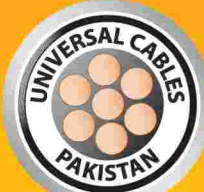




HSK78G
2MW Lean Burn
Gas Generator
44.2% Electrical
Efficiency

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



**UNIVERSAL
CABLES**
THE POWERLINE OF PAKISTAN

☎ 021-111-786-825 🌐 www.ucil.com.pk

UAP Railway Project Gains Momentum as Pakistan, Uzbekistan, and Afghanistan Sign Joint Feasibility Agreement

In a landmark development for regional connectivity, Pakistan, Uzbekistan, and Afghanistan signed the Framework Agreement on the Joint Feasibility Study for the Uzbekistan–Afghanistan–Pakistan (UAP) Railway Project on Thursday in Kabul.

The trilateral deal marks a pivotal moment in the long-envisioned goal of linking Central Asia to Pakistan's Arabian Sea ports, transforming the region into a critical hub for trade and transit.

Deputy Prime Minister and Foreign Minister Ishaq Dar, who led the Pakistani

delegation to Kabul, announced the signing via a post on X (formerly Twitter), congratulating the three

their commitment to regional cooperation.

"We remained closely engaged throughout the nego-

Minister Hanif Abbasi, Pakistan's Special Representative for Afghanistan, and the Secretary of the Ministry of Rail-



nations and commending the efforts of the Uzbek and Afghan foreign ministers for

tiation process to finalize the details," Dar stated. He was accompanied by Railways

ways.

A Strategic Corridor for Central and South Asia

Originally conceptualized in 2021, the UAP railway corridor spans approximately 850 kilometers (528 miles) and is projected to connect Tashkent to Peshawar via Termiz (Uzbekistan), Mazar-i-Sharif and Logar (Afghanistan), and the Khar-lachi border crossing in Khyber Pakhtunkhwa, Pakistan. The corridor aims to serve both freight and passenger services and is expected to reduce transit times by at least five days while cutting transportation costs by up to 40 percent.

The railway, estimated at \$4.8 billion, will provide landlocked Central Asian states direct access to Pakistan's deep-sea ports in Karachi and Gwadar, thereby opening up the Indian Ocean for regional trade.

From Vision to Imple-

Supplement on

**ELECTRICITY
PAKISTAN**
ENERGY | STORAGE | POWER

Please See Pages
3-7

mentation: Key Milestones and Challenges

The project has seen several hurdles since its first roadmap was signed in Tashkent in February 2021. Construction, originally slated for September 2021, was delayed due to the Taliban's return to power in Afghanistan. However, by

Contd on page 8



**BEST ELECTRIC
PANELS (PVT) LTD**
Made to Control!

**BEST GROUP SWITCHGEAR,
CONTROL, PROTECTION &
MEASURING SYSTEM**

**CRAFTING
TECHNOLOGY
SOLUTIONS
WITH LONG TER
SUSTAINABILITY
AT THE CORE.**



Best Street,
14 Commercial Area,
Latifabad, Unit No. 2,
Hyderabad, Sindh,
Pakistan.

P : +92 22 340 7740
P : +92 22 340 7741
E : info@bestelectricpanels.com
W : www.bestelectricpanels.com
facebook.com/bestelectricpanels



**WIRING
ACCESSORIES**
TRUSTED NOT TO COMPROMISE

MAKE THE SWITCH.
A SEAMLESS TOUCH OF
MODERNITY WITH **KIARA**

Available in selected cities only.



021 111 CABLES (222 537)
pakistancables.com



Wiring Accessories
Dealer List



**BILAL SWITCHGEAR ENGINEERING
(PVT.) LIMITED**
11 KM, Raiwind Road, Lahore
Park Stop, Lahore-Pakistan.
UAN: +92-42-111 19 19 19 |
Mob: +92 336 4810167
Fax: 042 35320050 |
Email: info@bilaleng.com

ABB TYPE TESTED MV SWITCHGEAR

UniSafe 2.0



Type tested by CESI
according to
latest standards

BILAL SWITCHGEAR ENGINEERING
Authorized Sole Distributor
in Pakistan & Afghanistan



DRY TYPE TRANSFORMERS
MADE IN ITALY



Type tested by CESI
according to
latest standards
IEC 61439-1/6

BILAL SWITCHGEAR ENGINEERING
Authorized Sole Distributor
in Pakistan & Afghanistan



BUSBAR TRUNKING SYSTEM
MADE IN ITALY



Type tested by CESI
according to
latest standards
IEC 61439-1/6

BILAL SWITCHGEAR ENGINEERING
Authorized Sole Distributor
in Pakistan & Afghanistan

CHINT

Empower the World

A GLOBAL LEADING SMART ENERGY SOLUTIONS PROVIDER

Provide a complete energy solution for public institutions, businesses and end-users

Low-voltage Products



NVF2G Series
Inverter



NXB Series
Moulded Case Circuit Breaker



NU6 Series
Surge Arrestor



NH40 Series
Switch Disconnector



NXC Series
AC Contactor



NXA Series
Air Circuit Breaker



NXZ Series
Automatic Transfer
Switching Equipment



NXM Series
Moulded Case Circuit Breaker

Meters



CHS120
Single Phase Smart Meter



CHS320
Three Phase Smart Meter



DDSU666/DT(S)SU666
Smart Electricity Meter



PA/PZ/PD666
Three Phase Digital
Multi-function Meter

EV Charger



AC Charger



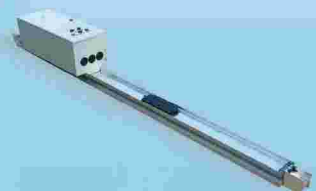
Fast DC Charger
Rating 150/180kW Dual Plug

Ring Main Unit



NG7-12

Busway



NCM3

Vacuum Circuit Breakers



NV2-12
Indoor Type
Vacuum Circuit Breaker



NXV-17.5
Indoor AC High Voltage
Vacuum Circuit Breaker

Scan the QR Code to
find out more about
CHINT Global and our
Smart Energy Solutions



AUTHORIZED DISTRIBUTORS | LOW-VOLTAGE

Ameejee Valleehee & Sons
(Pvt.) Ltd. (AVS)
Tel: +92 21 32625492 5

Diwan International
(Pvt.) Ltd. (Diwan)
Tel: +92 021 111 333 926

HL Pakistan Pvt. Ltd. (HL)
Tel: +92 0311 1617777

The Imperial Electric Company
(Pvt.) Ltd. (IEC)
Tel: +92 042 36304861 5



@CHINTGroupAsiaPacific



@CHINTElectric



@CHINTGroup

Empower the World with us at www.CHINTGlobal.com

Years of Committed Service

Pipes & Fittings
uPVC, PVC, PE, PPR

eivie

ISO 9001: 2015 CERTIFIED

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

FORTNIGHTLY

ENGINEERING REVIEW

The voice of engineers

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: nimpab@gmail.com Website: www.nimpk.com

Supplement on

ELECTRICITY PAKISTAN
ENERGY | STORAGE | POWER

1 - 3 August, 2025 Lahore Expo Centre - Pakistan

Electricity Pakistan 2025 Returns to Lahore Powering Innovation and Energy Transformation

Pakistan's largest and most influential energy exhibition, Electricity Pakistan 2025, will be held from August 1 to 3, 2025, at the Expo Centre Lahore.

Organized by FAKT Exhibitions, this international platform brings together leaders in power generation, energy storage, smart grids, and renewable technologies under one roof.

In this latest edition,

Electricity Pakistan continues to lead conversations on how Pakistan can transition to a more sustainable and efficient energy future. The exhibition is expected to feature over 300 local and international exhibitors, with remarkable number of visitors including engineers, energy experts, utility operators, government bodies, and investors.

Key Features of Electricity Pakistan 2025:

- Energy Storage Technologies: Grid-scale batteries, hybrid systems, UPS solutions, and more.

- Renewable Energy Solutions: Solar, wind, hydro, and biomass innovations.
- Digital & Smart Grid Tools: AI-driven systems, automation, and smart meters.

- Networking Opportunities: Government agencies, EPC contractors, utilities, and international firms.

Pakistan currently faces multiple energy challenges, including high transmission losses and power outages. This event is strategically aligned with national goals to

Contd on page 7

An Interview with Asad Butt – Jawad Electric, One of the Leading Names in Pakistan's Electric Industry

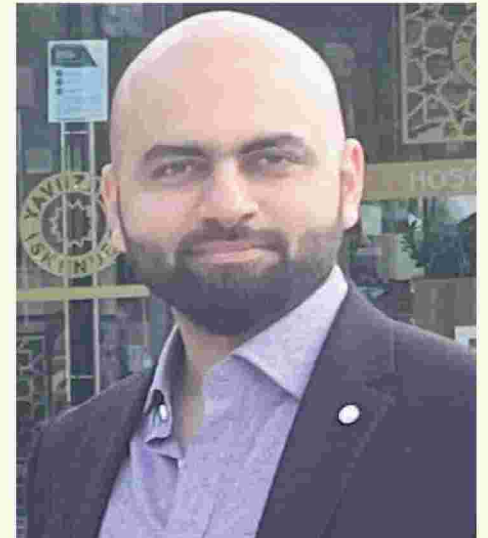
The Situation of Industry in the Country

The fact is that the situation of the industry in the country has been improving since 2024. We expect that the conditions in the sector will further improve in this year—2025. We hope Pakistan achieves stability and that the situation improves significantly. There are many pending projects, and we expect the end of this year to be much better as we are waiting to see these projects mature.

Experience Working with Sigma, a Turkish Product

It was a tough decision for me—a different brand made in Turkey—and I was intro-

Contd on page 4



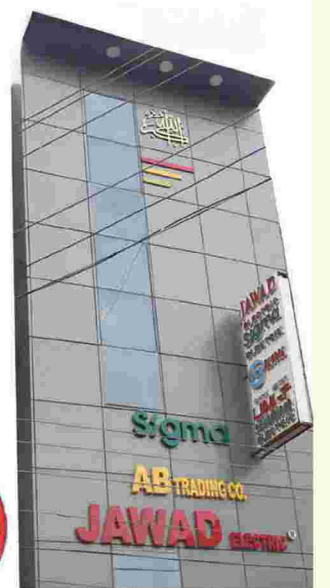
Sigma
elektrik



www.sigmaelektrik.com



Approved By



Sigma Elektrik located in Istanbul, one of the leading company, focuses on designing, manufacturing and marketing of low voltage switch-gear components such as MCCB, MCB, RCCB, Contactors, Current Transformers, Motor Protection switches, since 1993 in Turkey.

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



A S T A

CopperGat Is Moving Towards Manufacturing High-Voltage Wires

The cable industry in Pakistan is growing, and exports will take it to the next level, says Mian Haseeb Safdar, Director of CopperGat Cables, in an exchange with ER.

Electric Wire and Quality

The most important characteristic of electric wire is its insulation. Next comes the purity of the conductor used in the wire — from the conductor's composition to the compounding of the insulation. The application of wires varies from industry to industry in Pakistan.

It is a proud moment for Pakistan that it is receiving export orders for electric wires. We are now in the upper tier of countries producing electric wires. In the current scenario, many countries prefer Pakistan for business.

Electric Wires and Availability of Testing Facilities

Yes, Pakistan is a country where all types of cable and wire testing labs are available. However, CopperGat Cables is also tested by KEMA Laboratories (Netherlands) — the world's largest cable testing lab — and by TUV Austria, an internationally recognized cable testing body. We are also certified under

all major ISO standards. These international certifications ensure the quality of electric wire manufacturing in Pakistan.

Challenges in Getting Technical Certifications



One of the most important factors is the support of the Trade Development Authority of Pakistan (TDAP) for the cable manufacturing industry. The Authority played a pivotal role in connecting Pakistan's cable manufacturers with the international community dur-

ing the recently held Middle East Energy Summit. We greatly appreciate the support TDAP has extended to our industry.

AI, Emerging Technologies, and the Cable Industry

These technologies are vital. We are producing wires using automated production lines equipped with the most modern machinery. In addition, our testing machines and facilities are state-of-the-art to ensure that our products comply with international standards.

This not only reduces production costs but also helps us meet benchmarks set by the National Electrotechnical Commission.

Industry-Academia Liaison

Academia plays a role in grooming graduates, but practical knowledge is essential. Unless students gain hands-on experience, they cannot distinguish between right and wrong in real-world applications.

I suggest academia should take a more practical role in cable manufacturing and testing. Students should understand cable design, laying structures, and related processes. These elements should be part of the curriculum so that engineers can make informed decisions. For example, in high-rise buildings, it is the engineers who decide what kind of cables should be used.

Future Plans of CopperGat

We are present in all regions of Pakistan, and consultants are increasingly selecting our cables for industrial applications. Meanwhile, international barriers to exporting electric wires are being removed, and both we and the broader industry are moving towards exports.

The Middle East — including Saudi Arabia — is a very attractive market for us, along with African countries. Moreover, CopperGat is now progressing toward the manufacturing of high-voltage cables.

An Interview with Asad Butt – Jawad Electric

Contd from page 3

ducing it in Pakistan, fully aware that the Pakistani market had become highly competitive. There were already three to four brands

that had penetrated the market, and no new brand had succeeded in entering it for at least the last two decades.

It was a risk, but behind that decision were the bless-

ings of my elders. We worked hard, and within six to seven years, we achieved what we aimed for. Turkey supported us a lot because of its brotherly relationship

with Pakistan. If your principal supports you by going the extra mile, it matters a lot. They supported us like brothers—they preferred our brotherly ties over business interests.

AI, Emerging Technologies, and Sigma

AI does not affect us that much directly—it has more implications for software-based products. However, AI and emerging technologies have brought a lot of ease to our operations. Sometimes, we don't need human resources to research technical matters—ChatGPT does these tasks very well. These technologies have helped us explain projects and even apply them at the site level.

Growth in the Switchgear Industry

The switchgear industry

has grown significantly, as Pakistan has a lot of potential. New projects are launching rapidly—commercial as well as residential. We offer complete support to the switchgear industry, including efficient after-sales service. This is due to rising competition in the market.

Just four years ago, there were around 12 companies in Punjab's market. Today, the number has grown to nearly 100. We not only have the ability but also deliver quality that matches European standards. We are also flexible in pricing. Western products are expensive due to high import duties, so they cannot compete with our offerings.

We provide excellent value for customers—low prices and good quality. We

have already covered the entire Punjab region and are now expanding into other areas. We have applied for KE (K-Electric) approval and hope to receive it this year. After that, we plan to open an office in Karachi and focus on the Karachi and Sindh markets.

