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FORTNIGHTLY
ENGINEERING REVIEW
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Founded by Najam ul Hassan (Marhoom)

Vol. 50 No.02 | January 16-31, 2025 | info@engineeringreview.com.pk | Ph:+92-21-32215961-2

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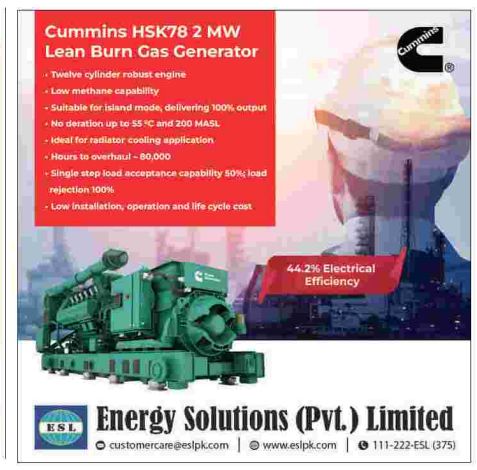

A New Dawn for Reko Diq: Saudi Investment and Pakistan's Mining Future

It was a crisp winter morning in Riyadh, as the towering glass structures of the Saudi capital gleamed under the soft sunlight. Inside the grand hall of the Future Minerals Forum, global mining experts, executives, and government officials gathered to discuss the future of mineral resources and energy. Among them was Bandar Alkhorayef, Saudi Arabia's Minister of Mining, who had a lot to share about his kingdom's ambitions in the mining sector, particularly in Pakistan.

Alkhorayef had just made a significant announcement that rippled through the mining industry: Saudi Arabia's state-backed mining giant, Manara Minerals, was eyeing a $100 million investment in Pakistan's mining infrastructure. The news came as a welcome surprise to many in Pakistan, who had long struggled with underdeveloped infrastructure in their mining sector. The focus was on the vast copper and gold reserves of Reko Diq, a mine regarded as one of the world's largest underdeveloped mineral deposits.

"We are looking to help Pakistan with infrastructure projects that will make the mining deals more viable," Alkhorayef explained in an interview with Reuters. "The lack of proper infrastructure has hindered many potential mining ventures here. Through the Saudi Development Fund, we aim to provide financing solutions to make this possible."

The announcement aligned with Pakistan's growing optimism regarding foreign investments in its mineral resources, particularly the Reko Diq mine, which had been at the center of a legal and financial dispute for years. The mine, once a dream for many in the country's mining industry, had the potential to transform the economy.

Just a day earlier, Pakistan's Petroleum Minister, Musadik Malik, had expressed similar optimism. "I'm very hopeful that in the next quarter or two we will have very big announcements," Malik had said. He was referring to a series of copper-related developments at Reko Diq and other nearby mines. "So we're very hopeful that this year, we will make some big announcements."

Minister Malik's confidence was not without foundation. Back in May, executives from Manara Minerals had visited Pakistan to explore potential partnerships. The kingdom's interest in Reko Diq wasn't just about copper and gold; it was about securing a foothold in one of the most coveted mining regions in the world. For Saudi Arabia, it was part of a broader strategy to diversify its economy away from oil dependency.

Manara Minerals, a joint venture between Ma'aden, Saudi Arabia's state-controlled mining company, and the Public Investment Fund (PIF) – which manages a staggering $925 billion in assets – was created to take on ambitious international ventures. As part of Saudi Vision 2030, the kingdom's plan to transition its economy, the partnership with Pakistan was a pivotal step.

"I am confident this partnership will bring prosperity to both countries," Malik added. "The Saudi investment could revitalize Reko Diq and potentially expand operations to other mineral-rich areas in the region."

The deal was still in the

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"A hero is an ordinary individual who finds strength to persevere and endure, in spite of overwhelming obstacles."

- Christopher Reeve

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A New Dawn for Reko Diq: Saudi Investment and Pakistan's Mining Future

Contd from page 1

works, but as the Future Minerals Forum in Riyadh continued, there was a tangible sense of momentum. For Pakistan, this development was a glimmer of hope amidst ongoing economic struggles. The promise of Saudi investment brought not only financial capital but technical expertise that the Pakistani mining sector had long lacked.

In the broader context of mining in the region, another announcement had caught the attention of industry leaders. Saudi Aramco, the oil giant, had begun a promising lithium extraction project in partnership with King Abdullah University for Science and Technology (KAUST). Lithium, a key component in the batteries of electric vehicles, laptops, and smartphones, was quickly becoming one of the world's most sought-after minerals. Aramco's interest in this emerging market further showcased the kingdom's commitment to diversifying its economy beyond oil.

Yet, even as Saudi Arabia and Pakistan were entering an exciting phase of cooperation, challenges remained. The Reko Diq mine, despite its immense potential, was far from commercially viable without substantial investment in infrastructure, both logistical and technological. This was where the Saudi Development Fund's role became crucial. The kingdom's deep pockets and financial expertise would be vital in turning the mine into an operational success.

Over the coming months, a flurry of negotiations and agreements between Manara Minerals, the government of Pakistan, and local stakeholders began to take shape. There was talk of a joint venture agreement that would see the kingdom's mining giant gain access to Reko Diq, as well as other untapped deposits in the region. The deal would include not just extraction operations but also significant upgrades to local infrastructure: roads, power grids, and transportation networks necessary to bring the mine into full production.

In the corridors of power in Islamabad, excitement was palpable. With foreign investment on the horizon, officials began to reimagine Pakistan's role in the global mining landscape. For decades, the country's mineral wealth had remained largely untapped, hidden beneath layers of bureaucracy and economic stagnation. The potential for change was immense, and the future of Reko Diq was now intertwined with Saudi Arabia's ambitious vision for diversification and global partnerships.

As the months rolled by, the first major announcements came through. Manara Minerals confirmed it would be taking a significant stake in the Reko Diq project, a milestone that would open the door to an influx of capital and technology. The copper and gold reserves of Reko Diq were no longer a distant dream – they were becoming a reality.

By 2027, when commercial production of lithium from Aramco's pilot project was expected to begin, Saudi Arabia and Pakistan were not just collaborators in mining; they were emerging as major players in the global energy transition. The partnership, forged in the corridors of Riyadh, had the potential to reshape the future of mineral extraction in the region and beyond.

