6,000 working hours to develop and is now fully automated.

"This journey has reached its culmination. It is one of the most comprehensive programs ever introduced by PEC because it has brought the Council, industry, and clients onto a single platform," he said. "Here in Karachi, 15 major organizations—many of them engaging with PEC for the first time—have committed to

onboarding trainee engineers. This was made possible through extensive groundwork that helped stakeholders realize their shared responsibility in grooming the next generation of engineers."

He expressed confidence that the GET Program would become a mandatory requirement within the next five

years, adding, "I am certain this program will be remembered in the years to come."

Former PEC Chairman Engr. Abdul Qadir Shah described the initiative as unique and highly encouraging for young engineers. "This reflects our long-standing effort to build meaningful collaboration between industry and academia," he said,

adding that feedback from engineers completing the program would help further refine and improve it.

Senior engineer Engr. Mukhtiar Ahmed Shaikh termed the Karachi event the most successful GET initiative so far. "The number of partner employers in Karachi

Contd on page 15



Often described as a "house job for engineers," the GET Placement Program is designed to bridge the long-standing gap between academic education and industry requirements. The structured six-month program includes five months of on-the-job industrial training and one month of soft skills development, closely mirroring the house-job model suc-

GRUPPO ENERGIA POWER QUALITY MANAGEMENT POWER FACTOR CORRECTION & POWER METERING EQUIPMENT MADE IN ITALY

live with energy... www.gruppoenergia.com

GEAHF
Active Harmonic Filters, 3 in 1
Wall mounted type, from 30A up to 100A, 230V - 400V, 50/60Hz
Cabinet type, from 70A up to 400A, 230V - 690V, 50/60Hz

GESVG
Static VAR Generators
Wall mounted type, from 20kVAR up to 100kVAR, 230V - 480V, 50/60Hz
Cabinet type, from 40kVAR up to 400kVAR, 230V - 690V, 50/60Hz

GESBZ
Voltage Stabilizer
from 1kVA up to 3000kVA, 110V - 440V, 50/60Hz

3CBAmMV
PFC Capacitor Banks MV
from 100kVAR up to 5MVAR, 1kV - 15kV, 50/60Hz.
With or without Harmonic reactors

3CBAmLV
PFC Capacitor Banks LV
from 5kVAR up to 1500kVAR, 400V - 690V, 50/60Hz
With or without Harmonic reactors

PA007JB
Power Analyzer Tariff Meter & Data Logger
For Single phase & Three phase LV & MV, electric power distribution systems. With large color LCD display.

RCM-INB, RCM-INP, RCM-INA
PFC Capacitors Three Phase LV
from 1,25kVAR up to 62,5kVAR, 400 - 780V, 50/60Hz.
Type Standard, Type Heavy Duty, Type Extra Heavy Duty.

GE-RT3/GE-RTM3
Detuned Harmonic Reactors LV
from 2,5kVAR up to 100kVAR, 400V - 690V, 50/60Hz
P = 5,67% - 210Hz / P = 7% - 189Hz
P = 14% - 134Hz.

3TRD
Three Phase Dry Type transformers LV
Type Safety transformers. Rated Power up to 25kVA Rated Input Voltage 100V - 600V Rated output Voltage 24V - 600V
Type Isolating transformers. Rated Power up to 40kVA Rated Input Voltage 100V - 600V Rated output Voltage 24V - 600V
Type Power transformers. Rated Power from 41kVA up to 1000kVA Rated input Voltage up to 1000V Rated output Voltage up to 1000V

ERD 6/ERD 12 ERDS 7/ERDS 13
Power Factor controllers LV & MV. Fully Automatic. Type ERDS with LCD graphic display.

GE-VC-3
Load Break Switches LV
from 160A up to 3150A, 415V, 50/60Hz

QR Code:

GRUPPO ENERGIA srl
Via Cavezzo, 36 - 25045 Castegnato (Bs) - Italy
Phone: +39 030 320 301 - Fax: +39 030 2411 006
Mobile: +39 348 007 6538 / +39 389 619 1385
www.gruppoenergia.com - mail: info@gruppoenergia.com

Head Office (Karachi): Ameerjee Chambers, Campbell Street, Karachi-74200, Pakistan
Phones: + 92-21 32625492-5, Fax: +92-21 32627817 & 32621910
Lahore Office : +92-42 36676507-9 Islamabad Office: Tel: 051-2321191-2 Fax: 051-2321193
Email: avsltd@avs.com.pk Web: www.gruppoenergia.com

A Paradigm Shift to Take Place in IEP Centres Across Pakistan: President Engr. Sohail Bashir

IEP Will Organize International Convention in November, Hold Global Conferences at All Regional Centres, Reconnect with International Engineering Partners, New President Tells ER

The Plan
I am thankful to all engineers across Pakistan who gave me a strong mandate in the IEP elections and elected me. As many as 99 percent of engineers in Karachi and 89 percent across Pakistan supported and voted for me. Our competitors received only 11 percent of the votes. Of course, a victory by such a huge margin comes with responsibility, and engineers have attached high expectations to me.

There appear to be two main reasons behind this support. Over the last seven years, the Karachi Centre has developed a completely new culture—not only in its outlook but also through the international conferences we have been organizing here.

Opportunity and Challenge

At present, the IEP Karachi Centre organizes nine international conferences every year. Engineers in other centres now expect similar activities to be held there as well.

This is indeed a challenge. Therefore, we met at the outset and decided to replicate Karachi Centre's activities across other centres. A yearly calendar has been developed and synchronized with Karachi Centre's calendar.

IEP International Convention

This year, we are going to

organize a major event on the calendar—the IEP International Convention, which was last held in 2018. We have



decided to convene it in November this year. Participants from IEP centres and professional bodies around the world will attend the convention, which will be held in Lahore.

Furthermore, we will celebrate World Engineering Day on March 4. This is an international event, and the programme will be organized in Islamabad.

We have asked all chairmen to develop their respective calendars accordingly.

Changing Culture

I also plan to devote time to the IEP head office in Lahore, where many initiatives will be undertaken in coordination with the Secretary, Engr. Ameer Zamir.

We face another challenge

as well. At present, we have three major centres—Karachi, Lahore, and Islamabad—along with provincial centres

including Multan, Faisalabad, Quetta, Peshawar, and Hyderabad. We plan to organize one international conference at each of these centres. Moreover, we are reviving the IEP Engineering Journal, which had been discontinued for some time. Training for Young Engineers

In addition to these plans, IEP is closely engaged with the government to induct young engineers into PSDP projects for on-the-job training. They will be paid from the contingency amount embedded in the projects. This initiative will provide engineers with the requisite experience needed to secure employment.

The government has recognized its importance, and this programme will soon become part of the government's youth initiative.

According to our estimates, around 10,000 engineers will benefit each year.

The programme will initially begin using the remaining contingency funds, and from next year it will become an integral part of every PSDP project. The release of project funds will be conditional upon the hiring of engineers, with a monthly salary of Rs 50,000.

Simultaneously, IEP has decided to train engineers in project management. Balochistan is our top priority, and 100 percent of engineers from the province will be included in the programme. The initiative will be portal-based, and both the portal and advertisements have already been designed.

Finally, to do away with the present modus operandi of elections conducted through postal ballots, we have decided to introduce e-balling in the future. — By Manzoor Shaikh

IEP Karachi Celebrates Newly Elected Office-Bearers at Gala Dinner

The Institution of Engineers Pakistan (IEP), Karachi, hosted a gala dinner last night in honour of the newly elected IEP President, Vice Presidents, Secretary General, Chairmen of Local Centres, and Central Council Members.

A large number of senior engineers, vice chancellors, and professional engineers serving abroad participated in the event and exchanged views on issues pertaining to engineers, educational institutions, and industry.

Under the leadership of Engr. M. Farooq Arbi, the newly elected Chairman of

Contd on page 13

Maintaining momentum of Karachi Centre is indeed a major challenge

Engr. Farooq Arbi, who served the Centre for two terms, told ER that they would continue through teamwork.

I have served as Secretary of the Centre twice, and during those tenures we successfully increased the number of international conferences.

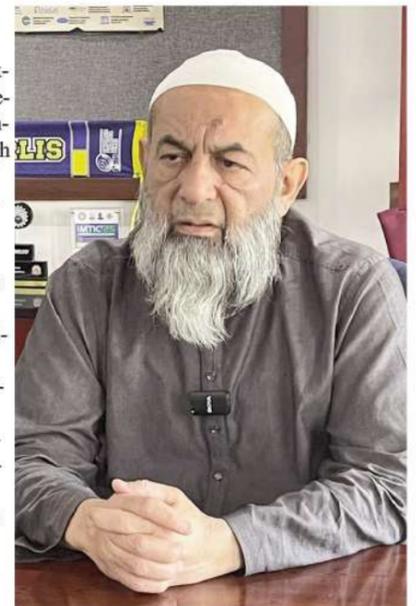
Currently, we are organiz-

ing seven to eight conferences with international speakers. The papers presented at these conferences are of high quality and are published in international journals.

Insha'Allah, we shall continue this momentum. We are collaborating with PEC-accredited universities in Karachi, as well as universities in Balochistan and MUET, Jamshoro. We are now expanding this collaboration by approaching other universities, including UET Lahore, University of Peshawar, and universities in Faisalabad and Multan.

This model will be replicated in major IEP centres across Pakistan so that students in other regions may also benefit.

Maintaining the momentum of the Karachi Centre is indeed a major challenge. However, we have an excellent council comprising capable professionals from academia, and with their col-



laboration, we are confident of sustaining this progress.

We also plan to increase the institution's membership. Our CPD score is an additional attraction for engineers.

We will organize a one-day International Civil Engineering Symposium at NED University's campus in Mithi, Tharparkar. At present, the Mithi campus has two departments: Civil Engineering and Computer Sciences. ■

Bijli Ghar



Karimi Electromech Systems

Plot No: 8/5-2, Street-5, Sector 12-C, North Karachi, Industrial Area, Karachi, Pakistan.
TEL: (+92-21) 36909873, 36909874, 36909875 Cell: 0300-2190590;
E-mail: info@karimisystems.com, karimiswitch@yahoo.co.uk | website: www.karimisystems.com

Engineering Review

MHENGINEERING PRIVATE LIMITED
Engineering Solutions for Inspection, Calibration, Mechanical, Electrical & Training
MH Engineering, a Pakistan-based company, offers specialized inspection services to the energy industry, including:
○ Lifting Gear Inspection ○ Drill Pipe & Tubular Inspection
○ Rig Inspection ○ NDT Inspections ○ Rope Access Services
Their services cater to drilling, operating, power generation, and refinery companies.

Lifting Equipment & Accessories Inspection:
 Cranes Jacks Shackles Pad Eye Baskets Operator Training
 Fork Lifters Slings Hooks Containers Elevator

CONTACT US
Office # C-9, 3rd Floor, Farah Center adj: KFC, Block 13-C, Gulshan e Iqbal, Karachi.
Mob: (+92) 346 4844441, Phone: (+92) 213 4819992,
Email: info@mhgroup.com.pk Website: www.mhgroup.com.pk

AL-MADINA Electric Corporation Estd. since 1967
www.almadinaelectric.com

Pressure Controls
Pressure Switches
Pressure Transmitters
High Performance
Solenoid Valves for all Purpose
Magnetic Contactor Over Load Relays

Danfoss
Temperature Controller
Humidity Controller
Thermostat
Thermocouple
Proximity Sensor
Multi Range Timer
Micro Processors
Push Button all sorts

International Standard Available
16 Amp 3/4/5 Pins } IP 44
32 Amp 3/4/5 Pins } IP 44
63 Amp 5 Pins } IP 67
125 Amp 5 Pins } IP 67

YEEDA Plug & Socket

All KINDS OF ELECTRICAL PRODUCTS FOR CONTROLS, DISTRIBUTION & AUTOMATION
Address: 19-Nishtar (Brandrth) Road, Lahore - 54000 (Pakistan)
Ph: (+92-42) 37641306-37641307, 37662197 Fax: 37634579
Email : almadina786@yahoo.com

0301-8441311

"Life is a gift and it offers us the privilege, an opportunity and responsibility to give something back by becoming more."
Terry Robbins

ENGINEERING REVIEW

PROGRESSIVE POWER GENERATORS (PVT) LIMITED PPG
www.progressivepower.com.pk
info@progressivepower.com.pk

CUMMINS / CAT TEAM
WE DEAL IN NEW & USED GENSET SALES, SPARES, SERVICE IN POWER GENERATION & INDUSTRIAL EQUIPMENTS

● GENERATORS SALES ● RADIATORS
● WORKSHOP & LAB ● ALTERNATORS
● TOP / MOJAR OVERHAULING ● PORTABLE GENERATOR

GENCAT Perkins
DRESSER VOLVO PENTA Denyo
Waukesha Jenbacher

FOR FURTHER DETAILS & ENQUIRIES CONTACT US ON:
PH: 021-34322307-8, MOBILE: 0345-2681973, 0300-9260047
EMAIL: maqsood.cummins@gmail.com

Focusing on

Universities: Adapting to Changing Times

Special Supplement on Engineering S&T Universities & Institutions

From Institute to Innovation Hub: UIT University's Transition and Vision UIT University Eyes Growth and Global Relevance, Says VC Dr. Vali uddin

In an exclusive interview with Engineering Review, Dr. Vali Uddin, Vice Chancellor of UIT University, Karachi, shares insights drawn from his rich academic leadership experience across leading institutions including NUST, Iqra University, Hamdard University, and Sir Syed University. Reflecting on UIT's transformation from a young institute into an emerging university, he discusses how the institution is redefining its academic direction with a strong emphasis on practical learning, industry-academia collaboration, research culture, and emerging technologies. Dr. Vali Din also outlines UIT's vision for expansion, innovation-driven education, and its evolving role in preparing industry-ready engineers for Pakistan and beyond.