Future Plans

I have launched another Turkish brand, namely Zelkon. The first consignment will arrive next month. Since the electric field in Pakistan is vast and Sigma cannot cover all products—every company has its limitations—Zelkon will help fill those gaps.

Zelkon Electric is a good company offering different products than Sigma. With this, we will now have two Turkish brands in the Pakistani market. ■

AL-MADINA Electric Corporation
Since 1967

We Represent World Renowned Manufactures of all Kind of Electrical products for controls, Distribution & Automation. Growing with Intelligence & Inspiration.

GE Consumer & Industrial Power Protection

Insulated Enclosures, ACBs, ELCBs, MCBs, Relays, Magnetic Contactors

Danfoss Industrial Control Components

Magnetic Contactors Over Load Relays, High Performance Solenoid Valves, Pressure Transmitters, Pressure Switches, Pressure Controls

YEEDA

Plugs and Sockets
International standard Iec 60309-1

Technical Data:
• Capable of operation both indoor and outdoor, Ip44, Ip54 and IP 67 protection classes, superior characteristics of dust, water and splash proof.
• Temperature rang - 25 C to +40 C, where no explosive gas or conductive dust shall exist.
• 16A, 32A(3,4,5pin) Ip4463, 125A(5pin) Ip67

Reliable and Accurate

Temperature Controllers, Thermostates and Micro Processors, All Kind of Thermocouple

MAXTHERMO
Made in Taiwan

Temp: Canted Analogue

YFE TENMARS

19, Nishter (BRANDRETH) Road, Lahore-54000, (Pakistan).
Ph: (+92-42) 37641306 37641307, 37662197, Fax: (+92-42) 37634579
E-Mail: almadina786@yahoo.com Website: www.almadinaelectric.com

Digi Insurance gets Pakistan's First Digital-Only Insurance License

The Securities and Exchange Commission of Pakistan (SECP) has granted the country's first-ever digital-only non-life insurance license to Digi Insurance Limited, marking a major milestone in the evolution of Pakistan's insurance sector. The license, issued under SECP's progressive regulatory framework, reflects the Commission's commitment to promoting innovation and expanding access to financial services through technology-led models.

Digi Insurance Limited is a homegrown insurtech

company offering an end-to-end digital platform for non-life insurance products. Its business model is built on digital-first principles, with core operations—such as policy issuance, customer onboarding, and claims processing—conducted entirely through digital channels. By leveraging advanced technologies and data-driven tools, Digi Insurance aims to deliver faster claims processing, enhanced customer experience, and operational efficiency.

The digital-only license allows Digi Insurance to operate without any physical branch infrastructure, reducing overhead costs and enabling broader reach, especially in underserved and remote regions. This move supports SECP's strategic goal of financial inclusion through responsi-

ble innovation, and promotes the adoption of customer-centric, tech-enabled insurance solutions.

This initiative is part of SECP's broader efforts to modernize Pakistan's regulatory landscape and encourage the growth of new market entrants that offer agile and efficient business models. The Commission expects this approval to act as a catalyst for digital transformation within the insurance industry, driving greater competition, improved service delivery, and innovation in product offerings.

SECP remains committed to supporting Pakistan's shift toward a digitally enabled economy by fostering innovation, simplifying business processes, and strengthening the accessibility and resilience of the financial sector. ■

The Imperial Electric Company: Almost a Century of Impact

The Imperial Electric Company has a 90+ year history of business and is one of the oldest companies in Pakistan. Understanding how such companies continue their operations—and what kinds of strengths and weaknesses they have—is important. Ejaz Ashraf, Assistant General Manager of the company, spoke to ER and shared a variety of insights about the company, the challenges it faces, and the growth of the electric sector.

Impact of an Almost Century-Old Company

This company was established in 1933 with a long history, and continuing it is both a challenge and a responsibility. Running a company with such a background is surely a big challenge—and also a pleasure. This company has seen many ups and downs. It has a history full of learning. It's a mature organization with a strong IT infrastructure, and we're working to take it to the next level.

Leading this company requires competence, so I always need to keep myself updated and make sure everything runs through a system. Since I do that, I'm very happy to be part of the company.

Imperial and Diversity

Trading is our prime business, and I lead it. We are distributors of low-voltage components from Schneider and others. We've been in this line for over 30 years. Recently, we've also started working with low-voltage components from Chint.

Secondly, we are in the generator business. We have a state-of-the-art factory in Lahore. It's a huge business. We have a strong

presence in the telecom sector and are performing well.

Moreover, we are a recognized name in the aviation industry and pioneers in this field.

Furthermore, we recently acquired a solar



company named EBR. This is a fully operational unit. So, these are the four main business areas that Imperial is engaged in.

IT Sector and Imperial

In the IT sector, we use SAP software, and we were among the first companies in Pakistan to adopt it. If I recall correctly, we implemented SAP in 2008. Currently, we are working on upgrading to the SAP HANA version, which is more powerful and offers more options. It provides an easy mechanism for reporting without limitations and supports a wide range of reports.

We require extensive data analysis using historical data, and this system is efficient in delivering that.

Our customers also rely on this support. I've seen many companies where

Pakistan and the Electric Industry

Yes, Pakistan is facing an energy crisis, and we are encountering many challenges. Unfortunately, we are an import-based economy. We import components from our principals. If imports are disrupted, our business is affected directly.

As for the energy crisis, it has been addressed to a significant extent. Look at the reduction in load-shedding. However, power has become expensive, and equipment prices have also risen slightly.

We have launched a new segment of products as well. Now, we are addressing two segments: Schneider for premium customers and

Chint for the broader market. With gradual solarization in the country, this issue will likely ease, and customers are expected to receive cheaper energy.

Switchgear Manufacturers


Almost all switchgear manufacturers across Pakistan are our customers. For them, we maintain stock and manage it through our software, which allows us to monitor trends and make informed decisions.

In this industry, the winner is the one who manages inventory well. We follow market norms and have a complete mechanism in place for business operations.

The Future of Imperial



We have recently reshaped our business and increased our market share.

We intend to introduce more new products in the future and continue to offer more value to our customers. ■



The Next Reliable Choice

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

IEC

Official Distributor The Imperial Electric Company (Pvt) Ltd.

Karachi 021-34555895 | Lahore 042-36304861-5 | Islamabad 051-2150218

www.iec.com.pk



**POWER QUALITY MANAGEMENT
POWER FACTOR CORRECTION &
POWER METERING EQUIPMENT**






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



**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



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



**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



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): Ameejee 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

How RTDS Can Revolutionize Pakistan's Power Sector Amid Solar Boom and Grid Reforms

By Farhan Mujeeb

Pakistan's power sector has long struggled with blackouts, inefficiencies, and an outdated grid. Recent reforms, such as the bifurcation of the National Transmission & Despatch Company (NTDC) into the National Grid Company (as Transmission Owner) and the Independent System & Market Operator (ISMO) (as System & Market Operator), aim to modernize the grid.

At the same time, the country is experiencing a solar power boom, with households and industries rapidly adopting rooftop solar and large-scale projects. Amid these changes, Pakistan acquired a Real-Time Digital Simulator (RTDS) a few years ago with the help of USAID, a powerful tool that can help prevent blackouts, optimize grid stability, and integrate renewables smoothly. However, many engineers and policymakers remain

unaware of its potential.

RTDS is essentially a supercharged virtual power grid lab that mimics real-world electricity systems in real time. It allows engineers to test protection relays, simulate blackouts, train grid operators, and validate new power plants and transmission lines before they are built. Think of it as a flight simulator for the power grid pilots train in simulators before flying real planes; similarly, RTDS helps engineers test grid scenarios without risking real blackouts.

One of the most critical applications of RTDS in Pakistan is preventing blackouts and improving grid stability. The country has suffered nationwide blackouts due to cascading grid failures. RTDS can simulate faults, such as a major transmission line tripping, and test how the grid responds. It can also optimize relay settings to prevent unnecessary tripping, a common cause of blackouts, and test islanding scenarios to keep parts of the grid running during a collapse.

With solar energy exploding, Pakistan's grid faces new challenges like solar intermittency, reverse

power flow, and instability.

RTDS can help by testing how solar farms behave during grid disturbances, designing battery storage systems to balance solar fluctuations, and ensuring grid-forming inverters work safely in Pakistan's grid. These capabilities are crucial as the country transitions to higher shares of renewable energy.

The recent separation of NTDC into NGC and ISMO introduces new complexities in grid management and market operations. RTDS can simulate these changes before implementation, reducing risks of failure. It can test new control strategies for grid balancing, model electricity market fluctuations, and even simulate cyberattacks to improve grid resilience. Additionally, RTDS can train grid operators to handle emergencies, such as sudden generator failures or extreme weather events, reducing the likelihood of human error in control rooms.

Despite having RTDS, Pakistan underutilizes it due to a lack of awareness among engineers, shortage of trained experts, and limited funding for advanced testing. To fully leverage this technology,

Pakistan needs a clear roadmap for integrating RTDS into national grid operations.

First, the Ministry of Energy (Power Division) must take the lead in fostering collaboration between universities, industry players, and the newly formed NGC and ISMO. The government should facilitate the establishment of an RTDS training centre by bringing together the key stakeholders, academia to provide research and training, industry to offer practical insights, and grid operators to share real-world challenges. This tripartite partnership could be formalized through a dedicated working group under the Power Division, with regular coordination meetings and joint projects. The ministry could further incentivize participation by offering research grants to universities that incorporate RTDS into their power systems curriculum and by requiring NGC and ISMO engineers to com-

plete certified RTDS training programs. Such institutionalized collaboration would ensure that RTDS expertise becomes deeply embedded in Pakistan's power sector ecosystem rather than remaining siloed in individual organizations.

Second, regulators should mandate RTDS testing for all new solar and wind projects to ensure they don't destabilize the grid. Third, the ISMO should use RTDS to simulate market operations and grid balancing scenarios before implementing new policies. Fourth, universities should incorporate RTDS into power engineering curricula to prepare the next generation of grid operators. Finally, Pakistan should allocate dedicated funding for RTDS-based research and grid modernization projects, possibly with support from international development agencies.

Pakistan's power sector is at a turning point, solar energy is booming, the grid is



being restructured, and blackouts remain a threat. RTDS is not just a luxury but a necessity to ensure a stable, efficient, and future-proof grid. By fully utilizing RTDS, Pakistan can prevent future blackouts, integrate solar power smoothly, train better grid operators, and build a resilient electricity market. It's time for Pakistan's energy leaders to unlock the full potential of RTDS before the next major blackout strikes. ■

World Bank's New CPF Sets Strategic Path for Long-Term Engagement in Pakistan

The World Bank's newly formulated Country Partnership Framework (CPF) for 2026–2035 took center stage during the first official visit to Pakistan by Mr. Ousmane Dione, the World Bank's Regional Vice President for the Middle East, North Africa, Afghanistan, and Pakistan (MENAAP).

In a high-level meeting with Federal Minister for Economic Affairs Ahad Cheema, the two sides discussed Pakistan's development priorities and the strategic vision underpinning the CPF. The new framework,

which includes a substantial commitment of \$20 billion, is designed to support Pakistan's long-term development objectives with a strong focus on climate resilience, human capital, institutional strengthening, clean energy, and inclusive economic growth.

Minister Cheema welcomed Mr. Dione and praised the World Bank's recent administrative restructuring, which places Pakistan under the newly formed MENAAP region effective July 1, 2025. He noted that this alignment—already adopted by other global financial institutions such as the IMF and IFC—would enhance coordination and responsiveness between Pakistan and the Bank.

"The CPF is not just a funding tool, but a strategic

roadmap that aligns with Pakistan's national goals," said Minister Cheema. He reaffirmed the Government of Pakistan's commitment to work closely with the World Bank country team to ensure effective and results-oriented implementation of the framework.

Acknowledging the World Bank as Pakistan's largest development partner, Minister Cheema expressed gratitude for its critical support during challenging times, including the COVID-19 pandemic and the catastrophic 2022 floods. He noted that Pakistan is showing early signs of economic recovery, including a drop in inflation, rising foreign exchange reserves, and renewed investor confidence. — ER News Desk




Raychem
45 Years in Pakistan

Always Insist on:
Genuine Raychem Brand Power Cable Joints and Termination Kits

BEWARE OF IMITATIONS

H.T. and L.T. Cable Joints and Termination Kits







■ **Floor heating Cable System**

CABLE ACCESSORIES

- Heat Shrink Power Cable Terminations and Joints.
- Insulation Enhancement Products.
- Cable Repair Sleeves
- Lugs and Ferrules
- Cable Jointing Tools
- Cable Fault Location Services
- Telecom Cable Joints
- Earth-Fault Indicators Type EFL - WAPDA Approved
- Electric Heat Tracing System

Expert Installation Services



ELEKTRO-MECHANIK
EARTH-FAULT INDICATOR TYPE EFL
surface-mounted

AVAILABLE EX-STOCK

Contact us

SGWI (PVT.) LIMITED.

HEAD OFFICE: 246-A/3, Gulberg-III, Lahore-54660 (Pakistan).
Tel: (92-42)35711176, 35761888-9, Fax: (92-42) 35711759, 35764888,
Email: ShabirH@sgwi.com.pk, sgwi.associates@hotmail.com www.sgwi.com.pk

KARACHI OFFICE: Bunglow No.469-C, Ground Floor, Adamjee Nagar,
Khataiwar Society, Near Madina Masjid, Karachi.
Tel: 021 - 34382843 - 44, 34320682, 34543034 Fax: 021-34543034

ISLAMABAD: A-1, 2nd Floor, New Aabpara Arcade
G-6/1, Islamabad. Tel: (92-51) 2603632, 2603683

Industrial Plugs and Sockets

Wall mount, Panel mount, Couplers & Plugs for upto 125A

Key Features:

- Electro zinc-plated external screws resist corrosion
- Internal strain relief prevents cable pull-out and terminal wear
- Shrouded brass pins ensure safe, high-conductivity connections
- IP67-sealed housing keeps out water, dust, and debris
- Locking ring stays secure under vibration or mechanical stress
- Staggered contacts prevent arcing and accidental live contact
- First-make, last-break (FMLB) contacts ensure safe grounding
- Clocked earth pin avoids mismatched connections
- UV-resistant, flame-retardant (V2), rated -25°C to +90°C



UAN# 0348 111 8090 - sales@sahamid.com - www.sahamid.com

Pakistan Unveils Breakthrough Heat-Resistant Cotton Seed Amid Soaring Temperatures and Crop Decline

ER Research Desk
In a historic moment for Pakistan's agricultural sector, a locally-developed, climate-resilient cotton seed has been introduced — marking the first such breakthrough in over two decades.