For Pakistan, the road ahead seemed brighter than ever. With Saudi investment and technological expertise, the mining sector was on the verge of a new era. And for Saudi Arabia, Reko Diq and its vast reserves represented not just a financial opportunity but a key component of the kingdom's journey toward a more diversified, sustainable economy. Together, the two nations stood on the precipice of a mining renaissance, one that would shape the future for decades to come.-- ER

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France Agrees to Support Pakistan's Electric Vehicle Shift, Energy Reforms

Pakistan has actively sought support from France's Green Fund to help transition its small vehicle fleet to electric technology. This request, presented by Pakistan's Federal Minister for Power, Awais Ahmad Khan Leghari, was made during a recent meeting with French Ambassador to Pakistan, Nicolas Galey. The proposal aims to leverage France's Green Fund to bolster Pakistan's efforts to shift to electric vehicles (EVs), a move that aligns with Pakistan's broader energy and environmental reforms.

During the discussions, Minister Leghari emphasized the benefits of Pakistan's newly introduced Electric Vehicle (EV) Policy. He highlighted that the policy is not only designed to reduce the country's fuel consumption significantly but will also contribute to the protection of the environment. By embracing electric vehicles, Pakistan expects to save billions of dollars annually in fuel costs, while also alleviating the financial burden on the public by reducing transportation expenses. This shift to EVs is seen as a crucial step toward reducing the country's carbon footprint and promoting sustainable development.

The French ambassador, for his part, expressed appreciation for Pakistan's proactive approach and its efforts to negotiate favorable agreements with Independent Power Producers (IPPs) in the energy sector. Minister Leghari shared that these negotiations, involving 28 IPPs, are projected to result in a national saving of approximately Rs1.4 trillion. He further discussed Pakistan's upcoming Wheeling Policy, which aims to improve the transmission and distribution of electricity more efficiently. This policy is expected to ensure that surplus power is distributed more effectively across the country, providing a significant boost to Pakistan's energy infrastructure.

Additionally, the minister noted that the government of Pakistan is planning to auction additional electricity, which will help the country transition out of the power business and foster a more competitive market. The government has also hired independent boards for most of the distribution companies, and these neutral boards are already showing positive results by improving recovery rates and reducing line losses.

Minister Leghari also underscored Pakistan's commitment to promoting renewable energy, particularly solar power, which is a key component of the country's energy strategy. He reassured that all these reforms are being carried out with complete transparency, opening up new avenues for investment in the energy sector. The government's forward-thinking approach is expected to stimulate significant growth in renewable energy and green projects across Pakistan.

The French ambassador expressed strong support for Pakistan's energy reforms, acknowledging that these initiatives are not only encouraging but also have the potential to yield positive long-term results. France has indicated its willingness to consider providing both technical and financial assistance to Pakistan's EV transition and other energy reforms, offering a collaborative partnership to help Pakistan achieve its goals in sustainable energy and environmental protection. – ERMD

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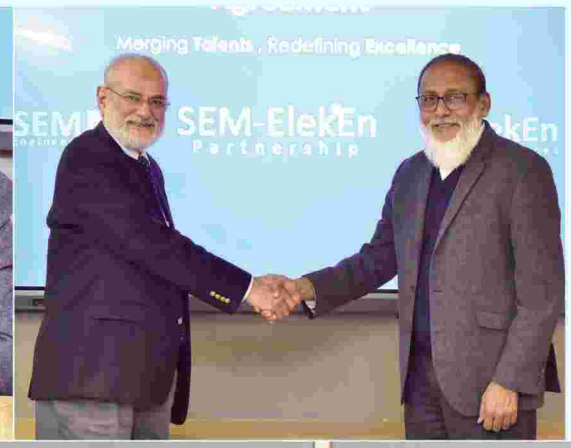
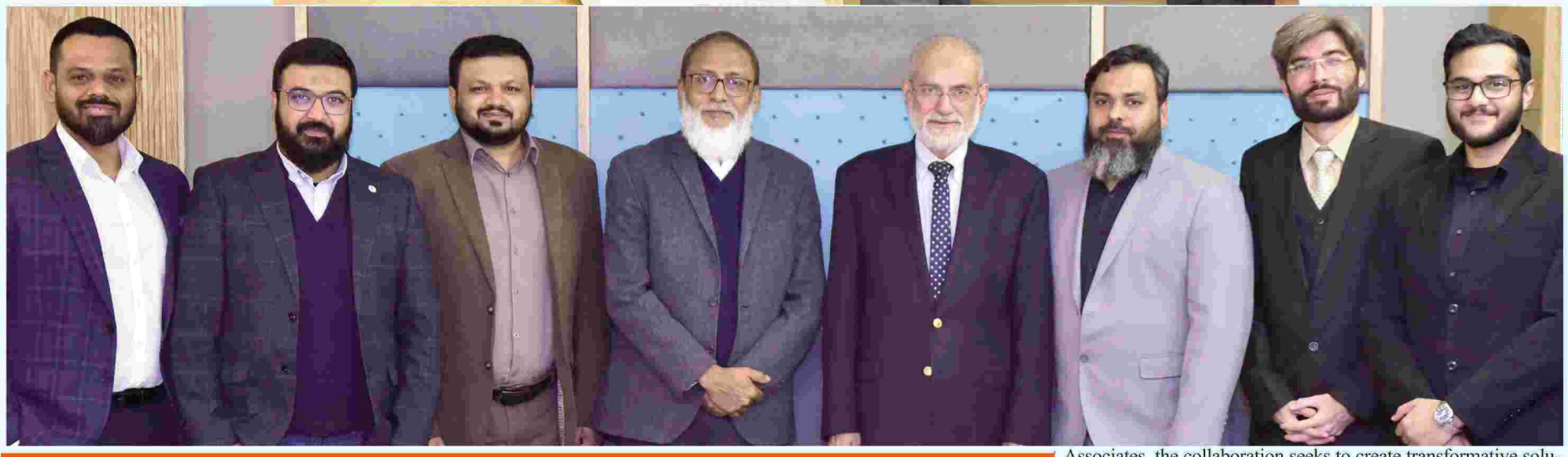
SEM-Eleken Partnership Redefining Future of MEP Design in Pakistan

In a transformative move for Pakistan's engineering consultancy sector, two of the nation's premier MEP design firms, SEM Engineers and Eleken Associates, have joined forces to establish SEM-Eleken Partnership. This groundbreaking collaboration signifies the dawn of a new era in the MEP (Mechanical, Electrical, and Plumbing) industry, marked by a shared vision for innovation, excellence, and sustainability.