Different shades of universities

I have had the opportunity to work at several institutions—NUST, Iqra, Hamdard, Sir Syed, and now UIT. Every institution has its own culture and environment, along with its strengths and challenges. One thing common to all is their commitment to quality education. If we look at how UIT is different, Hamdard was a large university with many programs, while Sir Syed evolved from an engineering university into a multi-program institution. Everywhere, IT and computing departments are growing rapidly. UIT is different in that it began as a small institute; its first classes started in Spring 2022, and now its first batch is about to graduate. It is transitioning from an institute to a university. With this new direction, our focus is also changing—strengthening research culture, building national and

international collaborations, policy-making, and product development—because as a new institution, we must take it forward.

Exploring UIT's Distinction



UIT's key advantage has been its strong practical orientation. From the start, students here have been very strong practically alongside theoretical knowledge, and they adapted quickly. Even

now, our graduates' employment ratio is very good. We want to maintain this edge and extend it to new programs we plan to launch, so our graduates meet market requirements fully.

working at an advanced level with industry on internships and practical exposure. We have also designed the curriculum to engage students with industry, and the third level is engaging faculty. We aim to implement all these within one year.

The Next Level of Industry-Academia Collaboration

We have many industry collaborations and benefit from being located in Karachi. However, much of the local industry consists of production units—except for software houses—where students do not always get deep learning opportunities. There is a lack of homegrown industry. Graduates and faculty are not engaged at the level they should be, which affects growth.

What to Do?

That is why we focused on our core strength. Pakistan's IC design tape-out was done by UIT students.

We identified this area, focused on it, and trained students. To date, nine tape-outs have been completed, and our students are present on all major global IC design platforms. There is strong demand, and real design work is happening. Currently, our students are working on a new quantum computing project acquired from abroad, which has been very successful. We have also formed partnerships for human resource training and will conduct training in Sindh and Balochistan, with roles as designers.

Emerging Technologies and Traditional Engineering Disciplines

Globally, job opportunities for engineers are increasing. IT has developed software, but it must be implemented—whether in robotics, alternative energy, or electric vehicles. A new EV

Contd on page 7



UIT
UNIVERSITY

Formerly Usman Institute of Technology

ADMISSIONS OPEN

Electrical Engineering

- ▶ BE Electrical (Electronic | Power)
- ▶ BE Computer Systems

Computer Science

- ▶ BS Computer Science
- ▶ BS Software Engineering
- ▶ BS Data Science
- ▶ BS Artificial Intelligence

Management Science

- ▶ BS Accounting & Finance
- ▶ BBA (Bachelor of Business Administration)

Engineering Technology

- ▶ Bachelor of Engineering Technology (Computer)
- ▶ Bachelor of Engineering Technology (Software)

Master's Programs

- ▶ MS Computer Science
- ▶ MS Electrical Engineering
- ▶ MS Communication & Network Engineering

Apply Online

www.uitu.edu.pk



Talent | Merit Need Scholarships Available

Contacts : 0333 0399 113 | 0308 9779 924

ST-13, Block-7, Gulshan-e-Iqbal, Abul Hasan Isphahani Road, Karachi

From Rankings to Recognition: Dr. Tariq Soomro on IoBM's Global Ambitions

How IoBM Is Navigating Rankings, Research Quality and Emerging Technologies

In an in-depth conversation with Engineering Review, Dr. Tariq R. Soomro, Rector of the Institute of Business Management (IoBM), Karachi, shares his perspective on university rankings, research impact, international accreditation, and the fast-changing landscape of emerging technologies.

Drawing on IoBM's experience in regional and global ranking frameworks, Dr. Soomro explains how strategic faculty structuring, research focus, and perception management have strengthened the university's visibility and performance. He also reflects on the challenges of sustaining progress, the importance of impact-driven research over sheer numbers, and the need for thoughtful policies on the use of artificial intelligence in academia, outlining his priorities for IoBM's next phase of growth.

Ranking of Universities

There are two views on this issue. Some say there is

no need for ranking, as alumni and employers would determine where universities stand. Others support the standards on which university standings are ranked.

QS is one of the top rankings and is believed to be prestigious. It impacts universities in terms of admissions, as it determines their standing. Pakistan has a very low number of universities that appear in world rankings. Now, the Asia ranking was introduced in this exercise in 2024. In this ranking, 82 universities from Pakistan appeared. After the Asia ranking, we are more visible than ever. We qualified from the start of this category. We understood the mechanism and fulfilled the parameters. One of the significant parameters is research. Another basis is perception—how other people perceive IoBM. They seek employer lists and talk to them about the university. On the research side, they assess the quantitative aspect of research by looking at numbers. The target is 1,000 publications in three years. This is not possible for every university, given the size of student and faculty populations engaged in research.

QS Ranking Qualification and Our Success

The number of universities appearing in the ranking is not satisfying; more universities should have appeared. Ranking does not happen automatically; uni-



versities must submit their evidence. HEC is, in a way, compelling universities to participate in rankings, as it asks about ranking in one of its rubrics.

This is serious work for

universities. What we have done is distribute our faculty into four parts, as everybody cannot do everything. We have two kinds of faculty: PhD and non-PhD. We divided PhD faculty into two categories—scholarly academi-

cians and professional academicians. The former focus more on research, while the latter teach more. Earlier, everyone was doing everything, which was difficult. Likewise, we categorized

non-PhD faculty as scholarly practitioners and instructional practitioners. Instructional practitioners focus on teaching, while scholarly practitioners engage in some research and funding. We have prepared an excellent framework, appreciated by HEC as well. Since we are moving toward international accreditation, we need to change ourselves. This benefited us as our visibility improved by default.

Research vs Numbers

In Pakistan, one may write 15 papers and become a professor. However, what is important is the impact of the research. Recently, THE discussed impact research based on the SDGs. Each university must cover at least three SDGs, while the fourth must be SDG 17. Another ranking, the Shanghai Ranking, asks at the outset whether any faculty member or student has ever won a Nobel Prize. No Pakistani university qualifies for that ranking. The university from which I earned my PhD had three Nobel laureates.

Next Target as Rector

Sustaining any achievement is a major challenge. In recent Asian rankings, many universities fell in the list and scored lower than

before. We have improved and moved upward continuously. First, we aim to move further up the list and enter world rankings. Second, we are now pursuing international accreditation. Some public-sector universities have already done so, and we are also capable. We are going for CCSP accreditation, as we are a business university. Then there are the "three crowns," a distinction earned by a very small number of universities. Additionally, BGA is another crown, and we are its first member in Pakistan.

Impact of Fast Changes in Emerging Technologies

These technologies are widely used today. Our students use them, including AI tools, for assignments, and we are experienced enough to understand this. Using these tools is not wrong; not acknowledging them is. We need to change the perspective that failing to mention the use of AI tools is inappropriate. These tools should be used positively, but we may have stopped thinking independently. Young people have started relying heavily on these tools, which is a real concern. We need to formulate a policy.

—By Manzoor Shaikh



ENGINEER THE FUTURE TODAY!

The College of Computer Science and Information Systems (CCSIS) at the Institute of Business Management (IoBM) is committed to becoming a leading national and international center of excellence in computing and statistics.

It equips students with advanced technological and analytical expertise grounded in local and global educational paradigms, fostering innovation and expanding knowledge creation.

www.iobm.edu.pk

In the Driving Seat: Dr. Muhammad Tufail's Vision for NED University

Industry Linkages, Technology Parks and the Future of Engineering at NED

With a legacy spanning more than a century, NED University of Engineering & Technology is redefining its role in a rapidly evolving industrial and technological landscape. In this interview with Engineering Review, Vice Chancellor Dr. Muhammad Tufail shares insights into how the university is strengthening industry linkages, embedding students in real-world projects, and preparing graduates for emerging technologies.

Feeling of Occupying the Driving Seat

My association with the university spans more than a quarter of a century. I am a graduate of this institution, having entered it as a student in 1986. I joined the university as a faculty member in 2000. The most satisfying aspect of my journey is that I have served at almost every level—at one point, even as a class advisor.

I must say that observing a university from the back

seat and leading it from the front seat are entirely different experiences. Occupying the top position dramatically increases interaction beyond the university's boundaries—whether with government, regulatory bodies, or industry—as well as with students, staff, and faculty. It is, therefore, a completely different scenario.

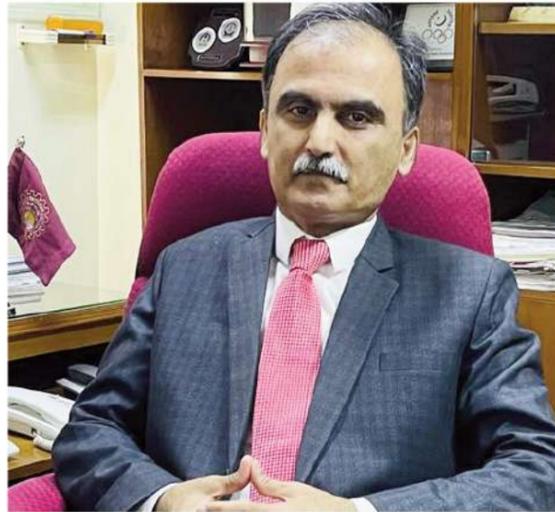
Quality of Engineering Graduates & Expectations

The perception that an engineer earns a degree and becomes industry-ready from day one is incorrect. This does not happen anywhere in the world. Universities provide academic knowledge, not practical experience; on-the-job training develops practical skills. The real difference lies in how quickly a graduate adapts. If a graduate takes longer, it may indicate gaps in foundational knowledge, which also reflects the institution they come from.

At NED, we strive to impart the best possible knowledge. Initially, we introduced internships, but when they did not yield the desired results, we modified the model. We now align students with industry from the very beginning. Every student is placed in industry during vacations. By the

time they graduate, they are nearly 75 percent ready to enter professional practice.

In developed countries, industry invests heavily in research and engages students in long-term projects. In Pakistan, however, industry faces constraints and often expects projects to



deliver results within months.

Does Industry Invest in Universities Locally?

In my view, industry investment in universities is limited, except for a few large organizations. Industry-academia interaction generally takes two forms: long-term collaborative projects and short-term problem-

solving assignments, where results are expected quickly.

Another challenge is that our industries often lack scale compared to those in developed countries. Most rely on foreign designs and products, and local operations are largely assembly-based. As a result, decision-

making authority rests with foreign principals, and collaboration ultimately shifts abroad.

Way Forward

Some international models have proven highly successful. In Singapore and Malaysia, industries have established facilities within universities, scaled accord-

ing to mutual capacity. In South Korea, companies like Samsung have set up centers on university campuses.

These arrangements benefit both sides: industries resolve technical challenges through university expertise, while faculty and students remain actively engaged with real-world problems.

We have implemented similar models at NED. K-Electric established its setup first, followed by ABB and several Silicon Valley companies. In all cases, students are actively involved. Recently, we established a Siemens laboratory, which will soon be expanded into a full training center—the company's second in the region after Dubai.

Furthermore, the establishment of a technology park has already been approved with the support of the Sindh government and Kuwait's Enertech. A concession agreement will be signed shortly. This unique model places the technology park within the university premises and will host multiple industries. Agreements will ensure faculty and student engagement.

NED University, Karachi

With a legacy of over

100 years, NED University's graduates are spread across the globe. One of our alumni, Engr. Raghbir, sold his company a few years ago, and more recently, Engr. Rehan Jalil, another NED graduate, sold his company for USD 1.7 billion. The quality of education at NED speaks for itself.