Developed after 25 years of extensive research by Lahore-based Four Brothers Group, in collaboration with the Centre of Excellence in Molecular Biology (CEMB), University of the Punjab, the seed—named CEMB-33—is being hailed as a potential game-changer for the country's struggling cotton industry.

During a recent visit to the company's research facility, Federal Minister for Planning and Development Ahsan Iqbal, accompanied by Engineer Javed Saleem Qureshi, lauded the scientific achievement, calling it “nothing short of an agricultural revolution.”

“Pakistan must achieve self-sufficiency in agriculture. We cannot afford to rely on imports for essential crops any longer,” the minister said. “The government will fully support experts from the private sector who bring such innovations.”

What Makes CEMB-33 Exceptional?

The CEMB-33 seed is the first genetically modified cotton variety developed locally after years of dependence on smuggled or poorly regulated foreign Bt seeds. It incorporates advanced BT gene technology for resistance against bollworms and demonstrates high tolerance to extreme heat — withstanding temperatures as high as 50°C. It also offers strong resistance to diseases like the Cotton Leaf Curl Virus (CLCuV).

“The seed has the potential to increase yield from 15 maunds per acre to 40–45 maunds — even in regions previously considered unviable for cotton,” said Qureshi.

Why This Matters for Sindh

This breakthrough arrives at a time when Pakistan's cotton belt—especially in Sindh—is under siege from climate change. Cotton is

grown in around 15–18 districts of Sindh, with top producers including Sanghar, Mirpurkhas, Umerkot, Khairpur, and Shaheed Benazirabad (Nawabshah). However, temperatures in these districts now routinely hit 48–50°C, often during the peak cotton-growing season from May to July.

Districts like Jacobabad, Dadu, and Larkana, while historically involved in cotton production, have seen a decline in acreage due to intense heatwaves and water scarcity. Conventional seed varieties used previously were not designed to tolerate such heat, often resulting in:

- Early boll drop
- Flower shedding
- Decreased yield and poor fibre quality
- Susceptibility to pest attacks

CEMB-33's heat resilience, therefore, could revive cotton cultivation in these high-risk areas, offering farmers a viable alternative to abandoning the crop altogether.

Early Success in Punjab
Field trials in southern Punjab — including Bahawalpur, Rahim Yar Khan, Multan, and Vehari — have shown promising results, with farmers reporting:

- Strong boll retention even in 47°C+ conditions
- Yield increases of 10–15% over traditional varieties
- Better pest resistance and fibre uniformity

One farmer in Dera Ghazi Khan shared:

“We thought no cotton could survive in June's heat. This seed stayed green, withstood the stress, and we saw flowering when plants usually wither.”

Saving Billions in Imports

Ahsan Iqbal also highlighted potential savings in foreign exchange, stating that domestic innovation in crops like cotton and canola can reduce Pakistan's reliance on costly imports of edible oils



and raw materials for the textile industry.

“Increasing local production of canola oil, for example, could save us billions currently spent on imports,” he noted.

The Science and Future Outlook

Approved by the Punjab Seed Council in 2023, the CEMB-33 seed is seen as a milestone for

biotechnology in Pakistan. It also marks a new chapter in public-private collaboration, with Four Brothers Group at the helm of what may become a national seed replacement strategy.

As climate change reshapes Pakistan's agricultural landscape, stakeholders believe that such innovations are not optional, but essential.

“We need a 10 to 20-year national agriculture plan,” Ahsan Iqbal concluded. “Only then can we safeguard our food security and protect our farmers from climate volatility.”■



ELECTRICITY[®] PAKISTAN
ENERGY | STORAGE | POWER

CONNECTING VISIONARIES & DELIVERING INNOVATION

International Electricity Pakistan Exhibition & Conference

1st - 3rd AUGUST, 2025

EXPO CENTRE, LAHORE

Electricity Pakistan 2025

Contd from page 3
enhance renewable adoption and grid stability. With significant investment in CPEC energy projects and domestic clean energy initiatives, Electricity Pakistan 2025 is set to play a vital role in accelerating energy development.

About the Organizer

FAKT Exhibitions (Pvt) Ltd. is one of Pakistan's leading trade fair organizers, known for delivering high-impact industrial exhibitions. With a portfolio spanning engineering, energy, construction, and consumer sectors, FAKT plays a vital role in connecting businesses and fostering economic growth.■



BOOK YOUR SPACE



www.electricitypak.com

NESPAK Completes Pakistan's First Large-Scale Geo-Tagging of Urban Trees

Pakistan's premier engineering consultancy has achieved a landmark milestone by completing the geo-tagging of trees across a 22.5-kilometer stretch

of the Lahore Canal — the first large-scale digital mapping of urban green cover ever undertaken in the country, according to Mr. Zargham Eshaq Khan, Managing Director of NESPAK.



The effort is part of the upcoming Lahore Yellow Line Project, being launched by the Government of Punjab.



and provides a critical decision-making tool for authorities, urban foresters, and environmental planners.

Strategically located, the Lahore Canal green belt functions as one of Lahore's primary ecological corridors — mitigating air pollution, regulating the microclimate, and enhancing urban biodiversity. NESPAK's intervention equips this corridor with a robust digital inventory, facilitating data-backed manage-

ment without disrupting the integrity of the ecosystem.

More than a technological deliverable, this initiative reflects NESPAK's expanding role in climate-conscious infrastructure development. The ability to digitize tree health baselines, plan plantations using geospatial intelli-



gence, and identify encroachments or illegal removals sets a modern precedent for managing urban green assets with accountability.

This milestone signals a forward-thinking alignment with global urban sustainability practices. NESPAK continues to lead with precision and purpose — integrating engineering excellence with environmental foresight to address the evolving needs of Pakistan's cities. PR/ERMD

PNSC Signs MoU with Chinese Firm to Boost Maritime Cooperation Pakistan's shipping sector poised for a major transformation

Federal Minister for Maritime Affairs, Muhammad Junaid Anwar Chaudhry, has said that Pakistan's shipping sector is poised for a major transformation following the signing of a Memorandum of Understanding (MoU) between the Pakistan National Shipping Corporation (PNSC) and China's Shandong Xinxu Group.

The federal minister

expressed these views while addressing the signing ceremony of the MoU, signed by the CEO of PNSC and the Chairman of Shandong Xinxu Group Corporation.

“The signing of this MoU symbolizes a growing partnership between Pakistan and China in the maritime domain, paving the way for future cooperation, invest-

ment, and development in Pakistan's shipping industry,” he added.

He emphasized that the collaboration would boost regional trade, enhance connectivity, and strengthen Pakistan's role in the global maritime industry through mutual cooperation and shared economic goals.

PNSC, headquartered in Karachi, is Pakistan's pre-

mier national flag carrier operating under the Ministry of Maritime Affairs. Shandong Xinxu Group Corporation, based in Zibo City, Shandong Province, China, is a leading enterprise engaged in international trade and shipping.

The minister stated that the MoU establishes a framework of mutual trust and cooperation between the two entities, aimed at achieving commercial benefits and creating favorable conditions for investment in Pakistan's maritime sector.

The understanding primarily focuses on collaborative efforts in several key areas. These include the sale and purchase of merchant cargo vessels such as liquid bulk tankers, dry bulk carri-



ers, and containerized ships under joint or individual ownership, as well as through profit-and-loss sharing arrangements.

The MoU also encompasses the leasing of such vessels by Xingu to PNSC through various charter mechanisms, including time,

expressed these views while addressing the signing ceremony of the MoU, signed by the CEO of PNSC and the Chairman of Shandong Xinxu Group Corporation.

“The signing of this MoU symbolizes a growing partnership between Pakistan and China in the maritime domain, paving the way for future cooperation, invest-

ment, and development in Pakistan's shipping industry,” he added.

He emphasized that the collaboration would boost regional trade, enhance connectivity, and strengthen Pakistan's role in the global maritime industry through mutual cooperation and shared economic goals.

PNSC, headquartered in Karachi, is Pakistan's pre-

Contd on page 9

FORTNIGHTLY
**ENGINEERING
REVIEW**
The voice of engineers



It's very simple!



Scan & Receive



Just scan the QR Code

Save our number

Message your name and your company name to us

You will receive
Engineering Review
on every fortnight

Phones: (021) 32215961-62, 32632567

0334-2668581

E-mail: info@engineeringreview.com.pk
Web: www.engineeringreview.com.pk

UAP Railway Project

Contd from page 1

mid-2022, the de facto Afghan government had rejoined the project, and expeditionary work commenced to assess the most viable routes.

Despite this progress, technical and security challenges persist. A major concern is the incompatibility of rail gauges among the three countries. While nearly all political and financial frameworks are in place, agreement on a standard gauge system remains elusive. Additionally, the corridor passes through some of the most volatile regions of Afghanistan and Pakistan, raising concerns about militant activity, particularly from groups like ISKP in Afghanistan and insurgents in Khyber Pakhtunkhwa.

Nevertheless, during a bilateral meeting on July 7 in Islamabad, Pakistan and Afghanistan reaffirmed their commitment to overcoming terrorism and enhancing regional connectivity. The thaw in relations between Islamabad and Kabul may prove instrumental in keeping the momentum alive.

Kazakhstan Joins In: Toward a Trans-Afghan Multimodal Corridor

Parallel to the UAP railway project, a Trans-Afghan Multimodal Corridor is beginning to take shape. In collaboration with Pakistan's National Logistics Corporation (NLC), Kazakhstan Rail-

way's KZT Express, and QazTrade, this corridor facilitates multimodal shipments from Kazakhstan through Uzbekistan and Afghanistan to Pakistan, extending onward to the UAE's Jebel Ali port.

A recent pilot shipment from Pavlodar Special Economic Zone in Kazakhstan to Karachi took just 20 days, followed by shipping to Dubai in two more days. Another cargo successfully traveled from Karachi to Azerbaijan, crossing Afghanistan, Uzbekistan, and then ferrying across the Caspian Sea to Baku, covering over 4,800 km in 21 days.

The results are promising. Over 60 containers are expected to follow this route in the coming months, signaling growing confidence in the corridor's viability. Pakistan's TIR (Transports Internationaux Routiers) operators, including TCS, are also playing a key role in facilitating this trade.

Geeconomics in Motion: Regional Players Step Forward

The UAP and Trans-Afghan corridors are not isolated initiatives. In April 2024, Kazakhstan and Uzbekistan signed a joint venture to integrate their rail systems through Afghanistan. Kazakhstan has also committed to supplying materials for railway construction, includ-

ing sleepers and fasteners.

Further, in May 2024, transport ministers and logistics stakeholders from Russia, Belarus, Kazakhstan, Uzbekistan, Afghanistan, and Pakistan convened in Termiz to discuss digitalizing routes, harmonizing tariffs, and establishing a consortium to manage the corridor. The anticipated freight capacity is 20 million tons annually, connecting Europe, South Asia, the Middle East, and beyond.

What's at Stake?

For Pakistan, these transport corridors represent a game-changing opportunity to emerge as a transit gateway for Central Asia. For landlocked countries like Uzbekistan and Kazakhstan, they offer a lifeline to global trade networks. The railway's success could reshape regional supply chains, drive economic integration, and enhance people-to-people connectivity.

Still, significant hurdles remain—from technical rail gauge disparities to volatile border regions and fragile political alliances. Yet, with the Framework Agreement now signed, optimism is growing.

If successfully implemented, the UAP Railway Corridor and the broader Trans-Afghan Multimodal Network could mark the beginning of a new economic era for the heart of Asia. - ERMD

Govt Prioritizes Resolving Issues Faced by Chinese Investors: Ahsan Iqbal

Amid rising concerns over delays and operational hurdles faced by Chinese companies, Federal Minister for Planning, Development and Special Initiatives Ahsan Iqbal has reaffirmed the government's commitment to swiftly resolving all pending issues related to Chinese investment projects in Pakistan.

Chairing a high-level meeting of the Cabinet Committee on Chinese Investment Projects, the minister said that addressing investor grievances — particularly those involving security, regulatory bottlenecks, and utility provision — remains a top government priority. The meeting was attended by senior officials from key ministries and departments involved in the China-Pakistan Economic Corridor (CPEC).

"The government is fully committed to providing a safe, secure, and investor-friendly environment for our Chinese part-



ners," Ahsan Iqbal said. "Resolving their challenges is essential for attracting further investment under CPEC Phase II, which aims to diversify cooperation into sectors like agriculture, technology, and manufacturing."

The minister acknowledged persistent issues faced by Chinese investors, including delays in project approvals, power and water shortages in industrial zones, and concerns about the safety of personnel — particularly in Gwadar and other high-risk regions. He instructed ministries to fast-track pending cases and

ensure timely resolution of disputes and procedural delays.

Focus on Gwadar and Local Concerns

Ahsan Iqbal also emphasized the strategic importance of Gwadar Port, calling it a potential "hub of regional trade and logistics." However, he stressed that progress in water and power infrastructure must accelerate to meet the port's operational needs and to address the livelihood concerns of local fishermen — a long-standing issue that has led to social tensions around CPEC projects.

The minister reminded participants that increasing foreign direct investment (FDI) and local employment is central to the government's economic agenda. "We cannot afford delays that create frustration for our foreign partners or deny economic benefits to our local communities," he added.

CPEC Phase II: A Turning Point

With CPEC entering its second phase, the focus is shifting from infrastructure to industrial cooperation, technology transfer, and special economic zones

(SEZs). Officials said smooth coordination among ministries and provincial authorities is essential to maintain Chinese investor confidence and to ensure that Pakistan does not miss out on regional investment flows.

The meeting concluded with clear directives: pending issues in Chinese-led projects must be resolved without further delay, and ministries must coordinate closely to remove bureaucratic hurdles and provide real-time updates to the Planning Commission. - ERMD

PNSC Signs MoU with Chinese Firm to Boost Maritime Cooperation

Contd from page 8

spot, and bareboat charters. Another major component of the MoU involves PNSC offering commercial, technical, and administrative management services for the vessels, as mutually agreed. These services cover chartering, marketing, revenue optimization, maintenance, dry-docking, crewing, and

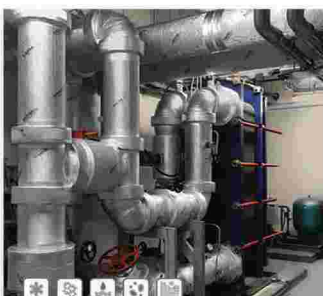
regulatory compliance.