Together, SEM Engineers and Eleken Associates as SEP bring an unparalleled legacy of over 80 years of combined expertise and a dynamic team of 140+ seasoned professionals. This partnership is poised to provide a one stop solution for designing MEP systems that cater to the evolving needs of modern construction and infrastructure development. SEP provides following services;

- Air-conditioning & Mechanical Ventilation
- Public Health services
- Life safety
- Vertical transportation
- MV/LV Power systems
- ELV systems
- Data & voice systems
- Building Management systems
- Solar Power system
- Specialized services





The official launch of the SEP (SEM-Eleken Partnership) was commemorated with a memorable agreement signing ceremony, attended by the top management of both companies. This momentous occasion not only celebrated the coming together of two exceptional firms but also highlighted their commitment to setting benchmarks for excellence in the MEP design industry.

Shaping the Days to Come

This partnership goes beyond a traditional business alliance; it represents a convergence of shared values, expertise, and aspirations. By harnessing the combined strengths of SEM Engineers and Eleken Associates, the collaboration seeks to create transformative solutions in the engineering and design industries, with a focus on innovation, sustainability, and excellence, , the partnership will prioritize the following areas:

1. M&P Systems The collaboration will focus on the design, development, and optimization of mechanical and plumbing (M&P) systems. By integrating advanced technologies and sustainable practices, the partnership aims to deliver highly efficient and cost-effective solutions. These systems will be tailored to meet the diverse needs of clients across industries, ensuring reliability and environmental responsibility.
2. Electrical Systems Electrical systems form the backbone of modern infrastructure. SEM Engineers and Eleken Associates will pool their expertise to innovate in areas such as power distribution, renewable energy integration, and smart grid technologies. Their efforts will prioritize energy efficiency, safety, and adaptability to evolving demands, ensuring that these systems are not only robust but also future-ready.

Leadership Speaks

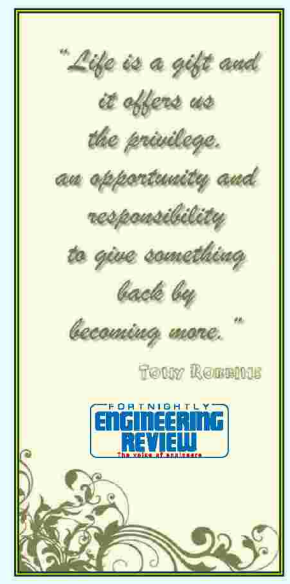
The SEM-Eleken Partnership is guided by a team of visionary leaders whose collective expertise ensures a bright future for the collaboration:

Mr. Syed Muhammad Ali Aamir	Mr. Asghar Hussain Siddiqui
Mr. Muhammad Hammad	Mr. Azfar Saleem
Mr. Muhammad Saquib	Mr. Syed Mojiz Mehdi Jafri
Mr. Syed Hasan Aamir	Mr. Muhammad Hammad uz Zaman

Their unwavering dedication and innovative mindset will drive the partnership to achieve its ambitious goals.

As SEP-SEM-Eleken embarks on this exciting journey, the industry can look forward to groundbreaking developments and a new benchmark for excellence in MEP design. Stay tuned as this partnership reshapes the future of the construction and engineering sectors in Pakistan and beyond!■

Bijli Ghar



Schneider Electric Pakistan Launches "Impact Roadshow" in Karachi

Schneider Electric Pakistan recently conducted the first-of-its-kind "Impact Roadshow" in Karachi's Aram Bagh market, focusing on combating the critical issue of counterfeit products within the retail segment.

The roadshow involved a full day of engaging activities, including informative presentations on the dangers of counterfeit goods and the importance of choosing genuine Schneider Electric products. The team distributed informative collaterals, hosted engaging activities like a spin-the-wheel challenge and a fun photo booth, and rewarded participants with exciting giveaways.

The Country Leader for Panel Builder & Distribution, Mr. Kamran Sultan said: "This roadshow is a testament to Schneider Electric's commitment to protecting our customers and ensuring they have access to genuine, high-quality products," The Channel Manager for Home and Distribution, Mr. Jahanzaib Inam also added that: "By partnering with our valued distributors and retailers, we are taking a proactive stance against counterfeiting and driving sustainable growth within the market."■

NED organizes 2nd Intl Conference on Technology Driven Climate Action
'Integrating sustainability, climate change topics into curriculum'

The NED University of Engineering and Technology organized the 2nd International Conference on Technology Driven Climate Action - 2025 (CLIMATECH 2025) on January 16 and 17, 2025. This two-day conference was organized in partnership with Dawlance and REON Energy.

During his talk, the Chief Guest, Turkish Consul General Mr. Cemal Sangu, emphasized strengthening collaborative efforts to address the issue of climate change. Pro Vice Chancellor of NED University, Prof. Dr. Muhammad Tufail, mentioned that NED University is playing its part by actively promoting the United Nations Sustainable Development Goals (SDGs), with a keen focus on clean energy, sustainable cities, and climate action. NED University integrates sustainability and climate change topics into the curriculum and encourages projects focused on environmental sustainability. The university also engages with the local community to raise awareness about climate change and promote sustainable practices.

Conference Chair, Prof. Dr. Muhammad Imran Aslam, mentioned that CLIMATECH 2025 is an initiative that aims to bring together experts, policymakers, stakeholders, researchers, and students to address climate issues. Conference Co-Chair, Dr. Irfan Ahmed, expressed that CLIMATECH 2025 comes at a critical juncture as we face the increasingly urgent challenge of climate change, which poses significant risks to our ecosystems, economies, and societies. Conference Secretary, Dr. Hira Mariam, mentioned that CLIMATECH 2025 is our initiative to elaborate on how pivotal the role of our engineering fraternity is in

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AI in Job Sector: Revolution or Disruption?

By Adnan Riaz

The rise of artificial intelligence (AI) is reshaping the global job market, offering unprecedented opportunities while posing challenges for workers and industries alike.

From healthcare to transportation, AI is automating tasks, enhancing efficiency, and creating new roles, but it is also raising concerns about job displacement and income inequality.