Overall, one major weakness among engineers is limited soft skills, particularly in sales and communication—this is a broader national issue. Another gap relates to keeping pace with modern technological trends. For instance, artificial intelligence is now a reality. We initially launched a dedicated degree program and later integrated AI applications across all degree programs.

I must also appreciate the vision and efforts of Ahsan Iqbal, under whose leadership four centers were initially established in Pakistan, including one at NED. Two more centers, including one for nanomaterials, are now being developed here. I am confident these initiatives will further enhance the quality of education and research at NED University.

— By Manzoor Shaikh

Karachi Development Package

Contd from page 2
sideline major local consultants and contractors by limiting competitive bidding. While FWO typically sub-contracts work to smaller firms—benefiting small and medium contractors—large civilian construction companies may find themselves excluded, potentially impacting the broader construction industry.

Others argue that the issue lies less with FWO's entry and more with the civilian sector's own weaknesses. According to this view, large local firms have struggled with project management efficiency, timely completion, and coordination, creating difficulties for clients. Delays

in fund releases, which are often seen as common in government projects, also remain a critical factor affecting project speed, regardless of the executing agency.

Transparency remains another debated aspect. Some engineers note that allegations of non-transparent contract awards and commissions have long surrounded public-sector projects in Sindh. They caution that unless governance reforms accompany the new partnership, structural issues related to accountability and fair procurement may persist, even if execution improves.

Meanwhile, work on smaller projects has already begun. Karachi Mayor Barister Murtaza Wahab

recently laid the foundation stone for the Suparco Road rehabilitation project in Keamari, being executed at a cost of Rs56 million. The project includes extensive paving and asphalt works aimed at improving traffic flow and civic facilities.

Overall, the Sindh government-FWO partnership represents a bold attempt to reset Karachi's development trajectory. Whether it succeeds in delivering timely, high-quality, and transparent outcomes—while balancing the interests of the local construction industry—will determine if this model becomes a template for future urban development in Sindh. ■

UIT University Eyes Growth and Global Relevance, Says VC Dr. Vali uddin

Contd from page 5
market is emerging, with large projects underway. Engineers are needed everywhere. While we have updated curricula according to requirements, we have not moved fast enough.

Significance of Labs
Another major requirement is laboratories, which are expensive. Labs are needed across disciplines, but when student numbers are low, institutions are reluctant to invest heavily, limiting output. In this

area, the government and PEC should consider how they can help.

University Consortium for Joint Use of Labs

I have raised the issue of labs at PEC as well. High-end labs are capital-intensive; therefore, the government or large institutions should invest in them and allow all universities to use them. We need to work according to our local environment and develop policies, rather than only citing international examples.

UIT Expansion

We urgently need more space. Pakistan has a large youth population, and to introduce new programs and variations, work has been done and final approvals obtained. We are constructing a new building of similar size to the existing one, with a target of completion within three years. Currently, we have around 1,600-1,700 students, which will increase to about 3,500.

— By Manzoor Shaikh

JES
Instrumentation & Controls

Air Venturi Valves

CentraLine HAWK 8000
Niagara 4 Controller

Spyder Model 7
VAV IP Controller

Honeywell Optimizer
Advanced IP Controller

VPI Series PIC Valve

Honeywell Valves

Honeywell Wall Module

302, Europa Centre, Hasrat Mohani Road,
Off. I.I Chundrigar Road, Karachi-Pakistan
info@jes.solution +9221-32626436

An Engineer at the Helm: Engr. Farhat M. Khan on Leadership, Accreditation, and Change Transforming a Young Institution into a Robust University: The Nazeer Hussain University Story

Engr. Farhat M. Khan, Chancellor, Nazeer Hussain University, is a graduate of Dawood College of Engineering & Technology (DCET), Karachi, which has now been transformed into a degree-awarding university.

He is an engineer deeply connected with society and its evolving needs. He is the only head of a university with this distinction. He has been leading the university for the past seven years and has remained actively associated with Pakistan Engineering Council (PEC) activities for several decades. Under his leadership, the institution has undergone significant transformation and emerged as a robust university.

Nazeer Hussain University in Today's Changing World

We held the university's first-ever convocation, at which a total of 800 students were awarded degrees. None of the graduates returned complaining of unemployment. Many secured jobs, while others went abroad to the US, UK, and Australia, with the majority obtaining scholarships. Several are pur-

suing master's degrees and PhDs. This, indeed, reflects the outcome of our efforts.

When I assumed charge of the university, there were many problems. We had only 400-500 students, just two PhDs on the faculty, and none of the degrees were accredited. The biggest challenge was that the degrees were neither verified by the Higher Education Commission (HEC) nor by the Pakistan Engineering Council; they were merely pieces of paper.

Our first priority was to accredit the degrees so that graduates could avail opportunities both within and outside the country. The most important aspect of this achievement was teamwork, despite numerous challenges. The university is owned by a trust that was itself facing financial difficulties. As a young university established in 2013-14, we approached the trust for support, particularly for setting up laboratories. Despite limited resources, the trust extended a helping hand, and with their funding, our laboratories were completed.

By the grace of God, today all our degrees are accredited by relevant bodies, including PEC, Technology Council, Computer Council, Pakistan Pharmacy Council, and others, according to pro-

gram requirements. After PEC approval, we also launched master's degree programs.

From a Young to a



Mature Institution

Today, we have 25 PhDs compared to just two when I joined, 15 departments, and over 2,000 students. These are clear indicators of success, achieved through team spirit despite the difficulties encountered.

We have signed around 30 MoUs with industry. I strongly believe in collaboration and regularly engage with industry to understand their requirements so we can incorporate relevant courses into the curriculum. I do not want graduates without clear career pathways. Our ORIC department

is in contact with international companies, including Microsoft, and we are organizing joint programs as well.

charges. We are also in contact with Cisco and other organizations.

Apart from engineering programs, we send technology students to industry for one year. Their performance is evaluated based on their industrial work. I firmly believe there is no meaningful education without industrial collaboration.

I have also been advocating this model at PEC. I believe we need to introduce an "engineering house job" system, similar to what exists for doctors. It is imperative to evaluate educational outcomes and strengthen collaboration; without this, progress is not possible.

Innovative Composition of Faculty

Our faculty includes both senior and relatively young members. Some are retired from leading universities,

while others are young PhDs. This combination creates an ideal mix—senior faculty bring experience, while younger members contribute innovative ideas. We present facts and realities transparently to regulatory bodies during their visits.

We must train today's youth, as education is often their only means to achieve dignity and success, regardless of where they live. Even those who go abroad often return to serve the country, despite concerns about brain drain.

Use of AI in the University

Artificial intelligence is today's reality. I give credit to the Higher Education Commission for requiring the inclusion of AI in curricula and for ensuring compliance. Learning from technology is essential and highly beneficial.

—By Manzoor Shaikh

Strengthening Industry-Academia Collaboration

Muhammad Haris, CEO of Tariq Electric Hosts UCP Rector Dr. Hammad Naveed

Muhammad Haris, CEO of Tariq Electric, welcomed Dr. Hammad Naveed, Pro Rector of the University of Central Punjab (UCP), along with Iftikhar Hussain, President of the Alumni Associa-

tion, and Usman Khan, into his office. This interaction marks an important step toward strengthening collaboration between industry and academia.



Under Muhammad Haris's leadership, Tariq

Electric has achieved significant growth, expanding its market presence, enhancing operational efficiency, and driving strategic development. The company has also advanced product innovation,

improved supply chain management, and deepened partnerships across commercial and industrial sectors.

development. A respected scholar and administrator, he has played a key role in elevating the university's academic standards, promoting a research-driven culture, and fostering strong industry-academia linkages.

This meeting underscores the shared commitment of both industry and academia to create meaningful collaborations that enhance innovation, research, and professional development.

SMJ
S.M. JAFFER & CO
SINCE 1948

ABB

EXPERIENCE HIGH EFFICIENCY
With the lowest total cost of ownership (TCO)

LARGEST STOCKS IN PAKISTAN:

- Design, Installation, Testing & commissioning of Turnkey Power Solutions.
- Technical expertise and advisory services for the best available Power solutions.
- Annual maintenance contract available.
- Comprehensive warranty with parts.
- Backup time Minutes to Hours.

UPTO 3MW

IDEAL FOR MODERN DATA CENTER DEMANDS

EX-STOCK AVAILABILITY
SEVICE ENGINEERS TRAINED & CERTIFIED BY **ABB**

HEAD OFFICE
Jaffer House, 17-Timber Pond, Keamari, Karachi-75620, Pakistan.

BRANCHES
LAHORE | ISLAMABAD | MULTAN | FAISALABAD | QUETTA | HYDERABAD | SUKKUR

SERVICE CENTERS
| RAHIM YAR KHAN | KOHAT | JHELUM | CHITRAL | MARDAN | MIRPUR KASHMIR | D. I. KHAN | GAWADAR |
| PESHAWAR | GILGIT | JACOBABAD | LARKANA | GUJRAT | ABBOTTABAD | SWAT |
info@smjaffer.com | www.smjaffer.com | 111-765-765

Your Industry Leader in
Prestressed Concrete (PC) Wire, Strands & Spring Wires

PRODUCT YOU CAN TRUST

0300 0552122 | 0303 3336970
www.unitedwire.com.pk
info@unitedwire.com.pk

unitedwire



Change your life

THERE'S A **PEL**
IN EVERY HOME

SINCE 1956

2026



HVACR Cricket Gala Season VIII Concludes Successfully in Lahore

The HVACR Cricket Gala Season VIII, organized by the Pakistan HVACR Society – Lahore Chapter, was held on 8–9 January at

manship, and healthy competition.

A total of 10 teams participated in the tournament. The gala featured 20 league matches, followed by two semifinals, leading to an exciting final match. The final was played between

match was also played between ASHRAE Central Pakistan Chapter and Pakistan HVACR Society Lahore Chapter, which added further excitement to the event. The Pakistan HVACR Society Lahore Chapter won the friendly

organizing committee and chapter chairman Jafar Raza. He also emphasized the importance of such activities in promoting unity, networking, and collaboration within the HVACR community.

The HVACR Cricket



the Khayaban-e-Amin Cricket Ground, Lahore.

The two-day sports event brought together professionals and organizations from the HVACR industry in a spirit of teamwork, sports-

Coolx Electronics and Haier Pakistan, where Haier Pakistan emerged as the champion, winning the title of HVACR Cricket Gala Season VIII.

In addition to the main tournament, a friendly

match, earning applause from participants and spectators alike.

The event was graced by Chief Guest Yousuf Hasan, President of Pakistan HVACR Society, who appreciated the efforts of the

Gala Season VIII concluded on a high note, reinforcing the strong bond within the industry and setting the stage for future events that blend professional engagement with sports and recreation. ■

ESL, GEAR Trust Celebrate Completion of First Professional Training Batch

Energy Solutions (Pvt.) Limited (ESL), guided by its vision to power progress, drive innovation, and build futures, marked a significant milestone with the Pro-

for every generator supplied and solar installation completed.

Leaders of the Future — Investing One Hour at a Time

The Leaders of the Future initiative reflects ESL's belief that progress is driven not only by technology, but by people. Through its partnership with GEAR



fessional Course Completion Ceremony of the first batch of GEAR Trust students—a testament to its growing commitment to community development and sustainable impact.

Trust, ESL launched a structured community empowerment program designed to equip underprivileged youth with relevant skills, industry exposure, and mentorship—preparing them to make meaningful contributions to Pakistan's growing energy and industrial sectors.

The ceremony celebrated the successful completion of an intensive professional training program delivered under ESL's "Leaders of the Future" initiative, a flagship campaign rooted in the company's pledge to dedicate One Man-Hour of Training

The first batch successfully completed 1,424 man-hours of training, covering a wide range of core professional and technical areas, including Service and Product Knowledge, Total Quality Management (TQM),

Contd on page 12

SMJ
S. M. JAFFER & CO
SINCE 1949

Baudouin
MOTEURS
A WEICHAI COMPANY

FRENCH TECHNOLOGY

WITH 100 YEARS PROVEN HISTORY

AFTER SALE SERVICES 24/7

RANGE

20-6250KVA

GENSET FROM OEM (SINGLE SOURCE PRODUCT)

SPECIALIZED FOR DATA CENTERS, HOSPITALS, BANKS AND POWER INDUSTRIES

EMISSION COMPLIANT - ENVIRONMENT FRIENDLY
LONG OVERHAULING INTERVAL (UP TO 32000 HOURS)

IMPORTED & LOCAL COUPLED - Both options available

HEAD OFFICE

Jaffer House, 17-Timber Pond, Keamari, Karachi-75620, Pakistan.