Furthermore, the MoU includes provisions for financing arrangements by Xinxu to PNSC for investments in ships and other floating platforms. These arrangements will be governed by commercially competitive terms, ensuring mutual benefit and financial viability. ■

FAKHRI Brothers
Group of companies. *The Air-Conditioning People*

Complete Solution of Centrally Air Conditioning, Plumbing & Fire Fighting Products

AEROFOAM®



Cross-Linked Closed Cell Polyolefin Thermal Insulation Foam

AEROFOAM® XLPE TUBES, ROLLS & SHEETS

Aerofoam® XLPE rolls, sheets and tubular shapes are made of cross-linked closed cell polyolefin thermal insulation foam with factory applied aluminum foil for mechanical protection designed to control condensation and energy losses in cooling and heating systems.



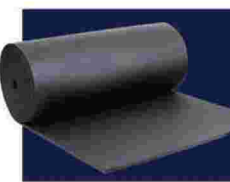
It is suitable for such applications like duct and pipe insulation for air conditioning, cold water, chilled water, hot water and refrigeration as well as within OEM applications.

Designed for indoor and outdoor applications, however outdoor applications need additional protection against weather conditions and UV radiation.

AEROFOAM® NBR TUBES & ROLLS

Aerofoam® NBR is a flexible closed cell elastomeric thermal insulation foam, with high water vapor diffusion resistance factor and low thermal conductivity. It is suitable for such application like duct and pipe insulation for air conditioning, cold water, chilled water, hot water and refrigeration.

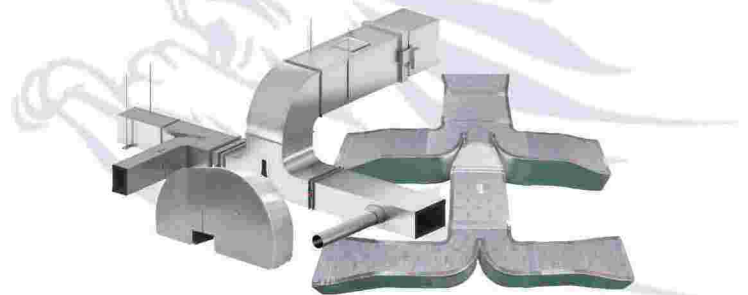
Designed for indoor and outdoor applications, however outdoor application needs additional protection against weather conditions and UV radiation.



Flexible Closed Cell Elastomeric Thermal Insulation Foam

Fibre-free Core Kingspan

LOW ENERGY & LOW CARBON BUILDINGS



AERODUCT®



KIMMCO ISOVER
SAINT-GOBAIN

A market leader in Innovative Sustainable Solutions



Phone: 021-35886201-5 Email: info@fakhribrothers.com Website: www.fakhribrothers.com
Karachi • Lahore • Rawalpindi • Dubai • Sharjah • Abu Dhabi • Qatar

Dozens of State-Owned Enterprises Fall into the Red Zone

Islamabad: Several State-Owned Enterprises (SOEs) in Pakistan have plunged into the financial “red zone,” raising serious concerns of potential bankruptcy and systemic institutional failure, according to an alarming internal review by the Ministry of Finance.

The country has around 212 SOEs, of which 85 are commercial, 44 non-commercial, and 83 are categorized as subsidiaries or inactive, based on the latest publicly available data. The internal assessment reveals that a significant number of these entities are operating under severe financial distress — with 14 major SOEs labeled “high loss-making”, and at least 30 more identified for urgent reforms or divestment due to persistent inefficiencies and mounting losses.

The review notes that bankruptcy is no longer a remote possibility for many SOEs — it is a likely outcome if comprehensive reforms are not immediately undertaken.

Structural Failures and Weak Oversight

The Finance Ministry has called for immediate strengthening of internal controls, governance frameworks, and enterprise-wide risk management systems. The absence of effective oversight in many SOEs has resulted in financial misreporting, escalating operational costs, and suspected fraudulent activities.

A key performance indicator — the average financial stability score across SOEs — is reported to be well below the safe threshold, indicating a widespread risk of collapse.

“Many of these institutions are not just financially vulnerable; they are structurally broken,” the report warns.

Despite the introduction of the State-Owned Enterprises Act, 2023, many SOEs continue to function without active boards of directors. The report criticizes these boards for lacking independence, expertise, and accountability. In several enterprises, audit committees exist only in name, without the technical capacity to enforce transparency or challenge executive decisions.

Energy and Commercial SOEs in Critical Condition

The situation is particularly dire in the energy and

commercial sectors, where complex supply chains and high cash flows are exacerbated by weak monitoring. Entities such as PIA, Pakistan Steel Mills, various DISCOs (distribution companies), and public sector oil and gas firms remain at the center of the crisis. The circular debt in the energy sector, exceeding Rs. 2.3 trillion, continues to weigh heavily on the fiscal system.

Additionally, market disruptions, inflationary pressures, and poor procurement oversight have created an environment ripe for manipulation, inefficiencies, and potential fraud.

Call for Urgent Policy Response

The Ministry of Finance has urged policymakers and regulators to treat the situation as a national economic emergency. The report calls for a revamp of governance structures, real-time financial monitoring, and clear accountability frameworks to prevent further deterioration.

Unless structural reforms are immediately enforced, experts warn that many of these state-owned entities could slide into complete insolvency, burdening the national exchequer and eroding public trust further. — ER News Desk

SNGPL Board Approves Formation of Wholly Owned Subsidiary

Sui Northern Gas Pipelines Limited (SNGPL) has announced that its Board of Directors, in its 638th meeting held on June 25, has approved the formation and registration of a wholly owned subsidiary company.

According to a regulatory filing submitted to the Pakistan Stock Exchange (PSX) and the Securities and Exchange Commission of Pakistan (SECP), the new subsidiary will be established with an authorized share capital of Rs. 1

billion and an initial paid-up capital of Rs. 50 million.

The formation costs of the new entity will be borne by SNGPL initially and subsequently recovered from the subsidiary once

it is operational. Further details regarding the purpose and scope of the new entity were not disclosed in the notification.

This move indicates SNGPL's efforts to expand or diversify its operations, though the specific objectives of the new subsidiary remain to be officially outlined. — ER Report



Pakistan Oilfields Discovers Significant Hydrocarbons at Makori Deep-03 Well

Pakistan Oilfields Limited (POL) has announced a significant discovery of hydrocarbons from the Makori Deep-03 development

25% pre-commerciality working interest.

According to the company's notice to the Pakistan Stock Exchange, drilling of the Makori Deep-03 well began on December 12, 2024, and reached a total

barrels of condensate per day, and 15 barrels per day of water. The test was conducted using a 32/64" fixed choke with a flowing well-head pressure of 4,744 psi, sourced from the Lockhart formation.



well, located in Karak District, Khyber Pakhtunkhwa.

The well is part of the TAL Block, operated by MOL, where POL holds a

depth of 3,887 meters.

Following completion, the well has tested a production of 22.08 million standard cubic feet per day (MMSCFD) of gas, 2,112

POL stated that the well is expected to be connected to the production line within two months, signaling a near-term boost in output and revenue potential. — ER Report

Siddiqsons Tin Plate Reports Rs. 2.05 Bn Loss

By Najeeb Naich

Siddiqsons Tin Plate Limited has posted a significant loss of Rs. 2.05 billion for the fiscal year ended June 30, 2024, as per the company's statement of profit or loss submitted to the Pakistan Stock Exchange (PSX).

The company's revenue declined to Rs. 4.07 billion in FY24 compared to Rs. 4.39 billion in FY23. However, the cost of goods sold surged to Rs. 4.13 billion, resulting in a gross loss of Rs. 55.47 million — a sharp reversal from the Rs. 399.99 million gross profit recorded in the previous year.

The company also

incurred heavy administrative expenses amounting to Rs. 137.44 million (up from Rs. 111.36 million), and impairment losses of Rs. 306.13 million. Further financial strain came from finance costs totaling Rs. 596.15 million and other



expenses of Rs. 47.45 million.

Despite receiving other income of Rs. 53.77 million,



the company recorded a pre-tax loss of Rs. 2.04 billion. After taxation, the total comprehensive loss stood at Rs. 2.05 billion, translating to a loss per share of Rs. 8.88, compared to earnings per share of Rs. 0.01 in FY23.

This dramatic financial downturn highlights the challenges faced by Siddiqsons Tin Plate in maintaining profitability amid rising costs and operational pressures. ■

BOOST YOUR BUSINESS
with Pakistan's Biggest Electrical
& Electronics Industrial Exhibition

14th IEEE FAIR 2025
16 - 18 SEPTEMBER 2025
KARACHI EXPO CENTRE
www.ieeefair.com

ORGANIZER

IEEE KARACHI CENTRE

14th

IEEE FAIR 2025

UFI Approved International Event

UFI PASS BADAR EXPO SOLUTIONS

Renewable & Alternative Energy

Electrical Vehicles & Bike Charging

Battery Storage

Industrial Automation

Smart Grids & Distributed Generation

Electrical Cables & Wires

Energy Metering

Industrial Control Systems

PMT Transformer

UPS

Power Generators

Switchgears

Lithium Ion Battery

Lighting

Industrial Pumps

FOR SPACE BOOKING AND SPONSORSHIPS, PLEASE CONTACT:
info@ieeefair.com, amer.ansary@badarexpo.com, kiran.hassan.zaidi@gmail.com
 Tel: 021 34821159-60, Cell: +92 321 8264044, +92 331 3766294

Eliminating Jet Impulse Fan Systems in Basement Car Park Ventilation: A Comprehensive Technical Review and Safer Design Approach

Author: Engr. Syed Fakhar Sultan

B.Eng. (Mechanical) NED University of Engineering and Technology, Karachi.
MSc Building Services Engineering, Brunel University, London.
Position: Researcher, IJS Research Center.

Abstract
Jet impulse fan ventilation systems, originally developed for tunnel ventilation, have been widely adopted in basement car park designs due to low ceiling height constraints and perceived cost advantages. However, growing awareness of their health risks, operational limitations, and fundamental design flaws necessitates their complete elimination from such applications. This article reviews their history, operating principles, health implications with WHO/IARC references, comparative performance, and exposure risk calculations, and proposes a safer, scientifically validated design approach based on low-level and high-level ducted extraction systems.

1. Introduction
Effective ventilation in basement car parks is critical to maintaining indoor air quality, protecting occupant health, and ensuring compli-

ance with fire and life safety standards. Although jet impulse fans have become a widespread design choice, their suitability warrants serious reconsideration when assessed against fundamental ventilation engineering principles, exposure science, and occupant health protection guidelines.

2. Historical Background
Jet impulse fan technology originated in Europe during the 1960s-1970s for tunnel ventilation, where installation of horizontal ducts was impractical due to long confined geometries. Their primary purpose was to push smoke and exhaust fumes along tunnels to extraction shafts. In tunnels, occupants generally remain inside vehicles, limiting direct inhalation of contaminated air.

In the early 1990s, manufacturers such as Fläkt Woods and Colt International introduced jet fans for basement car parks in Germany and the UK to address low

ceiling heights and reduce ductwork installation costs. Over time, this cost-driven solution became the default practice without re-evaluation of its fundamental suitability for enclosed environments where occupants are directly exposed while walking or working.

3. Principles of Jet Impulse Fan Operation
Jet fans do not extract pollutants themselves. They create high-velocity air jets that entrain surrounding air, pushing it towards exhaust risers with extraction fans. Their performance depends on correct placement, thrust alignment, system balancing, and continuous maintenance to avoid stagnant pollutant zones. Fundamentally, they redistribute polluted air rather than remove it directly from the space.

4. Pollutant Toxicology and WHO/IARC Exposure Standards

4.1 Key Pollutants in Vehicle Exhaust

Pollutant	Source in Vehicle Exhaust	IARC Classification	Health Effects	WHO Exposure Limit
Carbon Monoxide (CO)	Incomplete combustion	Not classified as carcinogen	Hypoxia, headache, dizziness, death at high levels	10 mg/m ³ (9 ppm) 8-hour mean
Benzene	Unburned fuel components, combustion by-product	Group 1 (carcinogenic to humans)	Leukaemia, blood cancers	As low as possible; EU: 0.1 mg/m ³ annual mean
Formaldehyde	Combustion by-product, fuel additives	Group 1 (carcinogenic to humans)	Nasopharyngeal cancer, leukaemia, respiratory irritation	0.1 mg/m ³ 30-minute mean
Diesel Particulate Matter (DPM)	Diesel engine combustion	Group 1 (carcinogenic to humans)	Lung cancer, respiratory diseases	No WHO guideline; EU occupational limit: 0.05 mg/m ³
Nitrogen Dioxide (NO ₂)	High temperature combustion	Group 2A (probably carcinogenic to humans); strong respiratory toxicant	Lung irritation, reduced function, asthma aggravation	25 µg/m ³ annual mean; 200 µg/m ³ 1-hour mean
Polycyclic Aromatic Hydrocarbons (PAHs)	Incomplete combustion	Some PAHs Group 1 carcinogens (e.g. benzo[a]pyrene)	Lung, skin cancer, DNA damage	1 ng/m ³ annual mean for benzo[a]pyrene
Sulphur Dioxide (SO ₂)	Combustion of sulphur fuels	Not classified as carcinogen but toxic	Respiratory irritation, bronchoconstriction	20 µg/m ³ 24-hour mean

4.2 Indoor Air Quality

Pollutant	ASHRAE Guideline	OSHA PEL	CIBSE Guidance
Carbon Monoxide (CO)	9 ppm (8-hr avg)	50 ppm (8-hr TWA)	Maintain below 30 ppm peak; 9 ppm recommended
Benzene	No specific	1 ppm (3.2 mg/m ³) TWA	As low as possible
Formaldehyde	0.1 ppm (0.12 mg/m ³)	0.75 ppm TWA	Maintain below 0.1 ppm
Diesel Particulate	No specific	3 mg/m ³ (total particulates)	Minimise exposure; no safe level
Nitrogen Dioxide (NO ₂)	0.053 ppm (100 µg/m ³) annual avg	5 ppm ceiling	As low as possible
PAHs	No specific	Varies by compound	Minimise exposure; no safe level
Sulphur Dioxide (SO ₂)	0.5 ppm	5 ppm TWA	As low as possible

5. Exposure Risk Calculation Example
Assumptions
• Average vehicle idle exhaust CO: 400 ppm
• Car park volume: 10,000 m³
• Ventilation rate: 6 ACH (both systems)
• Number of vehicles



idling simultaneously: 10
Scenario 1: Jet Fan System
• Redistribution only, no direct extraction.
• Effective CO removal efficiency: 30-50%
• Estimated CO concentration:
(400ppm×10cars×50(400 ppm × 10 cars × 50% inefficiency) / 10,000 m³ = ~20 ppm(400ppm×10cars×50
This exceeds WHO/ASHRAE guidelines (9 ppm 8-hour mean).
Scenario 2: Low-Level + High-Level Ducted Extraction System characteristics
• Low-level extraction: Removes CO, diesel particulates, benzene, formaldehyde, PAHs near
Contd on page 13

Bijli Ghar

Engineering Review

Crafting technology solutions
With long term sustainability at the core.