AI's Impact Across Job Sectors

AI's influence varies by industry, transforming workflows and reshaping employment landscapes:

- Healthcare: AI assists in diagnostics, drug discovery, and robotic surgeries. According to Grand View Research, the healthcare AI market is projected to grow at a compound annual growth rate (CAGR) of 41.7% by 2030. This growth fuels demand for medical data analysts, AI specialists, and tech-savvy healthcare professionals.
- Finance: AI-driven systems now dominate fraud detection, risk analysis, and algorithmic trading. The integration of AI is reducing traditional clerical roles while increasing demand for data scientists and AI ethics experts.
- Retail and E-commerce: Personalized shopping experiences, dynamic pricing, and AI-driven inventory management have become the norm. The global AI retail market is expected to exceed $24 billion by 2027, creating roles in digital marketing and supply chain optimization.
- Transportation: From autonomous vehicles to real-time logistics optimization, AI is reshaping transportation. Self-driving technology is set to reduce driver roles while increasing demand for AI maintenance specialists.
- Education: AI powers personalized learning tools, automates administrative tasks, and provides real-time student feedback. Platforms like Coursera and edX, which leverage AI, now serve over 100 million learners globally.

Jobs at Risk and New Opportunities

Vulnerable Sectors

AI is most likely to disrupt jobs involving routine, repetitive tasks, including:

- Clerical Roles: Tasks like data entry and scheduling are increasingly automated.
- Customer Service: AI chatbots now handle millions of queries daily, reducing the need for human agents.
- Logistics: Autonomous vehicles and drones are gradually replacing delivery drivers and warehouse workers.

Emerging Roles

While some jobs are being automated, AI is creating opportunities in new and existing industries:

- AI Developers: Engineers designing and programming AI systems are in high demand.
- Data Scientists: Professionals who analyze and structure data to train AI models.
- AI Trainers: Specialists refining AI by providing data inputs and guiding outcomes.
- Cybersecurity Analysts: Ensuring the safety of AI-driven systems from malicious attacks.
- Human-AI Interaction Designers: Developing seamless interfaces between humans and AI systems.

According to the World Economic Forum, AI is expected to create 97 million new jobs by 2025, even as it automates 85 million roles globally.

Adapting to the AI Revolution

To remain relevant, workers and organizations must embrace reskilling and upskilling:

- Technical Skills: Mastery of programming languages like Python and AI tools such as TensorFlow is essential.
- Analytical Thinking: Understanding data analytics and decision-making frameworks is increasingly valuable.
- Soft Skills: Creativity, emotional intelligence, and adaptability are critical for roles requiring human interaction.
- Lifelong Learning: AI-powered platforms like LinkedIn Learning and Udemy offer flexible, affordable courses to help individuals stay competitive.

Ethical and Social Challenges

AI's rapid adoption raises ethical and social concerns:

- Workforce Displacement: Governments and industries must plan for displaced workers through robust reskilling programs.
- Bias in AI: Ensuring fairness and transparency in AI systems to prevent discrimination.
- Income Inequality: Addressing gaps between high-skill AI-focused roles and displaced low-skill workers.

The Global Picture

Statistics at a Glance:

- The global EdTech market, heavily driven by AI, was valued at $254 billion in 2022 and is projected to reach $605 billion by 2030.
- AI in the energy sector is expected to reach $11.1 billion by 2030, optimizing renewable energy and conservation efforts.
- Over 70% of companies plan to adopt AI by 2025, with tech-heavy industries leading the way.

Conclusion

AI is both a revolutionary tool and a disruptive force in the job market. While it creates efficiencies and opens new opportunities, it also necessitates a shift in how we prepare for and sustain careers. A balanced approach involving government policy, industry adaptation, and individual effort is essential to navigate the AI revolution. Investing in education, ethical AI practices, and workforce development will ensure that AI benefits society as a whole while minimizing its potential pitfalls. --F I B E R C A S T - www.fibercast.com.pk ■

NED organizes 2nd Intl Conference on Technology Driven Climate Action

Contd from page 5

addressing climate-related challenges through technological advancements, innovative solutions, and sustainable practices.

The conference featured multiple keynote speeches from leading researchers and industry experts, a knowledge session on 'Advancing the Circular Economy in Pakistan', a panel discussion on 'Stakeholder Engagement for Climate Change', and technical sessions on 'Agriculture and Water Management', 'Green Economy and Sustainability', and 'Emerging Solutions for Climate Action'. In addition, a sustainability hackathon was arranged by Dawlance during the conference.

Conference speakers presented innovative solutions to tackle climate problems. Technological advancements can be utilized to monitor and control the factors affecting our environment. By fostering collaboration among various stakeholders, industry experts, and academia, we can significantly contribute to achieving climate resilience and environmental sustainability. CLIMATECH 2025 serves as a global platform to bring together leading scientists, researchers, policymakers, industry experts, and environmentalists to address one of the most pressing challenges of our time: climate change, with innovative technologies for sustainable climate solutions. It emphasizes the critical role of cutting-edge technologies in shaping a sustainable future. -- PR

Annual Convocation of Usman Institute of Technology

146 Graduates Awarded Degrees

Top 5 Students Honored with Gold Medals and Cash Prizes

The Usman Institute of Technology (UIT) held its 26th Annual Convocation on Saturday at NED University. The ceremony was presided over by Dr. Sarosh Lodhi, Vice Chancellor of NED University, who conferred degrees upon 190 graduates. The graduates included 41 students from Electrical Engineering, 55 from Computer Science, and 50 from Software Engineering. Outstanding academic achievers were recognized during the event, with five top-performing students awarded gold medals and cash prizes of PKR 25,000 each. Additionally, three exceptional students from the Electrical Engineering department were honored with gold medals by the Institution of Engineers Pakistan (IEP).

The top achievers in their respective disciplines included Hina Saeed from Computer Systems, Saman Fatima from Electronics, and Muhammad Qamar Ali from Power Engineering in the Electrical Engineering department. Afrah Mahmood earned the top position in Computer Science, while Huzaifa Mahmood secured the first position in Software Engineering.

In his address, Dr. Sarosh Lodhi congratulated the graduates and highlighted UIT's status as one of Pakistan's leading private-sector institutions. He acknowledged the institute's strong association with NED University and its consistent delivery of high-quality education and performance. Dr. Abdul Qadir, Director of UIT, emphasized the significance of the occasion as the institute celebrated three decades of excellence in education. He expressed pride in UIT's achievements and optimism about continuing its journey toward academic and professional excellence.