BRANCHES

LAHORE | ISLAMABAD | MULTAN | FAISALABAD | QUETTA | HYDERABAD | SUKKUR

SERVICE CENTERS

| RAHIM YAR KHAN | KOHAT | JHELUM | CHITRAL | MARDAN | MIRPUR KASHMIR | D. I. KHAN | GAWADAR | PESHAWAR | GILGIT | JACOBABAD | LARKANA | GUJRAT | ABBOTTABAD | SWAT |
info@smjaffer.com | www.smjaffer.com | 111-765-765

CHINT | Next

CHINT ELECTRIC | series

The Next Reliable Choice

Air Circuit Breaker | Moulded Case Circuit Breaker | Modular Din Rail Product | Motor Control & Protection

Authorized Distributor

Amejee Valleejee & Sons (Pvt.) Ltd.

Head Office (Karachi): Amejee Chambers, Campbell Street, Karachi-74200. Pakistan.
Phones: +92-21 32625492-5, Fax: +92-21 32627817 & 32621910
Lahore Office: +92-42 36676507-9, Islamabad Office: +92-51 2321191-2,
Email: avsltd@avs.com.pk Web: www.next.chint.com

Haier

More Creation, More Possibilities



WORLD LEADER in MAGNETIC BEARING CENTRIFUGAL CHILLER SOLUTIONS



Zero Friction



Less Noise



Energy Saving



Long Life



IPLV 11.98

Project: **Dominion Mall**
Building Type: **Mall**
Location: **Rawalpindi**
Capacity: **5,000 Ton**



Project: **Park Lane Tower**
Building Type: **Mall & Apartment**
Location: **Islamabad**
Capacity: **1,650 Ton**



Project: **MG Motors**
Building Type: **Industrial**
Location: **Lahore**
Capacity: **700 Ton**



Project: **HBK Hypermarket**
Building Type: **Mall**
Location: **Peshawar**
Capacity: **400 Ton**



Project: **Zong cmpak Head Office**
Building Type: **Office**
Location: **Islamabad**
Capacity: **1,800 Ton**



ESL, GEAR Trust Celebrate Completion of First Professional Training Batch

Contd from page 10
Health, Safety, Security & Environment (HSSE), Ethics and Values, Supply Chain Management (SCM), MS Office, Renewables, Leadership, and Sales.

Following the completion of this foundational program, selected participants

Trust, solidified through a Memorandum of Understanding (MoU) signed at ESL Headquarters by Mr. Muhammad Tariq Haq, CEO of Energy Solutions (Pvt.) Limited, and Mr. Ekhlauque Ahmed, Chairman of GEAR Trust.

This partnership is

Energy
The Leaders of the Future initiative adds another meaningful dimension to ESL's broader sustainability vision. Alongside its ongoing tree plantation drive, pledging to plant a tree for every generator supplied and solar installed, this program



will move on to specialized training aligned with their areas of interest, with pathways leading toward employment opportunities, reinforcing ESL's commitment to long-term workforce development.

A Partnership with Purpose

The program is the result of a formal collaboration between ESL and GEAR

designed to deliver structured, high-impact training programs focused on technical expertise, leadership development, and professional growth. With additional batches planned under the initiative, ESL aims to scale its impact and extend these learning opportunities to more aspiring individuals in the future.

Sustainability Beyond

reflects ESL's holistic approach to social and environmental responsibility. By investing simultaneously in people and the planet, Energy Solutions (Pvt.) Limited continues to demonstrate that powering progress goes beyond energy solutions—it is about creating pathways for education, opportunity, and lasting community upliftment. ■

Tribute to Engr. Humayun Mazhar Qureshi (1947-2025)

The Pakistan Engineers Forum (PEF)

Dr. Bashir Lakhani, Director, Techno Consult (Water Division); former President of the Pakistan Software

unwavering commitment to the Pakistan Engineers Forum, and his passion for empowering young engi-



held a condolence reference for Engr. Humayun Mazhar Qureshi, a founding member of the Forum and a dedicated mentor to generations of engineers.

Friends, family members, and colleagues gathered at Faran Club, Karachi, to pay tribute to his life and services.

Former Governor of Sindh Muhammad Zubair;

Houses Association (P@SHA) Jehan Ara; Engr.



neers. His cousin, Engr. Ashir Ahmed, and his close friend, Dr. Irfan Hyder, Vice Chancellor of Salim Habib University, recalled his guidance, gentle demeanor, and lifelong mentorship.

Engr. Humayun was remembered for his kindness, humility, and readi-

Hafiz Haider Ali; President PEF Engr. Sabir Ahmed; Engr. Masood Jammi; Ashraf Kapadia; and Engr. Abdul Saboor Zaman shared their memories and



expressed heartfelt sentiments about Engr. Humayun.

Speakers paid rich tribute to Engr. Humayun's selfless contributions to the engineering community, his

ness to help others, leaving a lasting impact on all who knew him.

PEF Karachi also paid a special tribute in recognition of his countless and unparalleled contributions, particularly to the PEF Karachi team. Engr. Muhammad Imran, President PEF Sindh South, delivered the vote of thanks, while the programme concluded with a Dua led by Mr. Farooq Ahmed Memon. ■

Regions Leading Dedicated HVACR EXPO



31st PAKISTAN HVACR EXPO 2026
INTERNATIONAL & CONFERENCE
FEB 12, 13, 14 | KARACHI EXPO CENTRE



CREATING SUSTAINABLE ENVIRONMENT THROUGH NEXT-GENERATION HVACR INNOVATIONS

Supported Association



Organized By



Supported By



www.hvacrexpo.org.pk hvacr.events@gmail.com /PakistanHVACRSociety

إِنَّا لِلّٰهِ وَإِنَّا إِلَيْهِ رَاجِعُونَ

نرم دم گفتگو، گرم دم جستجو

انجینئر ہمایوں مظہر قریشی



کے انتقال پر ملال پر ہم ان کے اہل خانہ،

دوست احباب اور انجینئر زبرداری کے غم میں برابر کے شریک ہیں۔
انجینئر ہمایوں مظہر قریشی مرحوم انتہائی نرم گفتار اور شفیق انسان تھے۔
ہماری دعا ہے کہ اللہ تعالیٰ ہمارے پیارے ہمایوں مظہر قریشی صاحب کی مغفرت فرمائے اور ان کے درجات کو بلند فرمائے آمین۔



IMTIC25: 17 Years Of A Remarkable Journey

A journey that began with a vision, grew with collaboration, and now stands as a global symbol of academic excellence, innovation, and impact

The Inaugural Ceremony of the 8th International Multi-Topic ICT Conference (IMTIC'25) was jointly organized by Mehran University of Engineering & Technology and Sir Syed University of Engineering & Technology at the USPCAS-W Auditorium, MUET Jamshoro, with technical collaboration from IEEE and IEEE Karachi Section.

The theme of the conference was "AI-Driven Innovations Across Disciplines for a Resilient and Sustainable Infrastructure."

The ceremony was attended by a large gathering of local and international research scholars. Distinguished keynote speakers include Prof. Enrique Nava (University of Malaga, Spain), Prof. Muhammad Zeeshan Shakir (University of the West of Scotland, United Kingdom), Dr. Atif Siddiqui (Airbus Defence & Space, United Kingdom), Prof. Adeel Razi (Monash

University, Australia) and Prof. Syed Ali Hassan (NUST Pakistan). IMTIC'25 is the flagship conference of MUET Jamshoro, with a strong legacy beginning from its first edition in 2008, followed by successful editions in 2012,

rapidly expanding role of artificial intelligence in driving innovation across multiple disciplines.

On the occasion, Vice Chancellor MUET, Prof. Dr. Tauha Hussain Ali, emphasized the critical role of inter-

of collective accomplishment, stating that the three-day conference provided an effective forum for exploring state-of-the-art ideas through in-depth discussions and meaningful scholarly exchange.

Speaking on the auspicious occasion, Prof.

MUET and SSUET on the global academic map by enabling international research linkages, joint projects, and sustained engagement with leading researchers worldwide.

Prof. Muhammad Aamir,

form for disseminating innovative ideas across emerging areas of information and communication technologies.

Dr. Umair Ahmed Korai, IMTIC'25 Co-Chair, presented IMTIC'25 statistics, noting that 95 manuscripts were received, of which 34 were accepted, resulting in an acceptance rate of 35.7%. He added that the accepted papers were presented by authors from Bahrain, Bangladesh, Canada, Germany, Italy, Malaysia, Oman, Saudi Arabia, Spain, Turkey, the United Kingdom, and the United States of America, reflecting the conference's strong international outreach.

Presenting the vote of thanks, Prof. Faisal K. Shaikh, IMTIC'25 Chair, expressed sincere gratitude to the Chief Guest, Chancellor SSUET, Vice Chancellors of MUET and SSUET, keynote speakers, organizers, sponsors, authors, and participants. He acknowledged the collective efforts of all stakeholders for making the inaugural ceremony and the conference a successful and impactful academic event, and extended best wishes for continued collaboration in future editions of IMTIC. ■



2013, 2015, 2018, 2021, 2023, and now its 8th edition in 2025.

Addressing the ceremony, the Chief Guest, former Vice Chancellor MUET, Prof. Dr. Abdul Qadeer Rajput, shared valuable insights on the importance of knowledge sharing and highlighted the

university, industry, and international collaboration in advancing research and innovation. He noted that IMTIC has become a strong platform for fostering long-term academic partnerships, joint research initiatives, and global networking opportunities. He further expressed a sense

of collective accomplishment, stating that the three-day conference provided an effective forum for exploring state-of-the-art ideas through in-depth discussions and meaningful scholarly exchange.

Prof. Muhammad Aamir, IMTIC'25 General Chair, stated that IMTIC has been a regular and growing academic feature of both MUET and SSUET. He emphasized the conference's role in promoting high-quality research, encouraging young researchers, and providing a credible international plat-

IEP Karachi Celebrates Newly Elected Office-Bearers at Gala Dinner

Contd from page 04

the institution's Karachi Chapter, the event was organised by Engr. M. Aijazul Haque.

Senior and elected engineers from Lahore, Islamabad, and Hyderabad gathered at the dinner and were addressed by the newly elected President, Engr. Sohail Bashir; Vice President Engr. Ameer Zamir;

and the outgoing President, Engr. Farhat Adil.

Addressing the gathering, Engr. Sohail Bashir said that engineers across Pakistan actively participated in the elections, with voter turnout being the highest ever in the institution's history. He said the elections were now over and it was time to move forward and determine future priorities.

He added that the new leadership would continue the institution's legacy and strengthen IEP's representation of Pakistan at international forums. He noted that IEP has bilateral agreements with more than 50 countries and that international engagement had remained dormant in recent years, which the new team aims to revive.

Engr. Bashir announced

plans to organise a series of international conferences across the country—not only in Karachi but also in Hyderabad, Multan, Faisalabad, Lahore, Islamabad, and Peshawar. "We aim to create a nationwide web of conferences, which will require teamwork, and we are committed to working collectively to achieve these goals," he said.

Engr. Ameer Zamir, Secretary of the IEP Elec-

tion Commission, highlighted the comprehensiveness of the electoral process and termed it a positive development that the elections were successfully held. He said the results reflected participation by engineers from across the country, from Khyber to Karachi.

He appreciated the services of former President Engr. Farhat Adil and expressed high expectations

from the newly elected President, Engr. Sohail Bashir, recalling his exemplary performance as Chairman of the Karachi Chapter. He expressed confidence that Engr. Bashir would take the institution to new heights.

The moot was also addressed by the chief guest, Dr. Sarosh Lodhi, as well as elected presidents of Lahore and other IEP centres.

Professional Club

ASSOCIATED CONSULTING ENGINEERS ACE LIMITED

Established in 1958, ACE, being a multi-disciplinary and multi-sectorial organization, has become one of the premier engineering consulting house of Pakistan in the Private Sector.