BEST
BEST ELECTRIC PANELS
Best Street, 14 Commercial Area, Latifabad, Unit No. 2, Hyderabad, Sindh, Pakistan.
Tel No. 022-340 7740, 022-340 7741
email: info@bestelectricpanels.com | web: http://www.bestelectricpanels.com

MAVERICK TECHNOLOGY
Innovation Blends With Economy - Maverick Technology, Your Premier Engineering Firm. Explore The Possibilities With Our Cutting-Edge Solutions And Redefine What's Possible In Engineering

Solar Energy Solution Battery Solution UPS Solution Generators Solution

AUTHORIZED DISTRIBUTOR

GRUPEL **DJ** **GW** **C.T.C** **ADSI**

www.mavtecs.com | mavricttechnology.com | 0300 7008210
Office Address: R-26, Al Hjal Society CHS, Opposite Askari Park Karachi

PROGRESSIVE POWER GENERATORS (PVT) LIMITED
Suite 4403, Anam Estate Building, Main Shahr-e-Faisal, Karachi-75350

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** **JOHN DEERE** **Denyo**

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

POWERAGE
TOTAL POWER SOLUTIONS
Powerage UPS, 650VA – 800KVA
www.powerage.co

Complete IT, Power & Industrial Solution

Marketing & Sales Office:
Powerage Electronics
110, 1st Floor, Elni Centre,
Main Regal, Saddar, Karachi-74400
Ph: 021-32744880 - 32742080 - 35684413
E-mail: info@powerage.co - sale@powerage.co

Deals in:
• Servo stabilizer
• UPS 3/Phase & signal Phase
• Line Conditioner
• Isolating Transformer 3/3-1/1
• Dry Batteries 12V-5Ah-200Ah

"You don't learn to walk following rules. You learn by doing? and falling over."
- Richard Branson

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

KER



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, karimswitch@yahoo.co.uk | website: www.karimisystems.com

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

ENGINEERING REVIEW
FOR THE ADVANCEMENT OF THE INDUSTRY

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

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

Danfoss

Maxthermo & Maxtech
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 67
63 Amp 5 Pins }
125 Amp 5 Pins }

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



Known as the "Granary of India," Punjab is renowned for its abundant production of wheat and rice. The region is also a major producer of cotton, sugarcane, and maize. Agriculture is the primary occupation in Punjab, supported by its fertile land, which yields significant quantities of wheat and cotton each year. While wheat is the main crop, Punjab is also one of the leading exporters of rice, cotton, sugarcane, and maize. In addition, bajra (pearl millet) and jowar (sorghum) are also cultivated in various parts of the region.■

Prime Minister directs for preparing plan to provide easy loans to farmers

Prim Minister Muhammad Shehbaz

Sharif has directed the relevant authorities to present a policy framework for the provision of easy loans to the farmers for medium and small-scale agriculture activities.

Priority should be given to providing modern agricultural facilities to farmers owning less than 12 acres of land, the prime minister said while chairing a review meeting on planning for agricultural development and agri-financing.

The prime minister directed to prepare and present a comprehensive plan by the end of this month for providing farmers with easy

loans and introducing a system in the agri-financing sector aligned with modern

ucts.

He stressed that a framework should be presented to

for small-scale industrial machinery access, aimed at processing farmers' produce

agricultural equipment, quality seeds, artificial intelligence, better water use,

for increasing exports through the processing of agricultural produce, he added.

On the occasion, a detailed briefing was given on ongoing agricultural reforms, the performance of the Agricultural Development Bank Limited, and the loans being provided to farmers.

Deputy Prime Minister and Foreign Minister Ishaq Dar, Federal Ministers Ahad Khan Cheema and Rana Tanveer Hussain, Advisor to the Prime Minister Muhammad Ali, Ministers of State Bilal Azhar Kiani and Abdul Rehman Kanju, Special Assistant Haroon Akhtar, Governor State Bank Jameel Ahmed, Chief Coordinator Musharraf Zaidi, and other senior officials attended the meeting.■



requirements.

He said the development of Pakistan was linked to the development of the agriculture sector and value addition of the agri-prod-

provide farmers with easy loans for modern agricultural equipment, artificial intelligence, and quality seeds.

Comprehensive planning should also be carried out

into exportable goods, the prime minister stressed.

He pointed out that the government was accelerating reform process to provide farmers with modern

on-farm small industries, and other facilities.

Steps are also being included in the reforms for providing farmers with necessary facilities and training

Prime Minister Directs Third-Party Validation to Ensure Transparency in Public Welfare Projects

Prim Minister Muhammad Shehbaz Sharif has issued direc-

tives that third-party validation must be ensured to maintain transparency in public

welfare projects, particularly those related to clean water, electricity, communication, and



education.

He emphasized the importance of upholding high standards in both completed and near-completion projects through independent validation.

Chairing a review meeting on the development projects of the current fiscal year, the prime minister instructed that all delayed projects must be completed at the earliest.

He stated that the construction of high-quality educational centers, such as Danish Schools, in Gilgit-Baltistan, Azad Jammu & Kashmir, and all provinces

Contd on page 13

Engineering Bazar

Engineering Review

THERMAX Industrial Heating

Infrared Burner and Air Mixing Burners for Natural Gas and LPG

Burner
Gas, Diesel or Dual Fuel Maximum efficiency upto. 5000KW

Furnace
Gas Fired / Electric upto 1700°C
Controlled atmosphere / Vacuum
Tube Furnace / Ceramic Kilns

PAPERLESS RECORDER
Features:
FI to 34 channel recordings. F Multi input Thermocouple / RTD / DC Voltage / Current.
F Monochrome / Colour / LCD Display. F RS-232/485 communication / Ethernet.

LPG Vaporizer

THERMOCRAFT
The super store for instruments and materials of boilers and furnaces
Phone: (021) 3272 0757, Fax: (021) 3277 1108;
E-Mail: thermcraft@gmail.com Website: www.thermcraft.com.pk

C&M AUTOMATION (PVT) LTD.
SIEMENS REGIONAL DESIGNATED SYSTEM INTEGRATOR
C-188, Sector 31-D, P&T Society, Korangi Industrial Area, Karachi-74900, Pakistan
Tel: +92-21-35070751, 36016008, Mob: 0301-8241554
E-mail: cmautomation@paktel.com Web: www.paktel.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

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/usp
www.facebook.com/uspck
0300- 2374459 , 0333-2480659

BABAR GATES & DOORS
METAL ENGINEERING SERVICES

Cell : 0300-2303902
0315-2442290
0333-3327366

Fire Door

60 & 120 MINUTES FIRE RATING
SINGLE/DOUBLE LEAF
VISION PANEL, PANIC BAR, CLOSER
MS & SS DOORS ARE AVAILABLE ANY SIZE & ANY TIME

E-mail: babarbrothers060@gmail.com web: www.babarbrothers.com.pk

Eliminating Jet Impulse Fan Systems in Basement Car Park Ventilation:

Contd from page 11
emission height (>90% efficiency).

- High-level extraction: Removes lighter gases (e.g. NO₂) and hot gases (>90% efficiency).
- Estimated concentrations
- CO:
(400ppm×10cars×10(400 ppm × 10 cars × 10% inefficiency) / 10,000 m³ = ~4 ppm(400ppm×10cars×10
- NO₂:
Without high-level extraction: ~30-50 µg/m³
With high-level extraction (90% efficiency): ~3-5 µg/m³
Both are well within WHO and ASHRAE guidelines.

Scenario	System Type	CO Concentration	NO ₂ Concentration	Compliance Status
1	Jet fans only	~20 ppm	~50 µg/m ³	Exceeds WHO/ASHRAE limits
2	Low-level + high-level ducted extraction	~4 ppm	~3-5 µg/m ³	Within WHO/ASHRAE limits

Summary Table
Scenario System Type CO Concentration NO₂ Concentration Compliance Status

- 1 Jet fans only
~20 ppm ~50 µg/m³
Exceeds WHO/ASHRAE limits
 - 2 Low-level + high-level ducted extraction
~4 ppm ~3-5 µg/m³
Within WHO/ASHRAE limits
6. Technical Limitations of Jet Impulse Fans
- Do not provide direct pollutant removal; redistribute contaminated air within breathing zones.
 - Carbon monoxide and heavier pollutants

remain concentrated without low-level extraction.

- Even with CFD validation and ideal placement, they cannot overcome this fundamental limitation.
- Emergency smoke ventilation performance is unpredictable; risk of pushing smoke into escape routes.
- Dependent on ongoing maintenance, which often declines over time, reducing effectiveness.

7. Recommended Safer Design Strategy

A comprehensive ducted extraction system should replace jet fans,

consisting of:

- Low-level ducted extraction for CO, diesel particulates, benzene, formaldehyde, and PAHs at emission source.
- High-level ducted extraction for lighter gases (NO₂) and hot smoke during fires.
- Separate exhaust systems for daily ventilation and emergency smoke extraction to maximise reliability.
- Pressurisation systems for escape routes and staircases to prevent smoke ingress.
- Regular maintenance and indoor air quality monitoring to ensure

continuous compliance with design intent and health guidelines.

8. International Best Practices

ASHRAE, CIBSE, and WHO recommend direct pollutant removal at source to minimise occupant exposure. Hybrid systems combining jet fans for smoke with ducted extraction for daily ventilation exist, but reliance on jet fans alone is discouraged due to their inability to provide direct extraction, a core engineering requirement for indoor air safety.

9. Strategic Position: Discontinuation of Jet Impulse Fans

Based on this technical review:

- Jet impulse fan systems should be discontinued for basement car park ventilation, including for emergency smoke extraction.
- Their design limitation of no direct pollutant removal cannot be resolved by CFD validation or improved fan arrangements.
- They pose significant health hazards by recirculating carcinogens within breathing zones.
- Tunnel ventilation assumptions are inapplicable where pedestrians are exposed in confined indoor car parks.
- Low-level and high-level ducted exhaust systems are safer, reliable, and aligned with engineering ethics prioritising occupant health.

10. Conclusion

Jet impulse fans, initially introduced as a tunnel solution, became widespread in car parks without adequate consideration of their limitations in spaces with direct human exposure. Their continued use conflicts with WHO and IARC guidelines for cancer risk reduction and violates the fundamental ventilation engineering principle that effective systems must remove pollutants rather than redistribute them.

For occupant health, safety, and design compliance, it is recommended to discontinue jet impulse fan systems entirely in basement car park ventilation designs and adopt comprehensive low-level and high-level ducted extraction systems supported by fresh air supply and escape route pressurisation.

References

1. IARC Monographs on the Evaluation of Carcinogenic Risks to Humans, WHO.
2. WHO Air Quality Guidelines, 2021 Update.
3. ASHRAE Handbook – HVAC Applications, Parking Garages.
4. CIBSE Journal, March 2006: Jet Fans for Car Park Ventilation.
5. Fläkt Woods Technical Papers: Impulse Ventilation Systems for Car Parks.
6. Building and Environment Journal, 2008: Indoor Air Quality in Underground Car Parks.■

IMF Rejects Energy Ministry's 3-Year Power Incentive Plan for Industries

The International Monetary Fund (IMF) has rejected a proposed three-year marginal energy package put forward by Pakistan's Ministry of Energy, aimed at incentivizing industrial consumption of surplus electricity.

Sources privy to the negotiations told reporters that the Ministry of Energy was unable to convince IMF officials during ongoing economic review talks. The ministry is now expected to present a revised proposal in the next round of discussions.

The proposed energy package was designed to offer discounted electricity — calculated on a marginal cost basis — to sectors such as artificial intel-

ligence, data mining, and other energy-intensive industries. The plan was intended to utilize the country's reported 8,000 megawatts of surplus power by offering reduced rates on electricity consumption that exceeds normal usage thresholds.

Under the original proposal, consumers would be charged only for production costs and capacity charges on excess electricity, while all other fees and taxes were to be waived.

However, the IMF declined to endorse the package, citing concerns over the Ministry of Energy's inability to ensure full recovery of power sector dues — a key performance indicator under ongoing reform commitments.

Negotiations are expected to continue, with Pakistani authorities preparing a revised version of the industrial energy incentive plan.■

Prime Minister Directs

Contd from page 12
remains a top priority for the government.

The prime minister added that educational institutions are a vital component of this year's development agenda, aiming to provide international-standard education and training to children from economically disadvantaged backgrounds—ensuring equal development opportunities for all.

He further highlighted the critical role of water reservoirs in national development, noting that several such projects are currently under construction.

Regarding technological development, he noted that the establishment of technology parks in Karachi and Islamabad would position Pakistan as a major regional and global hub for information technology.

He also stressed that the

development of Special Economic Zones (SEZs) is a cornerstone of the government's broader economic vision.

During the meeting, the prime minister was briefed on completed projects as well as those in progress during the current fiscal year.

It was informed that multiple projects across the country—spanning communications, IT, water reservoirs, electricity, education, and healthcare—have been completed, while work on new initiatives is progressing swiftly.