The ceremony was attended by notable figures, including Ghazanfar Hussain, Registrar of NED University; members of the Usman Memorial Foundation Board; Hussain Hasham, Chancellor of UIT University; Dr. Valiuddin, Vice Chancellor of UIT University; as well as faculty members, industry professionals, and a large number of guests. ■

ACEP: Call for Papers Use of FIDIC Conditions of Contract for Transparency and Efficient Project Delivery

The Association of Consulting Engineers Pakistan (ACEP) in collaboration with FIDIC Asia Pacific, invites professionals, consultants, engineers, architects, lawyers, contract specialists, academia, etc. to submit papers for the upcoming regional conference focused on the use of FIDIC Conditions of Contract in promoting transparency and efficiency in project delivery.

CONFERENCE TOPICS

* Overview and Application of FIDIC Contracts.
* Legal Framework and FIDIC Compliance.* Infrastructure Financing and Risk Management.
* Efficient Project Delivery Using FIDIC.
* Disputes, Claims, and Arbitration (Dispute Resolution Mechanisms)
* Country-Specific and Local Bidding Standards
* The Future of Engineering and Entrepreneurial Innovation

SUBMISSION GUIDELINES

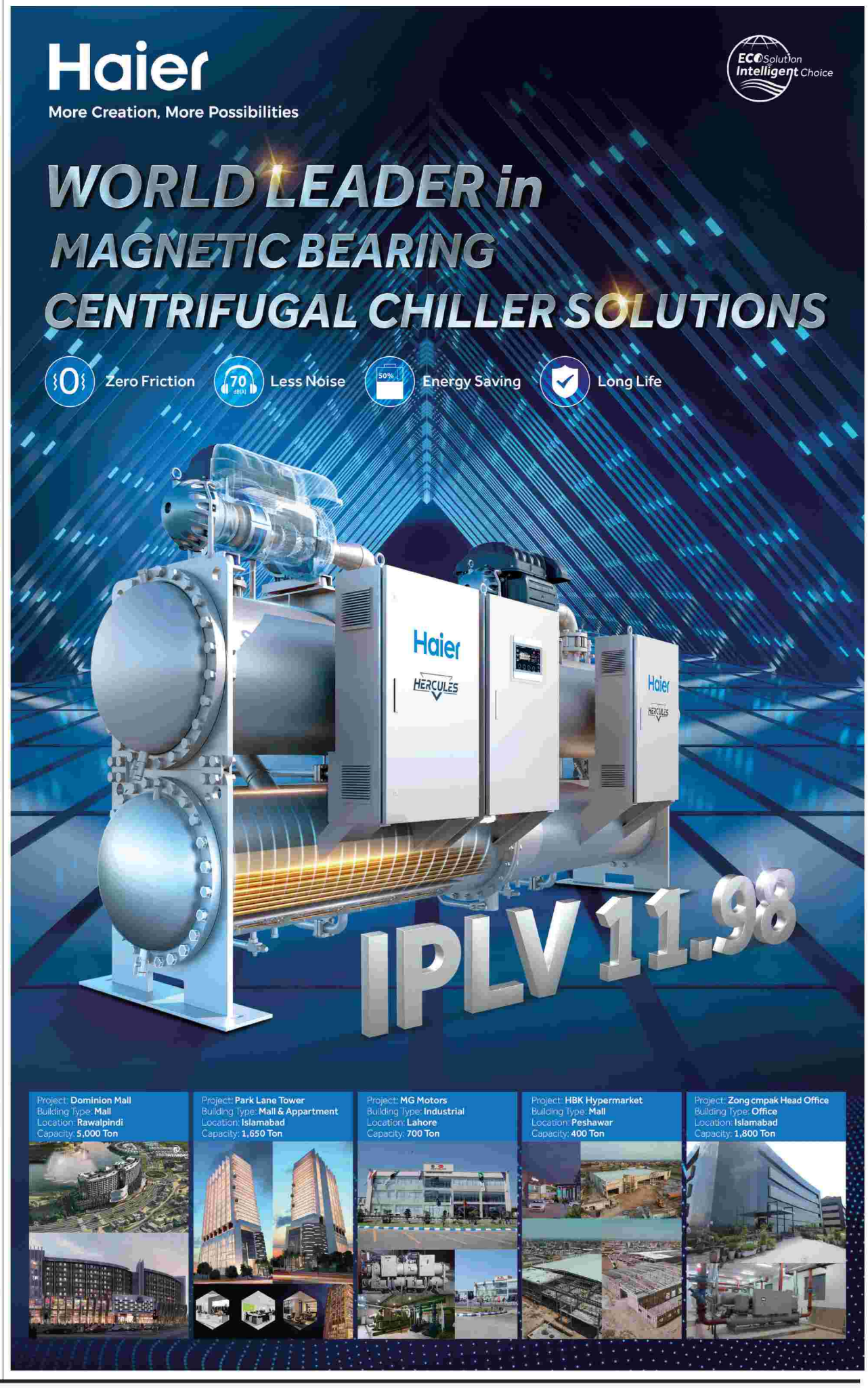
ABSTRACT SUBMISSION

* Abstracts should be 300 words or less.
* Abstracts must highlight the relevance of the topic to the conference themes and its contribution to enhancing the understanding and implementation of FIDIC conditions of contract.

PAPER SUBMISSION

* Papers should be original, unpublished, and focused on one of the conference themes.
* The paper should be between 3000-5000 words in length, including references.

Abstract Deadline is January 31, 2025 and Paper Deadline is March 31, 2025 ■



Not Indus alone, all five rivers make it a complete system

We often focus on the Indus River as if the Chenab and Jhelum Rivers are of no consequence. In reality, all five rivers (Indus, Chenab, Jhelum, Ravi, and Sutlej) are interconnected. If these supplementary rivers are blocked or diverted, the Indus will ultimately be affected.

A known agriculturist and the Vice Chancellor of Sindh Agriculture University (SAU) Tandojan Sindh Dr. Altaf Sial says we often focus on the Indus River as if the Chenab and Jhelum Rivers are of no consequence. In reality, all five rivers (Indus, Chenab, Jhelum, Ravi, and Sutlej) are interconnected. If these supplementary rivers are blocked or diverted, the Indus will ultimately be affected.

Contd on page 9

How digital platforms are transforming the agricultural sector

Digitalization is ushering in far-reaching change in all areas of our lives, not least in the agricultural sector. Researchers from the University of Bonn have now published a study in Big Data & Society on how international agricultural corporations and Big Tech firms are using digital platforms to transform the agriculture industry. They make it clear that, although the technologies harbor significant potential, they also risk amplifying existing power structures and creating new dependencies.