FIELDS OF ACTIVITIES:

- Dams and Barrages • Irrigation and Drainage • Power Engineering
- Public Health Engineering • Architecture and Town Planning
- Highways & Transportation Engineering
- Environmental Impact Assessment • Socio-Economic Studies
- Industrial Engineering • Hydraulic Structures
- Environmental Planning • Ground Water Resources Development
- River Basin Projects • Flood Control

SERVICES:

- Project Planning • Surveys & Investigations
- Feasibility Studies • Conceptual Designs
- Preliminary & Detailed Designs • Tender Documents
- Contract Award Process • Construction Supervision
- Management Consultancy • Inspection & Remedial Works
- Operation & Maintenance • Project Management
- Institutional Development & Capacity Building
- Training

website: www.acepakistan.com

Corporate Office
D-185, KDA Scheme No. 1, Tipu Sultan Road, Karachi-75350, Pakistan
Tel: (92-21)34530825, 34534128, 34539219
Fax: (92-21)34546679 Email: corporate@acepakistan.com

Regional Office (North)
1/C-2, M.M. Alam Road, Gulberg-III, Lahore-54660
Tel: (92-42)35759417-9 Fax: (92-42)35878278
Email: aceron@brain.net.pk, aceron@acepakistan.com

Regional Office (South)
C-35, Muhammad Ali Cooperative Housing Society, Tipu Sultan Road, Karachi-75350.
Tel: (92-21)34320171-76 Fax: (92-21)34141175
Email: acesouth@gmail.com, acesouth@acepakistan.com

Transportation Engineering Services
36-Civic Centre, 3rd Floor, M-Block, Model Town Ext. Lahore-54700
Tel: (92-42)35171081-3 Fax: (92-42)35171084
Email: ace.transportationdiv@gmail.com

ACE Architectural & Town Planning Services
36-Civic Centre, Ground Floor, M - Block, Model Town Ext. Lahore-54700.
Tel: (92-42) 35170871-4 Fax: (92-42) 35170875
Email: acearts@r@gmail.com

Islamabad Office
Suit # 101, Victoria Heights, Sohan, (Near Sohan Overhead Bridge), Main Service Road East, Islamabad Expressway, Islamabad
Tel: (92-51) 2612283, Fax: (92-51) 2612294, WhatsApp: 0309-6649732

Peshawar Office
House No. 1945, Afzalabad Old Bara Road, University Town, Peshawar
Tel: (92-91) 5700397
Email: acespeshawar@acepakistan.com

Foreign Offices: Malaysia, Indonesia

NATIONAL DEVELOPMENT CONSULTANTS (PVT.) LIMITED

FIELDS OF ACTIVITIES

- Dams & Hydropower
- Irrigation & Drainage Design
- River Training & Flood
- Transportation & Tunneling
- Public Health & Environmental
- Agriculture & On-Farm
- Building & Urban
- Physical & Numerical
- Surveys & Investigations

SERVICES

- Feasibility Studies
- Detailed Engineering Design
- Contract Administration
- Construction Supervision
- Third Party Validation
- Engineering/Monitoring
- Tender Documentation
- Water Management Bid Evaluation
- Rehabilitation Including Development QA/QC
- Operation &

NDC Head Office:
114, Sector-A, Commercial Broadway, Phase-VIII, Defence Housing Authority, Lahore, Pakistan
+92-42-37135034-37 +92-42-37135038
ndc@ndcpak.com www.ndcpak.com

SEP
SEMA EMERGENCY CONSULTANTS

YOUR MEP DESIGN PARTNER

40+ YEARS OF LEGACY | 1500+ PROJECTS | 150+ STAFF

- HVAC
- ELECTRICAL
- IT & COMMUNICATION
- SAFETY & SECURITY
- LEED CERTIFICATION
- FIRE PROTECTION
- PLUMBING & SANITARY
- VERTICAL TRANSPORT
- LIFE SAFETY
- BIM SERVICES

AFFILIATIONS

ISO 9001 Certified

Eleken
ASSOCIATES
Consulting Engineers, MEP & IT

Electrical

- Power Generation
- HV, MV, LV Distribution System
- Electronic Safety & Security
- Automation & IBMS
- Renewable Energy

M & P

- HVAC System
- Plumbing
- Fire-Fighting
- Water Treatment

Specialized Services

- Value Engineering
- Construction Management
- Energy Audit

eleken@eleken.com
021 3432-5537
Suite 513, RSM Square, Shaheed-e-millat, Karachi

AE ADVANCE ENGINEERING ASSOCIATES
MEP and Renewable Energy Consulting Engineers

We offer consultancy services in the following fields:

- Power Generation & Distribution
- Internal & External Lighting
- Flood Lighting
- Heating, Ventilation & Air-Conditioning
- Tariff & Bill verification
- Earthing & Lightning Protection
- Co-Generation System
- Renewable Energy (Solar PV & Wind)
- Fire Alarm & Security Systems
- Fire Fighting Systems
- Networking & CC TV
- Industrial Environment Control

Energy Audit & Safety Survey of Electrical & Mechanical Systems

Suite # 313, 3rd Floor, Anum Estate, Shakra-e-Faisal, Karachi- 75350.
Tel: +92 21 34311985-6; Cell: +92 345 2123474
E-mail: info@aea.agc-green.com - ae.associates@yahoo.com
web: www.aea.agc-green.com

ADOMATION
www.cadomation.com

- CAD Customization
- CAD Migration
- CAD Cartography
- CAD Automation
- CAD Drafting
- 3D Printing & Diorama

THE SPATIO
Engineering & Geo-Spatial Consultants

92-42-3546 898 2
info@thespatio.com info@cadomation.com
www.thespatio.com www.cadomation.com

KPWS CONSULTING

We operate in the following areas:

- Electrical and Power Engineering
- Building Systems
- Power Generation & Heat Recovery
- Energy Management
- Renewable Energy
- HVAC
- Plumbing, Water treatment
- Firefighting
- Industrial utilities
- Solid Waste treatment & disposal

Our Services include:

- Engineering services: End-to-end conceptualization, design, documentation, tendering, procurement support and construction supervision
- Studies: Feasibility and specialist techno-commercial studies related to Energy, Power systems, Mechanical systems, Plumbing, Security, etc.
- Audits: Fire Safety, Energy, System Healthiness, Power Quality, Hazardous Installations, etc.
- Renovation/Augmentation: Electrical, HVAC, Plumbing, ICT, Building Systems, Security, Utilities, etc.

304, Progressive Square, Block-6, PECHS, Shakrae Faisal, Karachi - 75400
T: (+9221) 3432 1350-1 | info@kpwsconsulting.com | www.kpwsconsulting.com

Disruptive Innovations in Green Technologies

Engr. Dr. Muhammad Nawaz Iqbal

Disruptive innovation in green technologies is transforming the manner in which societies generate, use, and manage resources by fundamentally changing cost structures and performance standards.

Such innovations differ from incremental ones and change the nature of markets, as sustainable solutions are now available, scalable, and more affordable. They challenge old systems that were developed based on fossil energy and resource-intensive processes, and industries need to think differently about growth and efficiency.

The democratization of energy generation is one of the most significant upheavals. Solar photovoltaics, which were initially prohibitively expensive, have developed into moderately priced systems that can be modified into small units, allowing households and small businesses to become energy producers. This transformation undermines centralized utilities and brings a stronger, decentralized

energy ecosystem that aligns environmental sustainability with energy security.

This disruption is further being spurred by energy storage technologies that address the issue of the intermittency of renewable energy. Developments in lithium-ion batteries, solid-state designs, and other chemistries are changing storage from a technical limitation to strategic enablement. Renewable energy systems will become more reliable as storage becomes lower in cost, more efficient, and competitive with conventional baseload power plants.

Another disruptive frontier is green hydrogen, which provides a clean substitute in areas that are hard to electrify. Industries such as steel, chemicals, and heavy transportation have pathways to decarbonize while enhancing performance through innovations in electrolysis and renewable hydrogen production. This challenges the long-standing belief that deep decarbonization of industry is not economically viable.

Electric mobility and shared transport platforms are redefining the transportation industry. Electric cars are not merely replacing internal combustion

engines; they are creating a new definition of mobility as a service through software integration, autonomous driving potential, and data-driven optimization. This convergence not only challenges traditional automotive business models but also accelerates the reduction of oil dependency.

Agricultural technologies are also no exception, as precision farming, vertical agriculture, and bio-based inputs are reducing environmental impact while increasing yields. Green agritech solutions using sensors, data analytics, and renewable energy have the potential to disrupt traditional farming practices that are resource-intensive in terms of water, chemicals, and land. These innovations make sustainability a driver of food security rather than a limiting factor.

Green technologies in the built environment are transforming buildings from passive energy consumers into active participants in energy systems. Intelligent energy management, net-zero buildings, and smart materials minimize emissions and improve occupant comfort. This disrupts the real estate and construction industries by shifting value from square footage to energy

performance and lifecycle efficiency.

Waste is being redefined within the circular economy through innovation. Technologies that facilitate recycling, remanufacturing, and biodegradation disrupt linear take-make-dispose models by closing material loops. These innovations challenge manufacturers to design products with end-of-life value in mind, reshaping supply chains and revenue models.

Digital technologies are paramount in amplifying green disruption through transparency and optimization. The Internet of Things, artificial intelligence, and blockchain enhance monitoring of emissions, resource use, and compliance. These tools become disruptive by embedding sustainability into operational decision-making, unlike traditional regulatory and reporting systems.

Financial innovation is also disruptive in accelerating green technologies. New channels for capital flow into sustainable projects include green bonds, carbon markets, and impact-investing platforms. These mechanisms challenge traditional investment logic by pricing environmental risk and reward,

which were often previously ignored.

Geopolitics is also being reshaped, as disruptive green technologies reduce reliance on fossil fuel-rich regions. Energy sovereignty increases as countries invest in local renewable resources and clean technologies. This realignment of power relations creates new strategic alliances centered on technology, critical minerals, and innovation capacity.

Social acceptance and behavioral change are increasingly important facilitators of disruption. User-friendly green technologies lower mental and financial barriers to sustainable choices, making adoption less about sacrifice and more about value creation. This transforms sustainability from a moral obligation into a rational consumer choice.

Disruptive green innovation can be accelerated or slowed by policy frameworks. Favorable regulations enable pilot projects and market access, allowing new technologies to compete with incumbents. Conversely, rigid policies tend to protect legacy systems that hinder the diffusion of transformative solutions.

Disruptive innovation in green technologies is



also reshaping labor markets and skill requirements. Renewable engineering, data analytics, and sustainability management are creating new roles, while existing jobs are being redefined or phased out. This transition requires substantial investment in education and reskilling to ensure inclusive outcomes.

Ultimately, the true disruption of green technologies lies in their ability to deliver business competitiveness alongside environmental integrity. They challenge conventional notions of progress by demonstrating that sustainability and profitability are not mutually exclusive. They signal a systemic shift in which environmental responsibility becomes a core driver of long-term value creation. ■

Professional Club



NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LIMITED

A WORLD CLASS ORGANISATION OF CONSULTING ENGINEERS

FIELDS OF SPECIALISATION: Power and Mechanical, Water Resources Development, Agriculture, Architecture and Planning, Highways and Bridges, Airports and Seaports, Environmental and Public Health Engineering, Engineering for Industry, Building Services, Heating, Ventilation & Air-Conditioning (HVAC), Renewable Energy, Disaster Management and Reconstruction, Information Technology, Geographical Information System

SERVICES: Pre-feasibility and Feasibility Studies, Surveys, Planning, Investigations, Designs, Design Review and Vetting, Tender and Contract Documents, Construction/ Installation Supervision, Contract Management, Post-Construction Services, Public Private Partnership BOT Project Services, Asset Valuation

HEAD OFFICE NESPAC House, 1-C, Block-N, Model Town Extension, P. O. Box: 1351 Lahore 54700, Pakistan
Tel: 92-42-99090000 Fax: 92-42-99231950
E-mail: info@nespak.com.pk Website: www.nespak.com.pk

REGIONAL OFFICES Karachi Islamabad Quetta Peshawar
OVERSEAS OFFICES Riyadh Muscat Doha Kabul



Fahim, Nanji & deSouza (Pvt.) Limited
Consulting Engineers
FND

OUR MEP SERVICES

MECHANICAL

- Air-Conditioning & Refrigeration
- Cogeneration
- Plumbing
- Fire Protection
- Steam Plants
- LPG - Air Mix Plant
- Oil Storage
- Fire & Life Safety Analysis
- Alternate Energy Systems
- Acoustical Engineering
- Solid Waste Management

ELECTRICAL

- Power Distribution
- Lighting Design
- Communication
- Fire & Security Alarm Systems
- Stand-by Emergency Power
- ELV Systems
- Vertical Transportation System
- Building Management Systems
- Electrical Safety Audit

4th Floor, ILACO House, State Life Building No.5,
Abdullah Haroon Road, Saddar, Karachi-74400, Pakistan
Phone: 92-21-35637878 & 82
Email: info@fnd.com.pk
Website: www.fnd.com.pk

The First Engineering Consultancy Company

ECIL

since 1959 in Pakistan

SERVICES

- Transportation
- Roads & Highways
- Marine
- Architecture & Planning
- Environmental
- Special Services
- Non-Destructive Testing (NDT)
- Post Completion Audit
- Project Management
- Power
- Economic Feasibility
- Data Collection
- Irrigation & Agriculture
- Surveying
- Investigation
- Research & Development
- Asset

Engineering Consultants International (Pvt.) Ltd.
Head Office: 29, Block 7/8, D.A.C.H. Society, Sharea Faisal, Karachi-75350 PAKISTAN
Voice: +92 (21) 3454-2290 (4 lines) 3430 2271 (4 lines),
Fax: +92 (21) 3454-5255,
E-mail: info@ecil.com URL: http://www.ecil.com

ISLAMABAD 23-A, Bhattar Road, (Old School Road), Sector F-7/1, Islamabad
Ph: +92 (51) 265 1993 (3 lines)
Fax: +92 (51) 265 1996,
E-mail: info@ecil.com

HOUSTON, United States of America
611, 6011 Hircroft Avenue,
Houston, TX 77081, USA
Ph: +1 713 272 7184, Fax: +1 713 995 4744,
E-mail: info@ecil.com

ALMATY, Kazakhstan
925, 142 Bogenbay Batyr Street,
Almaty 480091, Kazakhstan
Tel/Fax: +7 (3272) 508 001, 508 002
E-mail: info@ecil.com

DUBAI, UAE
307 Al-Nayef Building, Abu Hail Road,
P.O. Box: 96544, Dubai, U.A.E.
Ph: +971 4 297 3268, Fax: +971 4 297 3299
E-mail: info@ecil.com

Techno-Consult International (Pvt.) Ltd.
Consulting Engineers
Over 50 years of Professional Services

37 - K, Block -6, P.E.C.H.S., Karachi - 75400 Pakistan,
Tel: (92-21)3453 0630/31/32, 34557392, 34557425
Fax: (92-21)3454 6606 E-mail: email@techno-consult.com

Maritime Ports Harbours Coastal Engineering, Dams
Irrigation Canals Water Resource, Roads & Highways.
TCI is very Senior Consulting Engineering firm of Pakistan.