The meeting was attended by Minister for Planning and Development Dr. Ahsan Iqbal, Minister for Economic Affairs Ahad Khan Cheema, Minister for Information and Broadcasting Attaullah Tarar, along with senior officials from relevant institutions. - APP

Professional Club

Engineering Review



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)3517081-3 Fax: (92-42)35171084
Email: ace.transportation@ndc.gov.pk

ACE Architectural & Town Planning Services
36-Civic Center, Ground Floor, M-Block, Model Town Ext. Lahore-54700.
Tel: (92-42)3517081-4 Fax: (92-42)35170875
Email: acearts@ndc.gov.pk

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: acepeshawar@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



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



Z.A ENGINEERS (MEP CONSULTANTS)

DESIGN / PROJECT MANAGEMENT / TURNKEY ELECTRICAL - HVAC - PLUMBING - FIRE FIGHTING SOLAR - LPS - ENERGY MODELING - MEP AUDITS

Office 5A, First Floor, Snowwhite Complex, Shahra-e-Faisal, Karachi.
Ph: 0300 243 4979, 0333 243 4976, 0318 243 4979
Email: info@zaengineers.com.pk zaengineers@gmail.com
www.zaengineers.com.pk



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 Worthiness, Power Quality, Hazardous Installations, etc.
- Renovation/Augmentation: Electrical, HVAC, Plumbing, ICT, Building Systems, Security, Utilities, etc.

304, Progressive Square, Block-6, PECHS, Shahra-e-Faisal, Karachi - 75400
T: (+9221) 3432 1350-11 | info@kpwsconsulting.com | www.kpwsconsulting.com



"You don't learn to walk following rules. You learn by doing it and falling over."

- Richard Branson

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



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, Gulistan-e-Jauhar, Karachi.
Ph: 34623161-2, 35458647; Fax: 021-34632483
Web site: www.soilmatengineers.com

Engineering Education for Sustainable Entrepreneurship

Engr. Dr. Muhammad Nawaz Iqbal

With the implementation of a new vision of engineering education, enhanced by ideas of sustainable entrepreneurship, not only can engineering solve some of the biggest challenges in the world, but it can also do so in a scalable and ethical (regenerative) fashion.

The traditional pedagogy leading to the development of only practical skills should change to incorporate interdisciplinary thinking that instills sustainability into the genetic structure of every future engineer. Such transition demands scholarly models that combine environmental responsibility, societal change, and financial sustainability during the conceptualization,

planning, and application of technical solutions.

In order to instill the mindset of sustainable entrepreneurship, engineering education cannot go on with older forms of teaching and learning (lecture-based delivery) and needs to promote learning ecosystems based on experience. This also involves an incubation hub of startups by the engineering colleges, where students come up with low-carbon technologies and circular economy practices. The value of projects should not always be ranked on the basis of functionality and efficiency alone, but also on how the projects are sustainable and have the longevity to generate value within the communities. This solution is much more than solving the problem; it develops active designers of systems.

Current curricula need to incorporate biomimicry and regenerative design

thinking into biomimicry applied curriculum so that students can learn the engineering wonders of nature. An example would include water-capturing applications of beetles living in the desert or framework design influenced by the structure of leaves, resulting in the creation of start-ups that resemble balances of nature. Such bio-inspired models not only solve problems, but they also place human-made systems within planetary boundaries, and eventually form the foundation of start-ups that are defined as truly sustainable in nature.

The incorporation of sustainability indicators in the study of engineering alters the nature of measuring success. No premises here that students will be trained to judge their ventures on the results of the triple bottom line: people, planet, and profit. In real-life simulations, students

have an opportunity to play with choices that reduce environmental degradation, maximize the usage of resources, and, at the same time, maximize inclusive positive effects on social phenomena. This kind of metrics brings about a sense of accountability and vision for future entrepreneurs.

Indigenous knowledge systems and cultural sensitivity should also be put in place as an essential component of engineering education. It is expected of the engineering students to learn the sustainable ways that are included in the local customs and how they can be scaled using technology. As an example, smart monitoring can use traditional methods of water conservation and have a high-impact business that builds on the cultural intelligence and balance with nature.

The ability to identify sustainably based startups

can be fostered in transdisciplinary studios that embrace the engineering and business disciplines, sociology, and environmental science in a proactive fashion. These cross-functional groups promote a comprehensive design thinking model where the technological viability and the emotional connection with the users are merged with the eco-friendliness. These co-creation spaces reflect the complexity of the real world, and students are then ready to start businesses that perform well in the market, which is dynamic and ethically challenged.

One new instructional tool is to teach storytelling and systems thinking in the fundamental engineering classes. One can ask students to work out the journey of a product, in terms of its socio-environmental impact through its life cycle, i.e., extraction, and final



life. This form of narration intensifies ethical interaction with this story and what future engineers can predict business models can look like that become less damaging and more restorative.

Blockchain and AI technologies should be instructed not only because of their technical advantages but also because they can allow the establishment of transparent and decentralized sustainable businesses. As an example, engineering stu-

Contd on page 15

Professional Club

Engineering Review

NESPAC 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: NESPAK 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

TÜV AUSTRIA

decon International (Pvt) Ltd.

Geotechnical Investigation (On-Shore & Off-Shore)

Geotechnical Design:

- Bearing Capacity Evaluation
- Liquefaction Potential
- Swell Potential
- Slope Stability
- Shoring System for Deep Excavation

Field Testing:

- Standard Penetration Test
- Undisturbed Sampling
- Rock Core Sampling
- Field Density
- Grouting Test
- Water Pressure Test (Lugeon Test)
- Permeability Test
- Menard Pressure-Meter Test
- Cone penetration Test (CPT)
- Vane Shear Test

Laboratory Testing (NESPAK Approved)

Soil Gradation

- (Sieve + Hydrometer)
- Atterberg Limits
- Shrinkage Limits
- Unconfined Compression Test
- Direct Shear Tests
- Consolidation
- Swell Potential
- Bulk & Dry Density
- Natural Moisture Content
- Chemical Test for Soil & Water
- Modified / Standard Proctor Test
- California Bearing Ratio (CBR)
- Permeability Test

Soil Test:

- Double Hydrometer for Dispersive Soils
- Water Absorption
- Swell Pressure
- Knight Collapse Potential

3-Point Soaked CBR

- Pinhole
- Crumb Test
- Specific Gravity

Rock Testing:

- Bulk Density
- Dry Density
- Moisture Content
- Porosity
- Water Absorption
- Specific Gravity
- Uniaxial Test
- Elastic Modulus
- Poisson Ratio
- Point Load
- Brazilian Test
- Slake Durability
- Petrography

14-A/1, Block-P, Model Town Extension, Lahore.
Tel: 042-35713362; 042-35713364; 0347-4625111; 0347-4625222
Email: decon@decon.com.pk Web: www.decon.com.pk

SEP SEM-ElekEn Partnership (Private) Limited

YOUR MEP DESIGN PARTNER

40+ YEARS OF LEGACY

1500+ PROJECTS

150+ STAFF

AFFILIATIONS: ASHRAE, NFPA, PSE, PSI

SERVICES:

- HVAC
- ELECTRICAL
- FIRE PROTECTION
- PLUMBING & SANITARY
- VERTICAL TRANSPORT
- IT & COMMUNICATION
- SAFETY & SECURITY
- LIFE SAFETY

SEP@SEPL.COM.PK

021-34526688, 042-37823979

ECIL Engineering Consultants International (Pvt) Limited

The First Engineering Consultancy Company since 1959 in Pakistan

Your Partners for Total Solution, Resource Development/Conservation with Specialty in Satellite Image Processing & Geographic Information System (GIS), BOO & BOOT Perception Developers & System Managers, Automated Mapping Facility Management (AMFM) & Design of Building with Structures in Steel & Concrete, Pioneers in Non-Destruction Testing (NDT) for Concrete, Rebar Erosion & NDT of Highway/ Airport Pavements.

Engineering Consultants International (Pvt.) Ltd.

Head Office: 23, 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, Bhittai 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, 8011 Hillcroft 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-Nayil Building, Abu Hail Road, P.O. Box: 86544, Dubai, U.A.E. Ph: +971 4 297 3288; Fax: +971 4 297 3299 E-mail: info@ecil.com

FND Fahim, Nanji & deSouza (Pvt.) Limited

Consulting Engineers

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

edt Ihtisham H. Zarrar

B.Sc (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

30-A Nazam-ul-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

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

“When you aim for perfection, you find out it is a moving target.”

— George Fisher

ENGINEERING REVIEW

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

ADOMATION

www.adomation.com

CAD Customization **CAD Automation**

CAD Migration **CAD Drafting**

CAD Cartography **3D Printing & Diorama**

THE SPATIO

Engineering & Geo-Spatial Consultants

92-42-3546 898 2

info@thespatio.com **info@cadomation.com**

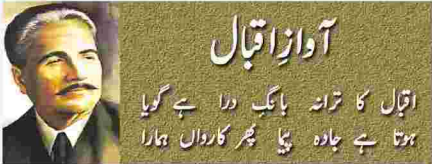
www.thespatio.com **www.cadomation.com**

“A good head and a good heart are always a formidable combination.”

— Nelson Mandela

ENGINEERING REVIEW

Phones: (021) 3221 5961-62, 3263 2567
E-mail: info@engineeringreview.com.pk
Website: www.engineeringreview.com.pk



آہ! یہ دست جو اے گل رنگیں نہیں
کس طرح تجھ کو یہ سمجھاؤں کہ میں گل جیں نہیں
کام مجھ کو دیدہ حکمت کے انجیروں سے کیا
دیدہ بلبل سے میں کرتا ہوں نظارہ تر

تو شناسائے خراش عقدہ مشکل نہیں
اے گل رنگیں ترے پہلو میں شاید دل نہیں
زیب محفل ہے شریک شورش محفل نہیں
یہ فراغت بزم ہستی میں مجھے حاصل نہیں
اس چن میں، میں سراپا سوز و ساز آرزو
اور تیری زندگانی ہے گداز آرزو
توڑ لینا شاخ سے تجھ کو مرا آئیں نہیں
یہ نظر غیر از نگاہ چشم صورت میں نہیں



پوری کوششیں کرنی چاہیے۔ جو لوگ فی الحال لاہور کی قرارداد
پاکستان کے خلاف ہیں، ہمیں ان کے دل میں غیر ضروری تلخی
پیدا نہیں کرنی چاہیے۔ آخر ہمیں ضرورت ہی کیا ہے؟ مجھے پورا
پورا یقین ہے کہ ہمارے یہی حریف ایک نہ ایک دن محسوس کر
لیں گے کہ ہندوستان کے انتہائی پیچیدہ مسئلہ کا واحد اور بہترین
حل قیام پاکستان ہے کہ جس کے قیام کی نظیر پوری دنیا کی
تاریخ میں نہیں ملتی۔
(پنجاب مسلم سٹوڈنٹس فیڈریشن-2 مارچ 194ء)



آزادی اور قربانی
پس جہاں تک ممکن ہو ہمیں اپنے حریفوں کو سمجھانے کے
لئے عقل اور دلیل سے کام لینا چاہیے۔ میں جانتا ہوں کہ دلیل
اور عقل ہمیشہ ہی کامیاب نہیں ہوتیں لیکن ہمیں اپنی طرف سے

Engineering Education for Sustainable Entrepreneurship

Contd from page 14

dents can create a blockchain-enabled supply chain system that conforms with ethical sources or even create AI models that maximize energy usage in smart cities. These new tools can power a new generation of green startups of conscience-minded tech-savvy engineers.

The entrepreneurial aspirations of the engineering students can be re-interpreted in a context of community immersion programs, where the students will be working and residing alongside the underprivileged or climate-vulnerable communities. Students get invested in solving the problem with all their focus as they observe the way the lack of concern about the environment and differences in infrastructure affect the current state of affairs. Such lived experience turns into the engine of the process that empowers and not exploit the marginalized population.

The adventures of circular design Circular design challenges, in which students are asked to make products out of recycled materials or design to disassemble, can light a flame in a new generation of engineers who think in circles instead of straight lines. Such problems lead to creative constraint and they compel the students to think of businesses that will perform optimally within the ecological boundaries. They also pave the way towards material innovation start-ups that cut to the middle between renegeing and prosperity. Sustainability hackathons in which students are matched with industry mentors to address an immediate challenge affecting the planet should be made mandatory in the engineering curriculum.

Such intensive short durations not only speed up the ideation process, but also prove the solutions on the fly. The best ideas may receive robust

advice and investment in the form of seed capital to help them bridge the gap between being a classroom idea to an actual product. The norm of mission-oriented and fast entrepreneurship can redefine the norms of innovation in engineering faculties. One of the basic novelties is the redefinition of internships: the students will not be able to intern in large corporations, but rather be embedded in eco-social startups or NGOs.

This experience of the grasshopper business adds objective innovation to their engineering way of thinking. These forms of internships have the potential to be pre-incubators, so students are able to conduct business experiments and investigate entrepreneurial resilience further. Technical subjects should include ethical entrepreneurship modules, which are developed on the basis of the actual dilemmas that green startups

may face. Trade-off case-based discussion on the consequences of growth and hits on the environment, or stakeholder alignment dilemmas, presents practical knowledge to students.

The modules base entrepreneurship on a moral plane so that the development of businesses does not have to be at the expense of society or ecological livelihood. They can train students in game-based simulators to run AI and VR-powered real-time entrepreneurial ecosystems in which students can make choices that both impact climate metrics, biodiversity, and community health. These tools develop an intuitive sense of the complexity of problems and responsibility of decisions by actively simulating the effects of engineering decisions in real-time. Such simulations startups are more prone to becoming systemically viable and morally upright. ■

Sales Blog for Young Engineers and Entrepreneurs

Why Being “Good Enough” Can Be Dangerous: Story of a Solution Oriented Salesman!

Muhammad Tariq Haq | www.eslpk.com

Imagine two armies fighting a tough battle with swords, spears, and arrows. Suddenly, a salesman arrives and offers a new weapon: the machine gun. The commander of Army A is too busy and happy with his current weapons, so he sends the salesman away. The salesman then goes to Army B. This commander is frustrated because he's not winning, so he listens to the salesman's idea.

After a quick demonstration, Army B uses the new machine and wins the battle in minutes.

This story shows a common problem in sales: sometimes customers are too satisfied with what they have, so they don't want to try something new—even if it's much better.

Why Customers Don't Buy

As a sales engineer, you might hear customers say, “Thanks, but what we have is good enough.” This means they are comfortable and don't see a reason to change. A famous researcher, said, “We must make people constructively discontent in order for them to buy.” In simple words, unless people feel they are missing out or could do better, they won't want to buy.

Modern Examples

This happens in real life too:

BlackBerry vs. Smartphones: BlackBerry

phones were very popular, and their company thought their product was good enough. Some customers like me were very content until an Apple Supplier showed what I was missing! BlackBerry lost because they didn't want to change.

tent as the world wants cleaner energy.