"If you think of agriculture, companies like Google or Amazon probably won't be the first to spring to mind," explains Monja Sauvagerd, first author of the study, who is working toward a doctorate in Professor Monika Hartmann's team at the University of Bonn's Institute for Food and Resource Economics.

"Our study shows that digital platforms have the potential to unlock more efficient agricultural practices but are also liable to amplify existing market structures and create new dependencies.

As well as furnishing the technical infrastructure, Big Tech firms are also acting as the agricultural corporations' strategic partners. They're exerting a growing influence on the agriculture industry because it's they who are supplying key technologies like cloud services and AI models."

Oligopolistic platformization ushering in new forms of partnership

The researchers introduced the term "oligopolistic platformization" in their paper to describe the close cooperation between multinational agricultural corporations such as Bayer, John Deere and BASF on the one hand and tech giants like Amazon, Google and Microsoft on the other.

Unlike where platforms are created in other sectors, this dynamic is magnifying existing power structures instead of radically transforming them, risking further concentration.

Digital platforms such as John Deeres Operations Center and Bayers Climate FieldView let farms make decisions based on real-time information. Sensors, satellites and tractors all generate data that can be integrated into digital twins to simulate and optimize agricultural processes, promising not only more efficient use of resources such as water and fertilizer but also higher crop yields.

Where efficiency meets dependence

The study shows that these technologies also bring their fair share of challenges, however. Many platforms are controlled by a handful of big corporations, putting the farms at risk of growing increasingly dependent on them. What's more, the platforms offered by the individual firms do not connect up to one another.

This often leaves data stuck in isolated systems (silos), making it hard for farmers to use more than one platform. For example, the platforms offered by the major manufacturers of agricultural machinery are designed to only offer limited compatibility with their competitors' products, restricting farmers' freedom of choice and tying them to particular providers.

Challenges for society and the economy

The paper also shines a light on how agricultural corporations and Big Tech firms are developing data-driven business models that go well beyond traditional agriculture. Besides aiding the decision-making process, platforms also link it directly to their products, such as seeds and pesticides. Similarly, companies are working on tools to measure carbon emissions in order to encourage more sustainable practices and enable farmers to access carbon credits.

Despite their potential, however, most of these data-driven business models have not proven profitable to date. Instead, they are being cross-subsidized by the corporations' established lines of business in order to secure market share over the long term.

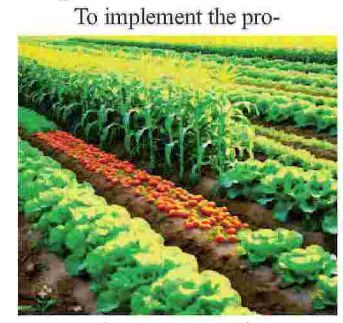
"The platformization of agriculture differs from the situation in other sectors in that it is strengthening rather than weakening the market position of established agricultural companies," Sauvagerd explains. "In view of the fast-paced developments in this industry, one has to ask how access to tech infrastructures and data can be made fair so that farmers don't find themselves in an even weaker position." -- ERMD

Sindh Government Introduces Crop Insurance in Larkana and Ghotki Districts

By Najeeb Naich

The Sindh government has launched a pilot Crop Insurance Program in the Larkana and Ghotki districts, aimed at protecting the farming community amid climate change, announced Mohammad Bakhsh Mehr, the provincial Minister for Agriculture.

To implement the program, the government has partnered with international advisors, Pula, for insurance services. Pula's Country Head in Pakistan, Widad Durrani, participated in a meeting held in Karachi to discuss the initiative.



Minister Mehr led the meeting with his team, including the Secretary of the Agriculture Department and other officials, to outline the next steps for the program.

The Crop Insurance Pro-

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Not Indus alone, all five rivers make it a complete system

Contd from page 8

A known agriculturist and the Vice Chancellor of Sindh Agriculture University (SAU) Tandojan Sindh Dr. Altaf Sial says we often focus on the Indus River as if the Chenab and Jhelum Rivers are of no consequence. In reality, all five rivers (Indus, Chenab, Jhelum, Ravi, and Sutlej) are interconnected. If these supplementary rivers are blocked or diverted, the Indus will ultimately be affected.

Making a GIS Analysis of Proposed Strategic Canals in a program held in Karachi, Dr. Sial said: We are raising objections to the construction of strategic canals, but many of us are unaware of their locations, where they start, or where they discharge. To help, I've compiled information about the geographic locations of these canals and will outline their potential impacts.

Some of these canals, like the Reni Canal and the Kachi Canal, were first excavated in 2001, but many of us have been unaware of their existence. Although they are not new, work is ongoing to extend them.

Currently, we have 19 barrages and a significant number of lined canals and watercourses. This extensive lining is contributing to the depletion of our fresh water aquifers in Sindh. Why wouldn't our underground water resources decrease if everything is lined? The lining has effectively choked natural recharge systems, and this was done without fully assessing the environmental consequences. As a result, the river is drying, and the recharge of underground water resources has been halted, a situation that could worsen further.

Out of the six proposed strategic canals, the Jalalpur Canal stands out as a major concern. This canal, which is under construction, takes off from the Rasool Barrage on the Jhelum River, and will cost Rs. 32.72 billion. Satellite images already show its progression. The canal will carry 13,500 cusecs of water and will have a command area of 170,000 acres. As a perennial canal, it will draw water year-round, which could have significant consequences.

Next is the Greater Thal Canal. It is often confused with the Thal Canal, but they are two separate projects. The Thal Canal takes off from the Chashma-Link Canal, while the Greater Thal Canal is a seasonal canal, designed with several minor canals. It will carry 8,500 cusecs and irrigate lands in Khush, Layyah, Bhakar, and Jhang districts.

Link canals, such as the CJ and TP canals, were originally intended to supplement rivers that were allocated to India under the 1960 Indus Basin Treaty. These canals were supposed to operate only during the flood season. However, areas within the command areas of these link canals are now being irrigated throughout the year. Sindh has consistently objected to the early opening of the CJ Link Canal before the monsoon season. Sindh urgently needs water in April and May due to early sowing for the Kharif season. These canals should only be opened during the monsoon period. Currently, construction of the Chaubara Canal, which connects to the Greater Thal Canal, is underway after securing funding. This project will irrigate a total of 3.6 million acres.