Engr. Al Kazim Mansoor
B.E. (Civil), M.S. Geotech (U.S.A.) P.E.
Consulting Engineer
0300-8207186

Geotechnical, Material, Structural Engineering & Testing Laboratories

SOILMAT ENGINEERS
B-136, Block 1, Opp: N.E.D. University,
Main University Road, Gullistan-e-Jauhar, Karachi.
Ph: 34623161-2, 35458647; Fax: 021-34632483
Web site: www.soilmateengineers.com

JAFRI AND ASSOCIATES (Pvt) Ltd.
CONSULTING ENGINEERS

Since 1971

Electrical
Grid Stations, EHV/MV/LV Distribution System; Commercial; Residential; Industrial Installation; BMS Bldg LV system; Computer Networking; Lifts and Escalators.

Energy and Power Generation
Energy Audit/ Conservation; Energy Management Systems; Standby and Base Load Power Generation, Co-Generation; Solar Energy; Wind Energy; Renewable Sources e.g. MSW and Bio Mass Based Plants etc.

Heating, Ventilation and Airconditioning
Air-conditioning of all types of buildings; Refrigeration Systems; Humidification; Air Treatment; etc.

Room # 206, 2nd Floor, Ibrahim Trade Tower,
Maqbool Co-operative Housing Society,
Shahra-e-Faisal, Karachi 75400.
Ph # +92-21-34327671-4,
Fax # +92-21-3432 7675
E-mail: jafriandassociates@gmail.com
website: www.jafriandassociates.com.pk

Ihtisham H. Zarrar
B.Se (Civil Engg)
M. Sc Struct. (London)
M.I.E (Pak), P.E (Pak)

Services:
Highway • Bridges
Structures • Communication Towers
• Architecture

Engineering Design Bureau
Consulting Engineers, Planners & Architects

38-A Nazam-ud-Din Road, F-7/1 Islamabad, Ph: +92-51-8432832, 8432833 Fax: +92-51-2651020 E-mail: izarrar@edb.com.pk

216-A, Ground Floor, S.M.C.H.S. Karachi, Ph: +92-21-34525111 Fax: +92-21-34556128 E-mail: izarrar@edb.com.pk

271-M, Model Town Extension, Lahore, Ph: +92-42-35169798, 35177494 Fax: +92-42-35168429 E-mail: izarrar@edb.com.pk

Our presence is everywhere

ENGINEERING REVIEW
The voice of engineers

WhatsApp Facebook Twitter YouTube TikTok LinkedIn



آوازِ اقبال

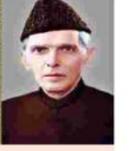
اقبال کا ترانہ ہاگک دور ہے گویا ہوتا ہے جاوہر جیہا نجر کارواں ہمارا

اے ہمالہ کوئی بازی گاہ ہے تو بھیجئے دست قدرت نے بنایا ہے عناصر کے لئے ہائے کیا فرط طرب میں جھومتا جاتا ہے ابر میل بے زنجیر کی صورت اڑا جاتا ہے ابر

تیری عمر رفتہ کی اک آن ہے عہد کہن وادیوں میں ہیں تیری کالی گھٹائیں خیمہ زن چوٹیاں تیری ثریا سے ہیں سرگرم سخن تو زمیں پر اور پہنائے فلک تیرا وطن چشمہ دامن ترا آئینہ سیال ہے دامن موج ہوا جس کے لئے رومال ہے ابر کے ہاتھوں میں رہوار ہوا کے واسطے تازیانہ دے دیا برق سر کوہسار نے

کلوئے کلوئے کر رکھے ہیں۔ ہندوستان کے نقشہ پر مسلم ہندوستان اور ہندو ہندوستان پہلے ہی سے موجود ہیں نہ معلوم اس کے متعلق اتنا ویسا کیوں کیا جاتا ہے۔ وہ ملک ہے کہاں جس کے کلوئے کلوئے کیے جائیں گے؟ اور وہ قوم کہاں ہے جس کی قومیت فنا کی جانے کو ہے؟ وہ طاقت جس کے قبضہ قدرت میں آج ہندوستان ہے وہ انگریزوں کی طاقت ہے اور یہ جو ایک خیال دماغوں میں بیٹھ گیا ہے کہ ہندوستان ایک متحدہ ملک ہے اور اس کی اپنی حکومت ہے وہ صرف اس وجہ سے ہے کہ انگریز اس سارے ملک پر حکمران ہیں۔ (مسلم لیگ کانفرنس، بمبئی، 26 جنوری 1940ء)

فرمانِ قائد اعظم
ایمان، اتحاد، تنظیم



اصول اور تفصیلات

گاندھی جی کہتے ہیں: ہندوستان کو جیتنے کی جگہ کلوئے کلوئے کیا جا رہا ہے۔ راج گوبل چاریہ کہتے ہیں: بچے کلوئے کلوئے کیے جا رہے ہیں۔ قدرت نے پہلے ہی سے ہندوستان کو تقسیم کر رکھا ہے اور اس کے

GOLDEN JUBILEE



Founder

Najamul Hasan (Marhoom)

Funding Editor

Riazul Hasan (Marhoom)

Publisher / Managing Editor

Muhammad Salahuddin

Editor

Manzoor Shaikh

Honorary Consulting Editors

Prof. B. S. Chaudhry Education
Engr. Farhat Adil Civil Engg.
Engr. Khalid Pervaiz Elect. Engg.
Engr. Sohail P. Ahmed Industry
Dr. M. Nawaz Iqbal

Graphic Designer

Shaikh Muhammad Raza ur Rehman

Production Manager

Waheed Ahmed

Social Media

Muhammad Amin

Branch Manager (Lahore)

Hamza Idrees

Regional Manager (Islamabad & North)

Muhammad Arif

Annual Subscription

Rs. 2,400

Advertisement Tariff

Display Ads (Colour)

Per Col. cm Rs.425

Full Page	240 Col.cm	Rs. 102,000
½ Page	120 Col.cm	Rs. 51,000
¼ Page	60 Col.cm	Rs. 25,500
¼ Page	30 Col.cm	Rs. 12,750

Engineering Bazar

A package for small budgets

Inserts	10 Col.cm	15 Col.cm	20 Col.cm
24	Rs.75,000	Rs.112,000	Rs.149,000
12	Rs.38,500	Rs.57,000	Rs. 76,500

Professionals' Club

Only for listing consultants' specialities

Inserts	4x6 cm	8x6 cm	8x12 cm
24	Rs.35,000	Rs.69,000	Rs.137,500
12	Rs.18,000	Rs.36,000	Rs. 70,500

Printer

Aslam Zaki, Ayisha Printers,
Eveready Chambers,
Off: Chundrigar Road, Karachi.



Member All Pakistan Newspapers Society

Head Office

305, Spotlight Chambers, Dr. Billimoria Street,
Off: Chundrigar Road, GPO Box 807,
Karachi-74200, Pakistan.
Ph: 021-3221-5961-62
+92 335 2246787

Email: info@engineeringreview.com.pk
engineeringreview@yahoo.com

Lahore

Room # 29, 6th Floor

Goldmine Plaza

105-Ferozpur Road Lahore.

Ph: 042-3540-4622; Mobile: 0322-4881881

Email: engineeringreview_lahore@yahoo.com

Islamabad

3-B, Basement Tripple One Plaza,
Fazle Haq Road, Blue Area, Islamabad.
Ph: 051-2348-6200 Mobile: 0300-9202824
Email: engineeringreview_isb@gmail.com

www.engineeringreview.com.pk



PHVACR Faisalabad Chairman Abdul Raheem Unveils Plans for Seminars and Mini Expo

It is a great honor and privilege for me to serve as the Chairman of the PHVACR Society Faisalabad Chapter.

I am deeply grateful for the trust and confidence shown by our members. We are committed to the growth, development, and modernization of the HVACR industry in Pakistan, said Abdul Raheem, Chairman, PHVACR Society Faisalabad Chapter, while outlining his plans

technical seminars and training sessions in different cities. These seminars will focus on modern HVACR technologies, energy effi-



In addition to technical seminars, we are proud to announce that the PHVACR Society Faisalabad Chapter will organize a Mini Expo in Faisalabad. Faisalabad, being a major industrial hub, is an ideal city to bring manufacturers, suppliers, professionals, and young talent onto one platform. This Mini Expo will provide opportunities for networking, product displays, technology demonstrations, and business growth within the HVACR sector.

Our mission is to



for his tenure.

The PHVACR Society has always believed in knowledge sharing and skill development. Keeping this vision in mind, we are planning to conduct a series of

ciency, safety standards, and practical solutions. Engineers and semi-skilled workers will benefit from these seminars by upgrading their skills and knowledge.

empower professionals and support local industry. The PHVACR Society will continue to play a vital role in shaping a strong and skilled HVACR community. ■

PEC Expands GET Placement

Contd from page 3

is the highest. While the number of engineers benefiting is currently limited, this will be expanded so that more young engineers can train with reputable organizations and excel professionally," he said.

Industry representatives also strongly endorsed the program. Adil Riaz, Director HR at Pakistan Cables, said the initiative provides young engineers with vital exposure to real industrial environments. "It is the responsibility of industry to build engineering capacity. We believe in rotating trainees and grooming them for leadership roles, just as we have done as a seven-decade-old organization," he noted.

Ms. Tehmina from Yunus Textile Mills said the program aligns with the company's vision of "Textile for Better Life." "The combination of technical training and soft skills development will help transform fresh graduates into better professionals through continuous grooming and on-the-job coaching," she said.

Owais Khan of Alsons Group said the program offers an excellent opportunity to bring young talent into the industry. "We fully support this initiative so that engineers' potential is utilized from day one," he added.

Another industry representative, Mr. Kashan, said the GET Program would benefit both engineers and industry by strengthening industry-academia collaboration. "This is the model Pakistan needed, and it must continue in the future," he remarked.

Before the Karachi ceremony, PEC had already rolled out the GET Placement Program across multiple regions of Pakistan. With more than 45 partner organizations now on board nationwide, the initiative is emerging as a sustainable national framework for professional engineering development—transforming academic knowledge into practical competence and preparing young engineers to meet real-world challenges. — ER Report

BISMILLAH HIR REHMAN NIR RAHEEM

Surah Al-Mutaffifin – The Defrauders

By Muhammad Tariq Haq | www.eslpc.com

With weights and with measures, they cheated and lied,
— Their hearts sick with taffif, swollen with pride.

They demand their full share whenever supplied,
— Yet when giving to others, the measure's denied.

Do they never reflect on the Day they'll be tried,
— When before their Lord they'll stand, stunned and wide-eyed?

A Day of vast terror none living can avoid,
— When the veils of the soul are all torn aside.

The rust on their hearts has hardened and dried,
— By the sins they committed and the Truth they defied.

From the light of their Lord they are utterly deprived,
— To the blaze of the Fire they are driven to reside.

Their record lies buried in Sijjin inside,
— A register sealed for the wicked who lied.