Kodak and Digital Cameras: Kodak invented the digital camera. Until customers were content, they were happy selling film. Then companies using digital cameras took over the market

Retail Stores vs. Online Shopping: Many shops thought their in-store experience was enough and customers were happy too! But companies like Amazon kept improving online shopping and took over by creating a customer discontent.

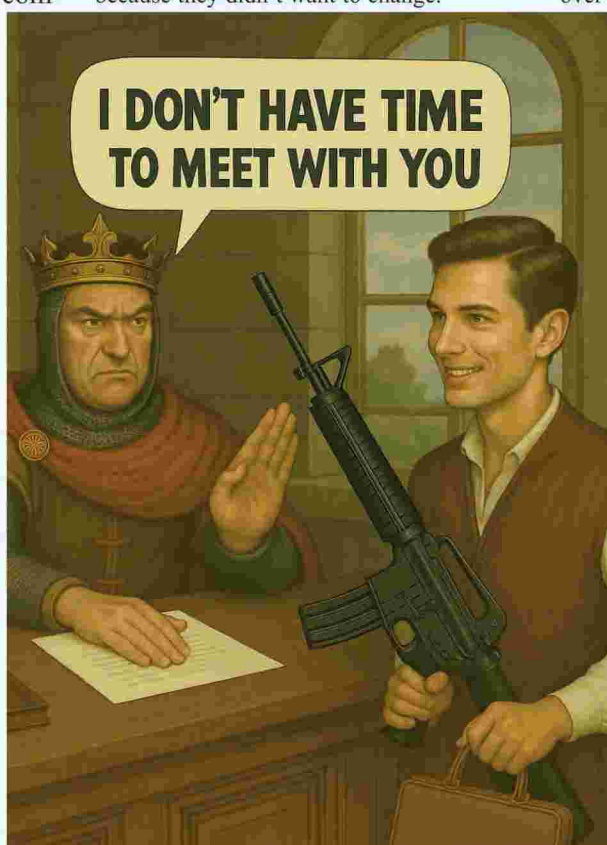
How to Help Customers See the Value

As a salesperson, your job is to help customers see why they should want something better. Here's how:

1. Show Problems They Didn't Notice: Help them see issues or risks with their current solution.
2. Describe a Better Future: Explain how your product can make their work easier, faster, or safer.
3. Make Them Curious: Don't make them feel bad, but show them how much better things could be.
4. Share Success Stories: Tell them about others who improved by using your solution.

Whether in war or business, being too satisfied can be dangerous. The best companies and leaders are always looking for ways to improve. As a sales engineer, remember: your biggest challenge

is not your competitors—it's convincing people that “good enough” isn't always good enough. Help them see what they're missing, and you'll be a great success in sales. ■



Fossil Fuels vs. Renewable Energy: For years, energy companies used coal and oil because it worked fine with customers. But then companies that tried solar, wind power and battery storage started creating discon-

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. Moh. Nawaz Iqbal	

Graphic Designer

Shaikh Muhammad Raza ur Rehman

Page & Web Designer

Waheed Ahmed

Branch Manager (Lahore)

Hamza Idrees

Regional Manager (Islamabad & North)

Muhammad Arif

Annual Subscription

2,400

Advertisement Tariff

Display Ads (Colour)

	Casual & Supplement	Contract
Per Col. cm	Rs.425	Rs.415
Full Page 240 Col.cm	Rs.102,000	Rs.99,600
½ Page 120 Col.cm	Rs. 51,000	Rs.49,800
¼ Page 60 Col.cm	Rs. 25,500	Rs.24,900
⅛ Page 30 Col.cm	Rs. 12,750	Rs.12,450

Engineering Bazar

A package for small budgets

	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
06	Rs.26,500	Rs.40,000	Rs. 53,000

Professionals' Club

Only for listing consultants' specialties

	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
06	Rs.12,000	Rs.21,000	Rs. 40,000

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

0334-2668581

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

Lahore

Room # 29, 6th Floor

Goldmine Plaza

105-Ferozepur Road Lahore.

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

Email: engineeringreview_lahore@yahoo.com

Islamabad

3-B, Basement Triple One Plaza,

Fazle Haq Road, Blue Area, Islamabad.

Ph: 051-2348-6200 Mobile: 0300-9202824

Email: engineeringreview isb@gmail.com

www.engineeringreview.com.pk



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
Email: ntmpab@gmail.com Website: www.ntmpk.com

پنرہ روزہ

انجینئرنگ ریزو

بانی: نجم الحسن بانی ایڈیٹر: ریاض الحسن

جلد نمبر: 50 • شمارہ نمبر: 15 • اگست: 2025 • 1-15 • فون: +92-21-32215961-2, 32632567 • ویب سائٹ: info@engineeringreview.com.pk • ای میل: www.engineeringreview.com.pk



www.engineeringreview.com.pk www.youtube.com/engineeringreviewER

اگلے 5 سالوں میں دنیا کا
درجہ حرارت خطرناک حد تک
بڑھ جائے گا، ماہرین کا انتباہ
ماہرین نے خبردار کیا ہے کہ اگلے 5 سالوں میں عالمی درجہ
حرارت میں 11 اشاریہ 5 ڈگری بڑھ جانے سے گلشیئر
پگھلنے کی وجہ سے سمندر کی سطح مزید بلند ہو جائے گی۔

بین الاقوامی میڈیا کے مطابق موسمیاتی
ماہرین نے اس خیال کا اظہار کیا ہے کہ اس
بات کا 80 فیصد امکان ہے کہ اگلے 5 سالوں
میں ایک سال گرم ترین سال ضرور ہوگا، انسانی
تاریخ میں پہلی بار وسطی 2 ڈگری کا اضافہ
متوقع ہے۔
ورلڈ میٹرولوجیکل آرگنائزیشن کے ڈپٹی
سیکریٹری جنرل کوہیرٹ نے کہا ہے کہ ہم
ریکارڈ میں گرم ترین سالوں کا تجربہ کیا ہے، اور
ہمیں ورلڈ میٹرولوجیکل آرگنائزیشن کی آنے
والی رپورٹ میں بہتری کی کوئی علامت نظر
نہیں آ رہی، جس سے ظاہر ہوتا ہے کہ ہماری
میشین اور روزمرہ کے معمولات ہماری زمین پر
برے اثرات ڈال رہے ہیں۔
عالمی درجہ حرارت میں ایک اشاریہ 5 کا
اضافہ نے ہمیں بیس کلائمٹ اگرینٹ پر
طے شدہ ہدف سے مزید دور کر دیا ہے۔ اس
ساری صورتحال میں ہوگا یہ کہ سطح سمندر پر واقعہ
ممالک اور چھوٹے جزائر کو اپنی بقاء کے لیے
مسائل کا سامنا کرنا پڑے گا، معاہدے میں یہ
طے کیا گیا تھا کہ ہم 2 ڈگری کم کی سطح تک
محدود رہیں گے۔

چین نے پاکستان افغانستان ازبکستان ریل لنک منصوبہ سی پیک میں شامل کرنے پر آمادگی ظاہر کر دی، وزیر خارجہ

کوریڈور وسطی ایشیائی ممالک کو افغانستان کے راستے پاکستانی بندرگاہوں سے جوڑ دے گا، ڈار، افغان وزیراعظم، وزیر خارجہ سے ملاقات

وزیر خارجہ اسحاق ڈار نے بتایا ہے کہ چین
نے پاکستان افغانستان ازبکستان ریل لنک
منصوبہ سی پیک میں شامل کرنے پر آمادگی
ظاہر کر دی ہے۔ اسلام آباد میں نیوز کانفرنس
کے دوران اسحاق ڈار نے بتایا کہ ٹرانس افغان
میں اس منصوبے پر بات ہوئی تھی، اچھی خبر
یہ ہے کہ چین نے سی پیک کو افغانستان تک
بڑھا دیا ہے۔
نائب وزیراعظم اور وزیر خارجہ اسحاق ڈار
نے ازبکستان، افغانستان، پاکستان (یو اے
ٹرانزٹ اور سیوریٹی میں تعاون کو بڑھانے کے
لیے کوششوں کو مضبوط بنانے کی ضرورت پر
اتفاق کیا۔ دریں اثناء اسحاق ڈار نے افغان
وزیراعظم ملا محمد حسن اخوند سے ملاقات کی۔
دونوں رہنماں نے امن و سلامتی، تجارت و



ریل منصوبے کے معاہدے پر اس جون کے
پہلے ہفتے میں دستخط ہونا تھے، مگر افغانستان کی
جانب سے تاخیر کی وجہ سے ازبکستان میں
معاہدے پر دستخط کا پروگرام موخر ہوا۔
اسحاق ڈار نے کہا کہ 19 مئی کو بیجنگ
میں پاک افغان چین سہ فریقی مذاکرات
پہلے سے معاہدے کو علاقائی رابطے میں
سنگ میل قرار دے دیا۔ اسحاق ڈار نے قائم
مقام افغان وزیر خارجہ امیر خان منگنی سے بھی
ملاقات کی۔ دونوں فریقوں نے دو طرفہ
تعلقات میں رفتار کو برقرار رکھنے اور دونوں
ممالک کے باہمی فائدے کے لیے تجارت،
ٹرانزٹ تعاون اور علاقائی رابطہ کاری سمیت
باہمی دلچسپی کے امور پر تبادلہ خیال کیا۔ اسحاق
ڈار نے ریلوے کو ریلوے کو ایک اہم سنگ میل
قرار دیتے ہوئے ڈار نے کہا کہ یہ وسطی ایشیائی
ممالک کو افغانستان کے راستے پاکستانی بندر
گاہوں سے جوڑ دے گا۔ انہوں نے اس

انرجی سیکٹر کے مسائل، عالمی بینک نے حل کیلئے تجاویز دیدیں

پالیسی سازی، مالی وسائل کا فقدان، توانائی سیکٹر میں اصلاحات کی راہ میں رکاوٹیں قرار
توانائی بحران پر قابو پانے اور ماحولیاتی تحفظ کے اہداف کیلئے نجی شعبے کے تعاون کی تجویز

عالمی بینک نے معلومات، پالیسی سازی
اور مالی وسائل کے فقدان کو توانائی کے شعبہ
میں اصلاحات کی راہ میں
بڑی رکاوٹیں قرار دیے یا
ہے اور توانائی بحران پر قابو
پانے کیساتھ ماحولیاتی
تحفظ کے اہداف کے
حصول کیلئے حکومت اور نجی
شعبے کے تعاون کی تجویز
دی ہے۔
تفصیلات کے
مطابق عالمی بینک کی
جانب سے پاکستان میں
توانائی کے شعبے سے متعلق
رپورٹ جاری کی گئی ہے
جس میں پاکستان کے انرجی سیکٹر کو درپیش
بڑے مسائل کی نشاندہی اور ان کا ممکنہ حل تجویز
کیا گیا ہے، عالمی بینک نے اپنی رپورٹ میں
بتایا ہے کہ معلومات، پالیسیز، ٹیکنالوجی فریم ورک
جدید ٹیکنالوجی کے استعمال
سے 60 فیصد بجلی کی بچت
متوقع ہے، یہی نہیں اس سے
13 فیصد تک کاربن کے
اخراج میں کمی بھی ہوگی۔
رپورٹ کے مطابق پاکستان
میں کول فائرڈ یونٹوں 15
سے 20 سال پرانے ہیں،
صرف گیس سیکٹر میں جدید
یونٹوں کے استعمال سے
سالانہ 2 ارب ڈالر بچت ہو
گی، کھادیکٹر کا بڑا انحصار
قدرتی گیس پر ہونے سے
اس سے قیمتوں میں اتار چڑھاؤ کا خطرہ بھی
زیادہ ہوتا ہے۔
عالمی بینک نے پالیسی سازی
اور مالی وسائل کی کمی جیسی رکاوٹیں اصلاحات
کی راہ میں رکاوٹیں ہونے دے رہیں، پانچ

CHINT Next series

CHINT ELECTRIC

The Next Reliable Choice

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

Authorized Distributor

Ameejee Valleejee & Sons (Pvt.) Ltd.

Head Office (Karachi): Ameejee 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



Tokenizers & Decoders Enable Image Editing Without Generators

Although image generation—which relies on neural networks to create new images from a variety of inputs, including text prompts—is projected to become a billion-dollar industry by the end of this decade.

Even with today's technology, if you wanted to make a fanciful picture of, say, a friend planting a flag on Mars or heedlessly flying into a black hole, it could take less than a second.

However, before they can perform tasks like that, image generators are commonly trained on massive datasets containing millions of images that are often paired with associated text. Training these generative models can be an arduous chore that takes weeks or months, consuming vast computational resources in the process.

But what if it were possible to generate images through AI methods without using a generator at all? That real possibility, along with other intriguing ideas, was described in a research paper presented at the International Conference on Machine Learning (ICML 2025), which was held in Vancouver, British Columbia, earlier this summer.

The paper, describing novel techniques for manipulating and generating images, is published on the arXiv preprint server.

It was written by Lukas Lao Beyer, a graduate student researcher in MIT's Laboratory for Information and Decision Systems (LIDS); Tianhong Li, a postdoc at MIT's Computer Science and Artificial Intelligence Laboratory (CSAIL); Xinlei Chen of Facebook AI Research; Sertac Karaman, an MIT professor of aeronautics and astronautics and the director of LIDS; and Kaiming He, an MIT associate professor of electrical engineering and computer science.

This group effort had its origins in a class project for a graduate seminar on deep generative models that Lao Beyer took last fall. In conversations during the semester, it became apparent to both Lao Beyer and He, who taught the seminar, that this research had real potential, which went far beyond the confines of a typical homework assignment. Other collaborators were soon brought into the endeavor.

The starting point for Lao Beyer's inquiry was a June 2024 paper, written by researchers from the Technical University of

Munich and the Chinese company ByteDance, which introduced a new way of representing visual information called a one-dimensional tokenizer. With this device, which is also a kind of neural network, a 256x256-pixel image can be translated into a sequence of just 32 numbers, called tokens.

"I wanted to understand how such a high level of compression could be achieved, and what the tokens themselves actually represented," says Lao Beyer.

The previous generation of tokenizers would typically break up the same image into an array of 16x16 tokens—with each token encapsulating information, in highly condensed form, that corresponds to a specific portion of the original image. The new 1D tokenizers can encode an image more efficiently, using far fewer tokens overall, and these tokens are able to capture information about the entire image, not just a single

versa. Another token affected the blurriness in the background, while another still influenced the brightness. He also found a token that's related to the "pose," meaning that in the image of a robin, for instance, the bird's head might shift from right to left.