The Kachi Canal, which takes off from the Taunsa Barrage, irrigates areas in DG Khan, Rajanpur (Punjab), Dera Bugti, Naseerabad, Bolan, and Jhal Magsi (Balochistan) over 175 kilometers.

The Reni Canal, although no official water allocation has been made, is still receiving water, and it will ultimately end in the Khairpur district. The Thar Canal is still on paper, with no detailed information available, though it is expected to reach Umerkot.

It is important to note that a large area upstream of the Reni Canal is affected by Punjab's drainage water.

The Cholistan Canal, which will irrigate the Cholistan and Thal deserts of Punjab, will be 190 kilometers long, with a capacity of 4,000 cusecs. It is scheduled to start in 2024 and is considered a seasonal canal. The canal will take off from the Sutlej River, which does have water, but there is a risk of water being drawn from other rivers (including the Indus) through link canals. The Cholistan Canal will irrigate lands in Bahawalpur and Bahawalnagar.

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Consider the potential impacts on Kotri. These projects could have devastating agricultural, environmental, and social effects. Sindh is an arid region, with rainfall below 500 mm annually, and these changes could exacerbate the region's water scarcity. – By Mnzoor Shaikh

Sindh Government Introduces Crop Insurance in Larkana and Ghotki Districts

Contd from page 8

gram is designed to compensate farmers whose crops are damaged by natural disasters such as heavy rains and floods. The program aims to address the increasing challenges posed by climate change and other environmental factors.

In addition to the insurance program, the Sindh government has introduced the Benazir Hari Card to further support farmers. The goal is to offer crop insurance under this initiative to help mitigate losses caused by floods, disease, pests, heat, and other threats.

Pula Advisors will assist Sindh's farmers in implementing this insurance model, focusing on key crops such as rice, cotton, and wheat. The program will begin as a one-year pilot project in the Kharif season of 2025. If successful, it will expand to 27 more districts and include additional crops such as sugarcane.

About Pula

This company claims:

Driving Traceability with Key Partnerships

The farmer registration effort is a coordinated approach involving a consortium of dedicated organisations working in sync. To date, over 303,811 coffee farmers have been registered, representing a substantial milestone in the journey to create a comprehensive database that supports traceability and accountability. The EUDR takes effect on December 31, 2024.

10,000 farmers in Kitui County, Kenya

Our insurance payouts are key in stabilising household incomes during droughts and severe weather events. Farmers invest insurance payouts into the livelihoods of families through closing the food shortage, saving and paying off debts, and investing in assets like livestock and children's education.

Empowering Smallholder Farmers with Central Bank of Nigeria – Anchor Borrowers Program

In 2020, Pula worked with the Central Bank of Nigeria to insure about 543,000 farmers for the wet season.

Of these, 196,301 were under the National Cotton Association of Nigeria (NACOTAN) and 235,907 were rice farmers under the Rice Farmers Association of Nigeria (RIFAN) and NIRSAL MFB.

Protecting Kenyan farmers with World Food Programme

Pula has worked with WFP over 3 years to provide crop insurance to farmers in Kitui, Kenya. Over the past three years, the programme has grown from 1,000 to about 10,000 insured farmers, and crop loss compensation amounting to US$766,000.■

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Data Analytics and Decision Making in Technology Management

Engr. Dr. Muhammad Nawaz Iqbal

Data analytics is enabling the organizations to decide effectively and strategically in their fast-paced digital world environments in technology management.

Businesses are now faced with more than ever technology complexities in actual implementation and innovation, with evidence-based data guiding clear and certain value reduction for risks. Data analytics is enabling the organizations to decide effectively and strategically in their fast-paced digital world environments in technology management. Businesses are now faced with more than ever technology complexities in actual implementation and innovation, with evidence-based data guiding clear and certain value reduction for risks. Expecting large volume of information generation by technology operations and their systems for large amounts of valuable data-in-configuration should also find their way into technology management through data analytics. It is from this data that many things will be unearthed such as pattern equations determining predicted outputs and the optimization of processes. For instance, advanced analytics tools may reveal hidden insights that could not be accessed by conventional decision-making systems.

Resource allocation is one of the important areas of data analysis in the management of innovation and technology. It is very critical that organizations utilize their assets of time, budget, and workforce at the maximum potential that they can, in anticipation that productivity and innovation can follow such an efficient utilization. This is done by the Manager's ability to forecast demand, assess the feasibility of the project and determine the very best way of making use of the resources currently available, all of which contribute to the efficiency and effectiveness of operations. In other words, predictive analytics is the governing force behind the management of technologies. It anticipates the patterns and makes foresight about the future obstacles. By analyzing historical data, using machine-learning algorithms, the managers identify the upcoming events, whether opportunities, risks, or both. Such a proactive attitude helps organizations trace market changes by having a preemptive strategy on what tactics to employ at a given point in time.

Data analytics, in the context of innovation, supports idea generation and product development by analyzing customer preferences and market demands. Data insights help organizations create products and services that fit in with the customer needs, which translates into a higher acceptance of the product in the market. Moreover, analytics catalyze continuous improvement by monitoring product performance and collecting data from the customers for future modifications. In addition, data analysis enhances the proper risk management of technology projects. By examining probable vulnerabilities and estimating their consequences, organizations can take protective measures from disruptions. For example, cyber security data analysis identifies abnormal and possible threats to help prevent breaches of critical systems and data assets.

Another major area of importance for data analytics in technology management relates to decision support systems. Combining real-time, fact-based recommendations from analytics tools, managers are empowered to take fast and accurate decisions. Here, this capability plays an important role in those high-stakes scenarios where timely actions determine the fate of a project. Managing technology requires a joined-up interaction between departments and collaboration so that it can be a more successful management process. Data analytics enable alignment by creating a centralized repository for everyone, thus giving access to all stakeholders. It has more benefits to the organization because they can ensure coordination and avoid misunderstandings. It also affirms all decisions made as being consistent with organizational objectives.

Cost optimization in technology management is made possible by analytics. Understanding the operational inefficiencies and unrequited spending can assist organizations in streamlining and reducing costs. For example, energy consumption analyses in data centers could bring about sustainable practices that will lessen costs and environmental impact. The application of analytic tools in technology management would be enhanced further with the use of artificial intelligence and machine learning. These computerized techniques allow processing of raw data and purchase of the large dataset in a very fast and accurate manner. Consequently, such data can help managers interpret those from focusing on the strategic execution to spending more time processing that data manually.