They laughed at the faithful as believers passed by,
— Winking and whispering, mockery beside.

Returning to kin, they boasted with pride,
— "Indeed these are lost," they arrogantly cried.

But now the believers in honor reside,
— On couches of splendor where joys multiply.

With faces made radiant, hearts satisfied,
— In ILLIYIN their record is described.

They drink of a nectar, pure, sealed, and refined,
— Its fragrance of musk—let the strivers then strive.

Mixed with Tasnim, from a spring highly prized,
— Drunk by the Near-Ones, the souls purified.

Today the believers look on in delight,
— While the scoffers stand humbled, disgraced, and despised.

The pure and the pious eternally thrive,
— While the cheats and deceivers are cast aside.

Yet mercy still awaits the souls who decide,
— To return and repent with the Truth as guiding light.

For the Lord is Forgiving to those who have tried,
— Before falls the curtain—when the Last Hour arrives.

Multiple Purpose Raw Food Washer
(Meat, Vegetables & Fruits)

LOW WATER CONSUMPTION
THOROUGH CLEANING
EASY TO USE
TIME SAVING
LOW LABOUR COST
INCREASE PROFITABILITY

NETWORK TRADE MARKETING
Ph: +92-21-36707233 - 36608964; Cell: +92 300 8299153
E-mail: ntmpiab@gmail.com Website: www.nmpk.com

پندرہ روزہ

جینرل ریویو

GOLDEN JUBILEE
50
ENGINEERING REVIEW
1975 - 2025

بانی: نجم الحسن بانی ایڈیٹر: ریاض الحسن

+92-21-32215961-2, 32632567 • فون: 16-31, 2026 • جنوری 02 • شمارہ نمبر: 51 • جلد نمبر: 51
www.engineeringreview.com.pk • ویب سائٹ: info@engineeringreview.com.pk • ای میل:



www.engineerigreview.com.pk www.youtube.com/engineeringreviewER

چمن، کوئٹہ، کراچی شاہراہ کو
2 روپہ کرنیکا منصوبہ شروع
وزیر اعظم نے افتتاح کر دیا، 415 ارب روپے کی
لاگت سے منصوبہ دسمبر 2027 میں مکمل ہوگا

ریلوے نظام جدید بنانے کے لیے اربوں روپے کے منصوبے پر سندھ اور وفاق کا اتفاق

اپنے وسائل سے 6 ٹریلین دوسرے مرحلے میں مزید 6 ٹریلین چلانے کیلئے 6.6 ارب روپے کی سرمایہ کاری کے لیے تیار، مراد شاہ
سندھ کو ایسا ریلوے نظام فراہم کرنا چاہتے جو معاشی ترقی میں بھی کردار ادا کرے، حنیف عباسی، وزیر اعلیٰ ہاؤس میں اجلاس

وفاقی حکومت بلوچستان کی محرومی کو دور
کرنے کیلئے صوبے کے دور افتادہ علاقوں کو
ملک کے سب سے بڑے شہر کراچی سے
جوڑنے کیلئے 415 ارب روپے کی لاگت
سے 809 کروڑ روپے کی شاہراہ
میں طویل چمن
کوئٹہ کراچی
شاہراہ کو
دور روپہ کرنے کا
میگا منصوبہ
شروع کر رہی
ہے۔ منصوبے
کے آغاز کے لیے وزیر اعظم شہباز شریف نے
کوئٹہ کا دورہ کیا۔
منصوبے کے تحت کراچی کوئٹہ چمن 809

ارب روپے رپے رکھی گئی ہے، جس میں 33 ارب روپے بنیادی
انفراسٹرکچر (سول ورکس، ٹریک اور سگنلنگ)، 127.6 ارب
روپے چھ جدید (DMU) ٹرین سٹیشن کی خریداری اور 2.66
ارب روپے دیگر بھال کی سہولیات شامل ہیں۔
وفاقی وزیر ریلوے حنیف عباسی نے کہا کہ وفاق اور سندھ
حکومت کے درمیان تعاون پاکستان ریلوے کی تاریخ میں ایک
نئے باب کا آغاز ہوگا۔ وزارت ریلوے سندھ کو ایسا ریلوے نظام
فراہم کرنا چاہتی ہے جو ماحول دوست ہونے کے ساتھ ساتھ
معاشی ترقی میں بھی کردار ادا کرے، اجلاس میں روپڑی ریلوے
اسٹیشن کی اپ گریڈیشن پر خصوصی توجہ دی گئی جس پر 999.9
ملین روپے کی لاگت آئے گی، اجلاس کا اختتام پاکستان ریلوے
اور سندھ حکومت کے درمیان 25 سالہ فریم ورک پارٹنرشپ معاہدہ
جلد دستخط کرنے کے عزم کے ساتھ ہوا تاکہ ریلوے ترقی کے
منصوبوں میں طویل المدتی تعاون کو باقاعدہ شکل دی جاسکے۔

ہوئے، وفاقی وزیر کے وفد میں سیکریٹری ریلوے مظہر علی شاہ،
جنرل منیجر ریلوے عامر بلوچ اور دیگر اعلیٰ افسران شامل تھے،
اجلاس کا مرکزی نکتہ ریل پٹی مضافاتی ٹرانسپورٹیشن پلان تھا
جس کا مقصد "سٹی سینٹر سے سٹی سینٹر براہ راست رابطہ فراہم کرنا
ہے، یہ منصوبہ تقریباً 3 کروڑ 70 لاکھ افراد کو سہولت فراہم کرے
گا جو سندھ کی مجموعی آبادی کا 67 فیصد بنتے ہیں، منصوبے کے
تحت 16 ارب روپے پر 858 کلومیٹر طویل ریلوے ٹریک کی
بحالی کی تجویز دی گئی ہے، جن میں دادو (181 کلومیٹر)، حبیب
کوٹ (166 کلومیٹر)، ماروی (200 کلومیٹر)، جیکب آباد
(87 کلومیٹر)، جیکب کشمور کالونی (124 کلومیٹر) اور بدین
(100 کلومیٹر) شامل ہیں۔
وزیر ٹرانسپورٹ شرجیل انعام مین نے بتایا کہ اس سرمایہ
کاری کے بعد کوئٹہ سے دادو کے درمیان سفر کا وقت تقریباً
ڈیڑھ گھنٹہ ہو جائے گا۔ اس منصوبے کی مجموعی لاگت 63.26

وزیر اعلیٰ سندھ سید مراد علی شاہ اور وفاقی وزیر برائے
ریلوے حنیف عباسی کے درمیان فیصلہ کن اجلاس میں صوبے
کے ریلوے نظام کو جدید بنانے کیلئے اربوں روپے کے منصوبے
پر اتفاق کیا گیا، اس منصوبے کا آغاز کراچی تا کشمور اور کراچی تا
تھر پارکر روڈ سے ہوگا جس کا مقصد لاکھوں شہریوں کو جدید
سٹری سہولیات فراہم کرنا ہے، وزیر اعلیٰ سندھ نے اجلاس میں
عزم ظاہر کرتے ہوئے کہا کہ منصوبے پھر میں موجود 308 میں
سے 100 مینڈ ریلوے کراسنگ کی تبدیلی، ریلوے نظام کی
بحالی، اور پیلے مرحلے میں اپنے وسائل سے 6 ٹریلین جبکہ
دوسرے مرحلے میں مزید 6 ٹریلین چلانے کے لیے 6.6 ارب
روپے کی سرمایہ کاری کے لیے تیار ہیں۔
وزیر اعلیٰ ہاؤس میں ہونے والے اس اجلاس میں وزیر
ٹرانسپورٹ شرجیل انعام مین، وزیر اعلیٰ سندھ کے پرنسپل
سیکریٹری آغا واصف اور سیکریٹری ٹرانسپورٹ اسد ضامن شریک

PAKISTAN CABLES HAI
NOORIABAD MEIN
MUKAMMAL
TAYYAR

PAKISTAN CABLES
TRUSTED NOT TO COMPROMISE



Agriculture Review



How AI is enabling agricultural intelligence and revolutionizing farming

By Jeff Rowe

With the world's population projected to reach nearly 10 billion by 2050, the global agricultural sector faces a defining challenge that mirrors one of the central themes of the World Economic Forum Annual Meeting 2026 – building prosperity within planetary boundaries.

For agriculture, this means feeding more people without cultivating more acres. The answer lies not in expanding farmland, but in revolutionizing how we farm the land we already have by fusing decades of agronomic expertise with the transformative power of data and artificial intelligence (AI).

This challenge is compounded by shifting markets and geopolitical uncertainty. Farmers worldwide – from the wheat fields of Australia to the US corn belt, to the smallholder farms of India – are grappling with rising expenses, volatile markets, extreme weather and labour shortages.

Such challenges are forcing more and more farmers to sell up. In the US alone 160,000 farms have disappeared since 2017, an 8% fall. Simply put, farmers must do more with less to stay competitive in the global market.

Yet farming has always been synonymous with resilience and innovation. Both of which are needed, now more than ever. Luckily, they're also in abundance.

The food and agriculture sector is big business, contributing hundreds of billions to global economies and employing millions of people whose livelihoods flow into rural communities worldwide. Yet despite its enormous importance, productivity growth in the global food chain has

remained well below the levels we need to feed an ever-growing population.

But I believe technology can help to close this gap. Growing up on my family's farm in the US, I've seen firsthand how innovations like the combine harvester transformed agriculture and productivity.

Today, many of those innovations are online. Cutting-edge digital tools, data analytics, AI and biotechnology are accelerating change and efficiency in ways previous generations could never have imagined.

How AI is enabling agricultural intelligence

In my career, I've seen only a few examples of an innovation that truly disrupted the agriculture industry. Biotechnology was one, and AI is now clearly the next one.

But in farming, AI alone isn't enough. It needs to be combined with data and agricultural expertise to become truly useful and transformative. That's agricultural intelligence – making precision farming more precise, making digital agriculture more intelligent, and making plant breeding and molecule discovery dramatically faster.

Unfortunately, going digital isn't always easy. Recent research by Syngenta points to a growing digital divide between large scale operations who are embracing AI, and the smallholders unable to access these transformative opportunities.

Many farmers operate on thin margins, making the upfront cost of buying new tools a big hurdle. Access is another challenge – patchy broadband in rural areas means farmers may struggle to use AI-driven platforms and data analytics.

And for those who have spent generations farming traditionally, the steep learn-

ing curve of integrating digital tools into their livelihoods can feel overwhelming. Realizing these opportunities requires deploying innovation responsibly to ensure such technologies achieve their promise.

AI solutions should combine simplicity with clear, tangible benefits that work at a local level – every farm's challenges are unique to their region and operation size. Farmers also need solutions that integrate with their existing machines and daily operations and can be easily operated remotely from a mobile phone.

Perhaps most important of all, farmers need assurance that their data won't be misused, that they'll retain ownership of their information and that AI systems will remain under their ultimate control.

Benefits of innovation to agriculture Despite these challenges, the benefits of innovation are undeniable. Growers today are utilizing smart platforms to take a bird's eye view of their crops and soil, quickly identifying a plant's nutrient deficiencies or the earliest signs of disease and pest infestations.

GPS, machine learning models and satellite imagery enable the precise application of fertilizers or pest control down to the nearest metre, or even single plant, thereby reducing input costs and environmental impact while increasing efficiency.

Platforms like Syngenta's Cropwise are demonstrating how this can work at scale. In just five years, this AI-powered system that connects data, tools, and services has transformed digital farm management across over 70 million hectares in more than 30 countries.

Whether on large commercial operations or smallholder farms, agricultural intelligence is empowering farmers to use

their deep expertise to make smarter decisions that increase crop yields, improve sustainability and drive profitability.

Analysing detailed data, such as weather patterns and soil conditions, simplifies key decisions like seed selection. What many don't realize is that farmers today can choose from hundreds of varieties within each crop – corn seed that withstands wind or drought better, varieties suited to different soil types, or hybrids optimized for specific climates. This precision ensures that each and every acre is used to its fullest potential.

Benefits of agricultural intelligence go far beyond the farm

When farmers thrive, so do their local communities. Every dollar spent on agricultural innovation trickles down, supporting businesses and bettering the opportunities for future generations.

Research from the World Economic Forum indicates that digital agriculture, significantly amplified by AI, has the potential to boost the agricultural GDP of low- and middle-income countries by more than \$450 billion annually. This is an estimated 28% increase in agricultural GDP for these regions.

Agriculture has clearly entered a new era – one in which farmers are harnessing data and AI to make farming more productive and their businesses more sustainable.