"This was a never-before-seen result, as no one had observed visually identifiable changes from manipulating tokens," Lao Beyer says. The finding raised the possibility of a new approach to editing images. And the MIT group has shown, in fact, how this process can be streamlined and automated, so that tokens don't have to be modified by hand, one at a time.

He and his colleagues achieved an even more consequential result involving image generation. A system capable of generating images normally requires a tokenizer, which compresses and encodes visual data, along with a generator that can combine and

The group demonstrated that with this same setup—relying on a tokenizer and detokenizer, but no generator—they could also do "inpainting," which means filling in parts of images that had somehow been blotted out. Avoiding the use of a generator for certain tasks could lead to a significant reduction in computational costs because generators, as mentioned, normally require extensive training.

What might seem odd about this team's contributions, He explains, "is that we didn't invent anything new. We didn't invent a 1D tokenizer, and we didn't invent the CLIP model, either. But we did discover that new capabilities can arise when you put all these pieces together."

"This work redefines the role of tokenizers," comments Saining Xie, a computer scientist at New York University. "It shows that image tokenizers—tools usually used just to

compress images—can actually do a lot more. The fact that a simple (but highly compressed) 1D tokenizer can handle tasks like inpainting or text-guided editing, without needing to train a full-blown generative model, is pretty surprising."

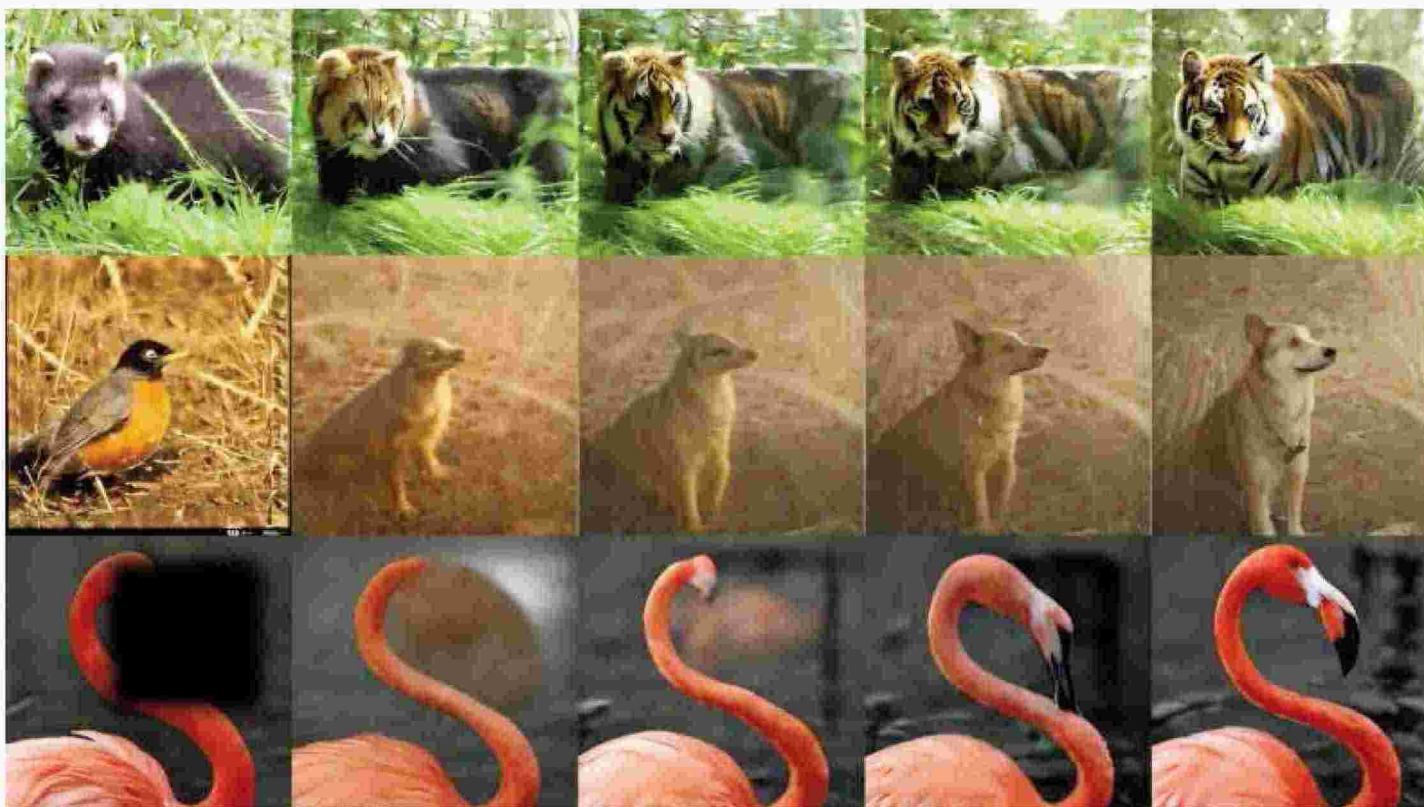
Zhuang Liu of Princeton University agrees, saying that the work of the MIT group "shows that we can generate and manipulate the images in a way that is much easier than we previously thought. Basically, it demonstrates that image generation can be a byproduct of a very effective image compressor, potentially reducing the

cost of generating images several-fold."

There could be many applications outside the field of computer vision, Karaman suggests. "For instance, we could consider tokenizing the actions of robots or self-driving cars in the same way, which may rapidly broaden the impact of this work."

Lao Beyer is thinking along similar lines, noting that the extreme amount of compression afforded by 1D tokenizers allows you to do "some amazing things," which could be applied to other fields. For example, in the area of self-driving cars, which is one of his research interests, the tokens could represent, instead of images, the different routes that a vehicle might take.

Xie is also intrigued by the applications that may come from these innovative ideas. "There are some really cool use cases this could unlock," he says. - TX



quadrant.

Each of these tokens, moreover, is a 12-digit number consisting of 1s and 0s, allowing for 212 (or about 4,000) possibilities altogether.

"It's like a vocabulary of 4,000 words that makes up an abstract, hidden language spoken by the computer," He explains. "It's not like a human language, but we can still try to find out what it means."

That's exactly what Lao Beyer had initially set out to explore—work that provided the seed for the ICML 2025 paper. The approach he took was pretty straightforward. If you want to find out what a particular token does, Lao Beyer says, "you can just take it out, swap in some random value, and see if there is a recognizable change in the output."

Replacing one token, he found, changes the image quality, turning a low-resolution image into a high-resolution image or vice

versa. Another token affected the blurriness in the background, while another still influenced the brightness. He also found a token that's related to the "pose," meaning that in the image of a robin, for instance, the bird's head might shift from right to left.

Their new approach makes use of a 1D tokenizer and a so-called detokenizer (also known as a decoder), which can reconstruct an image from a string of tokens. However, with guidance provided by an off-the-shelf neural network called CLIP—which cannot generate images on its own, but can measure how well a given image matches a certain text prompt—the team was able to convert an image of a red panda, for example, into a tiger.

In addition, they could create images of a tiger, or any other desired form, starting completely from scratch—from a situation in which all the tokens are initially assigned random values (and then iteratively tweaked so that the reconstructed image increasingly matches the desired text prompt).

New scrubbing robot could contribute to automation of household chores

While the advent of robotic systems that can complete household chores has been widely anticipated, those commercially released so far are primarily robot vacuums that autonomously clean the floor. In contrast, robots that can reliably clean surfaces, tidy up, cook or perform other tasks in home environments are either too expensive or have not yet reached the market.

Researchers at Northeastern University recently developed SCCRUB, a soft robotic arm that can complete a chore beyond hoovering and mopping, which many people find tedious, namely scrubbing surfaces clean. The new robotic arm, introduced in a paper on the arXiv preprint server, was found to successfully clean dirty, burnt and greasy surfaces, removing over 99.% of residue adhered to them.

"Our recent study builds on one of our earlier papers published in Science Robotics," Jeffrey Lipton, senior author of the paper, told Tech Xplore. "We knew we had a new type of robot arm that could deliver the power of a drill through a soft robotic arm. We wanted to show what else we could do with this new platform."

To further test the effectiveness of the soft robotic arm they developed, Lipton and his colleagues started browsing online, searching for viable real-world applications. They soon noticed that one of the drill accessories most purchased on Amazon was a scrubber, which inspired them to integrate it with their arm.

"I think many people have exerted themselves scrubbing something only to think: 'Why can't a robot be doing this?'" said Jakub F. Kowalewski, first author of the paper. "The reality is that robot arms that are powerful enough for heavy-duty cleaning often aren't safe around people. Our goal was to show how robots that combine flexibility and rigid-

referred to as TRUNC cells.

"TRUNC stands for torsionally rigid universal couplings," explained Lipton. "These cells can bend, extend, and flex while transmitting torque. By chaining and nesting them, we build a robot arm that is lightweight and soft but able to put a hand drill's worth of torque through the arm. This allows us to

added a bristled brush attachment to their robotic arm that can scrub dirt and residue from surfaces.

"The brush attachment for the SCCRUB arm uses a planetary gear box to counter-rotate the brush," said Alyssa Ugent, co-author of the paper. "By canceling out the frictional forces, the counter-rotating brush allows the soft arm to firmly press into a surface while maintaining its position."

The researchers tested a prototype of the SCCRUB arm in a series of experiments, as part of which it cleaned different types of "messes." They found that the arm successfully cleaned both a glass plate that was previously placed in the microwave with ketchup on it and a toilet seat with blueberry fruit preserve adhered to it, removing almost all the residue.

"Our soft arm can work with and around humans, in human spaces, but deliver the power typically only found in expensive hard robots," said Lipton.

"We hope this new way of making robots will allow robots to share our spaces and world alongside us on tasks that are dull and dirty without being dangerous. We now plan to continue to refine the arm used in SCCRUB to do other tasks."

The new robotic scrubber developed by this research team could soon be improved further, to broaden the range of chores that it can successfully tackle. Lipton and his colleagues hope that it will eventually make its way out of their lab and into real-world household environments.

"I hope to one day see soft robotic arms safely assisting humans across a wide range of settings, from industrial environments to everyday domestic tasks," added Kowalewski.



ity can be soft and safe yet powerful enough to scrub tough grime with a brush."

SCCRUB, the new robotic arm introduced by the researchers, has three main components. These include a counter-rotating scrubber brush, new deep learning-based software controller that plans the actions required to clean and robot components previously developed by Lipton and his colleagues,

make the arm safe for contacting surfaces and working around people while delivering the power needed to scrub dirt and grime."

The actions of the SCCRUB robot are planned by a machine learning-based controller that plans the movements of specific parts of the robot to ensure that they reach desired positions, while also accounting for the arm's flexibility. In addition, the team

Bifacial thin-film solar cells harness sunlight from both sides for higher output

A research team successfully implemented CuInSe₂ thin-film solar cells composed of copper (Cu), indium (In), and selenium (Se) on transparent electrode substrates. Furthermore, the team developed a "bifacial solar cell technology" that receives sunlight from both the front and back sides to generate power.

This technology can be fabricated at low temperatures, enabling a simpler production process, and is broadly applicable to building-integrated solar power, agricultural solar power, and high-efficiency tandem solar cells in the future.

The findings are published in the journal Advanced Energy Materials. The team was led by Dae-hwan Kim and Shijoon Sung at the Division of Energy & Environmental Technology (concurrently affiliated with Interdisciplinary Engineering), Daegu Gyeongbuk

Institute of Science & Technology.

Recently, bifacial solar cells have garnered significant attention, as the cells can absorb light from both

states that allow light to pass through. However, when thin-film solar cells were fabricated on transparent electrodes with low heat resistance, it was difficult to

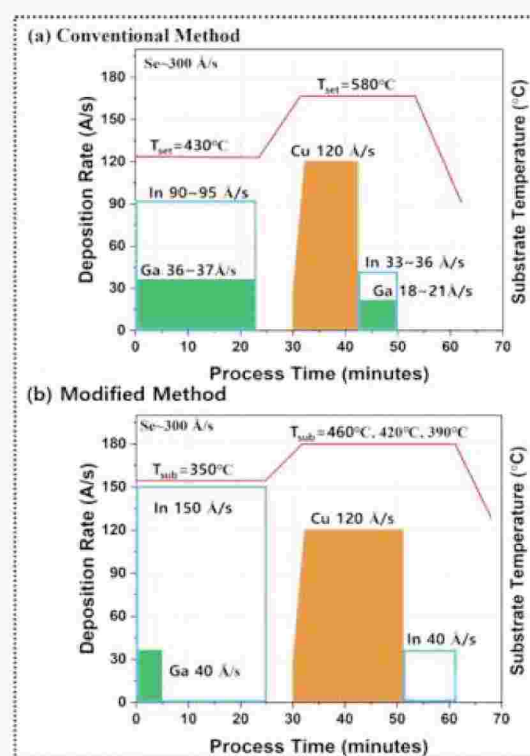
have successfully developed the compound thin-film solar cell technology that operates at temperatures below 420°C and has a narrow band gap. Silver (Ag) was introduced

device efficiency by inducing a gradient of gallium (Ga) at the bottom of the CuInSe₂ layer and by improving charge transport (carrier delivery) and recombination

As a result, the research team's narrow-gap thin-film solar cells on transparent substrates achieved one of the world's best performances, with 15.3% front efficiency and 8.44% back efficiency. They also demonstrated high efficiency in bifacial performance measurements, with a bifacial power generation density (BPGD) of 23.1 mW/cm².

"This study offers a new possibility to increase efficiency for thin-film solar cells based on transparent substrates," said Kim and Sung. "We will further expand the scope of applications for high-efficiency bifacial solar cell technology based on transparent substrates."

Meanwhile, Kim and Sung at the Division of Energy & Environmental Technology (also affiliated with Interdisciplinary Engineering) participated in this study as the corresponding authors, while Ali Amanat, a Ph.D. student in Interdisciplinary Engineering, and Donghwan Jeon, a full-time researcher in the Division of Energy & Environmental Technology, served as the first authors. - TX



the front and back simultaneously, not just the front, to generate more electricity in the same area. To implement these cells, it is necessary to use transparent electrode sub-

achieve good properties. This is because high temperatures are required to fabricate traditional thin-film solar cells.

Principal Researchers Kim and Sung at DGIST

during the process to form the CuInSe₂ compound, enabling high-quality compound deposition at lower temperatures.

Moreover, it increased

properties. This allowed the research team to enhance the performance of bifacial CuInSe₂ thin-film solar cells based on transparent substrates.