Agricultural intelligence is having as transformational an effect on farming as the tractor once did, and with continued advances and support for innovation, farmers will not only endure today's challenges but thrive for generations to come. (Jeff Rowe is a fifth-generation farmer from Illinois and CEO of Syngenta Group.) - WEF

Pakistan Highlights Water Resilience and Sustainable Agriculture at GFFA 2026

Federal Minister for National Food Security and Research, Rana Tanveer Hussain, represented Pakistan at the Global Forum for Food and Agriculture (GFFA) 2026 in Berlin, where he underscored the country's priorities on water resilience, sustainable agriculture, and food security amid climate change and rising global water stress.

Addressing the Forum under the theme "Water, Food, Our Future," the Minister highlighted Pakistan's historical reliance on water resources since the Indus Valley Civilization and emphasized the unprecedented challenges posed by floods, droughts, and extreme heat. He noted the severe impact of these climate shocks on agricultural productivity, rural livelihoods, and national food security.

Rana Tanveer Hussain outlined Pakistan's dependence on the Indus Basin, supporting agriculture, industry, and ecosystems for over 240 million people. Recent floods and prolonged dry spells have exposed the vulnerability of this system, reinforcing the urgent need for water resilience. He stressed that water security is fundamental to food security and that cooperation over shared water resources is vital for regional peace and stability.

Highlighting policy measures, he detailed initiatives to improve water productivity, including high-efficiency irrigation, precision land levelling, climate-smart agronomy, and

efforts to safely reuse treated wastewater in agriculture and peri-urban areas and to develop a sustainable blue bioeconomy. Fisheries, aquaculture, and coastal value chains offer

terms. He called for predictable, rights-based water allocation systems to protect smallholder farmers and maintain social and economic stability.

Addressing transboundary challenges, he reaffirmed Pakistan's commitment to international water law and the Indus Waters Treaty of 1960. Expressing concern over India's April 2025 decision to hold the Treaty in abeyance, he called on the international community to support the restoration and full implementation of the Treaty in its letter and spirit.

On the sidelines of GFFA 2026, the Minister met WTO Deputy Director General Jean-Marie Paugam to discuss trade and agriculture issues, and participated in the expert panel "Sustainable Irrigation Requires a Water-Energy-Food-Environment Nexus Approach," highlighting the interlinked challenges of water, energy, environment, and climate change.

Concluding his engagements, Rana Tanveer Hussain reaffirmed Pakistan's commitment to collaborate with international partners, research institutions, the private sector, and civil society to advance water resilience, climate-smart agriculture, and inclusive food systems, aiming to transform water from a risk factor into a foundation for sustainable development and peace. ■



drought- and heat-tolerant seed varieties. Ecosystem-based approaches—such as soil health improvement, watershed rehabilitation, agroforestry, wetland restoration, and groundwater recharge—were also emphasized as critical for long-term resilience.

The Minister highlighted Pakistan's

significant opportunities for economic growth, nutrition improvement, and employment, particularly for youth and women.

On governance and equity, Rana Tanveer Hussain stressed the importance of integrated water planning to balance the needs of agriculture, cities, industry, energy, and ecosys-



Does adding 'please' and 'thank you' to your ChatGPT prompts really waste energy?

Cut the words "please" and "thank you" from your next ChatGPT query and, if you believe some of the talk online, you might think you are helping save the planet.

The idea sounds plausible because AI systems process text incrementally: longer prompts require slightly more computation and therefore use more energy. OpenAI's chief executive, Sam Altman, has acknowledged it all adds to operating costs at the scale of billions of prompts.

At the same time, it is a stretch to suggest that treating ChatGPT politely comes at significant environmental cost. The effect of a few extra words is negligible compared with the energy required to operate the underlying data center infrastructure.

What is more important, perhaps, is the persistence of the idea. It suggests that many people already sense AI is not as immaterial as it appears. That instinct is worth taking seriously.

Artificial intelligence depends on large data centers built around high-density computing infrastructure. These facilities draw substantial electricity, require continuous cooling, and are embedded in wider systems of energy supply, water and land use.

As AI use expands, so does this underlying footprint. The environmental question, then, is not how individual prompts are phrased, but how frequently and intensively these systems are used.

Why every AI query carries an energy cost

One structural difference between AI and most familiar digital services helps explain why this matters.

When a document is opened or a stored video is streamed, the main energy cost has already been incurred. The system is largely retrieving existing data.

By contrast, each time an AI model is queried, it must perform a fresh computation to generate a response. In technical terms, each prompt triggers a fresh "inference"—a full computational pass through the model—and that energy cost is incurred every time.

This is why AI behaves less like conventional software and more like infrastructure. Use translates directly into energy demand.

The scale of that demand is no longer marginal. Research published in the journal *Science* estimates that data centers already account for a significant share of global electricity consumption, with demand rising rapidly as AI workloads grow.

The International Energy Agency has warned that electricity demand from data centers could double by the end of the decade under current growth trajectories.

Electricity is only one part of the picture. Data centers also require large volumes of water for cooling, and their construction and operation involve land, materials and long-lived assets. These impacts are experienced locally, even when the services provided are global.

AI's hidden environmental footprint

New Zealand offers a clear illustration. Its high share of renewable electricity makes it attractive to data center operators, but this does not make new demand impact-free.

Large data centers can place significant pressure on local grids and claims of renewable supply do not always correspond to new generation being added. Electricity used to run servers is electricity not available for other uses, particularly in dry years when hydro generation is constrained.

Viewed through a systems lens, AI introduces a new metabolic load into regions already under strain from climate change, population growth and competing resource demands.

Energy, water, land and infrastructure are tightly coupled. Changes in one part of the system propagate through the rest.

This matters for climate adaptation and long-term planning. Much adaptation work focuses on land and infrastructure: managing flood risk, protecting water quality, maintaining reliable energy supply and designing resilient settlements.

Yet AI infrastructure is often planned and assessed separately, as if it were merely a digital service rather than a persistent physical presence with ongoing resource demands.

Why the myth matters

From a systems perspective, new pressures do not simply accumulate. They can drive reorganization.

In some cases, that reorganization produces more coherent and resilient arrangements; in others, it amplifies existing vulnerabilities. Which outcome prevails depends largely on whether the pressure is recognized early and incorporated into system design or allowed to build unchecked.

This is where discussion of AI's environmental footprint needs to mature. Focusing on small behavioral tweaks, such as how prompts are phrased, distracts from the real structural issues.

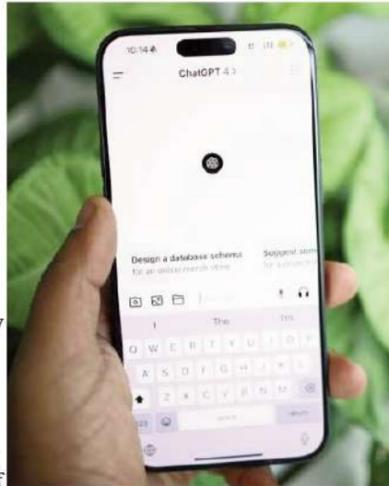
The more consequential questions concern how AI infrastructure is integrated into energy planning, how its water use is managed, how its location interacts with land-use priorities, and how its demand competes with other social needs.

None of this implies that AI should be rejected. AI already delivers value across research, health, logistics and many other domains.

But, like any infrastructure, it carries costs as well as benefits. Treating AI as immaterial software obscures those costs. Treating it as part of the physical systems we already manage brings them into view.

The popularity of the "please" myth is therefore less a mistake than a signal. People sense AI has a footprint, even if the language to describe it is still emerging.

Taking that signal seriously opens the door to a more grounded conversation about how AI fits into landscapes, energy systems and societies already navigating the limits of adaptation. - TX



Sub-zero green freezer achieves zero emissions

Researchers at the School of Engineering of The Hong Kong University of Science and Technology (HKUST) have developed the world's first sub-zero Celsius elastocaloric freezing device, capable of reaching temperatures as low as -12°C .

This represents a significant milestone in expanding green solid-state elastocaloric refrigeration technology into the global freezing industry, offering a promising solution to combat climate change and accelerate low-carbon transformation of the global freezing market.

The findings have recently been published in *Nature*, under the title "Sub-zero Celsius Elastocaloric Cooling via Low-transition-temperature Alloys."

As global warming intensifies, the demand for freezing has been growing rapidly and accounts for a significant portion of global electricity consumption. Mainstream freezing based on vapor compression cooling technology relies on refrigerants with high global warming potential (GWP).

As an eco-friendly alternative, solid-state cooling technology based on the elastocaloric effect of shape memory alloys (SMAs) has drawn substantial attention from both academia and industry due to its zero greenhouse gas emissions and high energy efficiency potential. The technology harnesses the latent heat from cyclic phase transition of shape memory alloys to provide cooling without greenhouse gas refrigerants, offering a promising path to decarbonize the freezing sector of the cooling industry and to mitigate global emissions and climate change.

Challenges and recent breakthrough in elastocaloric cooling

However, the existing elastocaloric devices have been limited to air conditioning scenarios for room temperature applications. It is important to expand the technology into the freezing sector, which has the same market size as the air-conditioning sector.

A research team led by Prof. Sun Qingping, Chair Professor from the Department of Mechanical and Aerospace Engineering at HKUST, has achieved a breakthrough in Sub-zero

Celsius elastocaloric cooling. This advancement results from a synergistic combination of materials, heat transfer fluid and refrigeration structures. The features include:

1. Super-elastic alloy: employing a binary low-transition-temperature nickel-titanium (NiTi) alloy with a high nickel content (51.2 at %) and lowering its austenite finish temperature (Af) to -20.8°C . This alloy maintains excellent super-elasticity and a substantial latent heat even at -20°C , with a peak adiabatic temperature change of 16.3°C at 0°C and a functional temperature window of 48.5°C .

2. Freezing-resistant heat transfer fluid: using a 30wt% aqueous calcium chloride solution as the working fluid. Its low freezing point ensures that it remains fluid in sub-zero operation, while its good wettability on the NiTi surface enhances heat exchange efficiency.

3. Cascaded tubular architecture: the regenerator operates on a compression-based active Brayton cycle and consists of eight cascaded units, each containing three thin-walled NiTi tubes. This design offers a high surface area-to-volume ratio (8.68 mm²/l) and withstands a compressive stress of 900MPa without buckling, as verified by X-ray computed tomography.

Operating at 1Hz, the desktop-scale device achieved a cold-source temperature of -12°C from a room-temperature heat sink (24°C), establishing a temperature lift of 36°C . This is the first reported sub-zero Celsius performance in elastocaloric cooling.

In a real-world demonstration, the system was integrated into a package measuring $1.0 \times 0.5 \times 0.5$ m³ and tested outdoors at temperatures between 20 and 25°C . It successfully cooled an insulated chamber down to a stable -4°C air temperature within 60 minutes and froze 20ml of distilled water into ice within 2 hours, validating its real-world freezing capability.

The device demonstrated a specific cooling power of up to 1.43W g⁻¹ under zero-temperature-lift conditions. In addition, the system's coefficient of performance can reach 3.4 under the ideal work-recovery assumption, highlighting its potential energy efficiency.

Potential impact on global emissions

The work has a significant impact on global decarboniza-

tion to battle climate change. According to published data, global Hydrofluorocarbon (HFC) emissions are projected to exceed 1.2 gigatons of CO₂ equivalent annually by 2025, with roughly 27% originating from sub-zero freezing applications. This translates to approximately 330 million tons of CO₂ equivalent each year.

The successful demonstration of sub-zero elastocaloric cooling provides a viable, emission-free alternative for these applications. Widespread adoption of this technology could, therefore, potentially mitigate around 330 million tons of CO₂ equivalent emissions annually, contributing substantially to global climate goals.

Future directions and expert perspectives

The research team leader, Prof. Sun Qingping stated, "This achievement demonstrates the potential for large-scale application of elastocaloric freezing technology. We are collaborating with industry to drive its commercialization. As global regulations on HFCs tighten, this zero-emission, energy-efficient freezing technology is poised to reshape the freezing sector of the refrigeration industry and provide a key technical solution for carbon neutrality.

"Looking ahead, we will focus on optimizing system efficiency, power density, and cost-effectiveness through advances in shape memory alloy materials, manufacturing, heat exchange design, and system integration and optimization to achieve larger cooling power and high energy efficiency."

Prof. Lu Mengqian, Director of the HKUST Otto Poon Center for Climate Resilience and Sustainability, where Prof. Sun and Prof. Zhou are affiliated members, said, "This groundbreaking advancement in elastocaloric freezing technology by our center's members represents a significant step forward in our fight against climate change. By offering a zero-emission alternative for sub-zero applications, we are addressing the urgent need for sustainable freezing solutions. This achievement has been phenomenal since the center's establishment in July 2025. The work accelerates the center's mission to deliver impactful strategies for climate resilience and sustainable development worldwide." - TX