Data privacy and ethics are also affecting how organizations use analytics in technology management. Organizations have to align their data analytics practices to the regulations and respect the privacy of users. Therefore, they need to infuse their analytics-driven decisions with transparent data governance as well as ethical frameworks for developing trust and maintaining the integrity of those decisions. It would definitely be growing from broad information analytics for management in technology to predictive analytics and real-time monitoring in the future. This can engage organizations not only to anticipate outcomes but also recommend how best to act and thereby improve the precision of decision-making.

The global characteristic of technology management causes organizations to source different datasets from across markets and regions. With analytics, cultural and regional differences are reduced, as they help to reveal local trends and preferences so that an organization can customize its strategy and achieve global success. Performing training and up skilling in data analytics is necessary to bring effective management in technology. Organizations must invest in building analytical competencies in employees, availing the data-driven decision-making model's full potential. Skilled human resources would therefore also understand the interpretation of data insights into actionable strategies driving organizational growth.

In the end, this is how data analytics converted the management of technology-from being mostly static to being fully dynamic and strategic. Accordingly, managers would empower organizations to navigate complexities through innovation, thereby engendering an organization that would survive and thrive in a more complex and competitive digital environment. Analytics and technology management are critical to any enterprise that wants to be future-ready. ■

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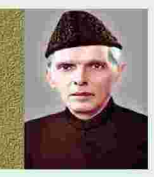

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اصول اور تفصیلات

گاندھی جی کہتے ہیں: "ہندوستان کو جیتے جی ٹکڑے ٹکڑے کیا جارہا ہے۔"
راج گوپال اچاریہ کہتے ہیں: "بچے کے ٹکڑے کیے جارہے ہیں۔"
قدرت نے پہلے ہی سے ہندوستان کو تقسیم کر رکھا ہے اور اس کے ٹکڑے ٹکڑے کر رکھے ہیں۔ ہندوستان کے نقشہ پر مسلم ہندوستان اور ہندو ہندوستان پہلے ہی سے موجود ہیں، نہ معلوم اس کے متعلق اتنا واویلا کیوں کیا جاتا ہے۔ وہ ملک ہے کہاں جس کے ٹکڑے ٹکڑے کیے جائیں گے؟ اور وہ قوم کہاں ہے جس کی قومیت فنا کی جانے کو ہے؟
وہ طاقت جس کے قبضہ قدرت میں آج ہندوستان ہے، وہ انگریزوں کی طاقت ہے اور یہ جو ایک خیال دماغوں میں بیٹھ گیا ہے کہ ہندوستان ایک متحدہ ملک ہے اور اس کی اپنی حکومت ہے، وہ صرف اس وجہ سے ہے کہ انگریز اس سارے ملک پر حکمران ہیں۔
(مسلم لیگ کانفرس، بمبئی۔ 26 مئی 1940ء)

قومی ترقی، ہنرمند افرادی قوت ضروری

کونسل آف کامن انٹرسٹ کی منظوری کے بعد 2023ء میں ہونیوالی مردم شماری کے جو نتائج سامنے آئے ہیں اس سے یہ بات ثابت ہوگئی ہے کہ ہمیں اپنی نوجوان نسل کا مستقبل محفوظ بنانے کیلئے ہنگامی بنیادوں پر اقدامات کرنے کی ضرورت ہے۔ مردم شماری کے اعداد و شمار سے اس بات کی تصدیق ہوتی ہے کہ ملک میں اڑھائی کروڑ بچے اسکول نہیں جاتے ہیں۔ علاوہ ازیں آبادی میں اضافے کی رفتار بھی خوفناک حد تک زیادہ ہے کیونکہ 1998ء کی مردم شماری کے مطابق پاکستان کی آبادی ساڑھے 14 کروڑ تھی جو لگ بھگ 25 سال بعد 24 کروڑ سے زائد ہوچکی ہے جس میں 80 فیصد آبادی کی عمر 40 سال یا اس سے کم ہے۔ اگرچہ اتنی بڑی تعداد میں نوجوان طبقہ کسی بھی ملک کی ترقی کیلئے انتہائی کارآمد ثابت ہوسکتا ہے لیکن اس کیلئے ضروری ہے کہ وہ مناسب تعلیم اور ہنر سے بھی آراستہ ہو۔ ایک اندازے کے مطابق ملازمت کے حصول کی خواہشمند 60 فیصد سے زیادہ افرادی قوت کے پاس خدمات اور مینوفیکچرنگ کے شعبوں میں درکار مہارتوں کی کمی ہے۔ اس وجہ سے بہت سی کمپنیاں اور سرمایہ کار اپنے پیداواری عمل کو اپ گریڈ کرنے سے گریزاں ہیں کیونکہ ملک میں نئی ملازمتوں کے لیے درکار ہنرمند انسانی وسائل کی کمی ہے۔ پاکستان لیبر فورس سروے 21-2020 کے مطابق ملک میں 15 کروڑ 98 لاکھ 30 ہزار افراد کام کرنے کی عمر میں ہیں۔ ان میں سے آٹھ کروڑ 92 لاکھ مرد ہیں اور تقریباً سات کروڑ 89 لاکھ خواتین ہیں۔ تاہم کام کاج کے قابل اس آبادی میں سے دو کروڑ 60 لاکھ مرد اور چھ کروڑ 20 لاکھ خواتین بے روزگار ہیں۔

اسی طرح ورلڈ اکنامک فورم کی 2017 میں جاری کردہ ایک رپورٹ کے مطابق پاکستان میں بے روزگار لوگوں میں سے اکثر کے پاس کوئی ہنر نہیں ہے۔ اس رپورٹ کے مطابق دراصل پاکستان میں ہنرمند افراد کی تعداد اتنی کم ہے کہ اس حوالے سے بنائی گئی 130 ممالک کی ایک فہرست میں اس کا نمبر 125 ہے۔ اس فہرست میں شامل جنوبی ایشیا کے دوسرے ممالک بھی پاکستان سے کہیں بہتر ہیں۔ ان میں سے سری لنکا کا نمبر 70، نیپال کا 98، انڈیا کا 103 اور بنگلہ دیش کا 111 ہے۔ یہاں یہ امر قابل ذکر ہے کہ پاکستان اور بیرون ملک ہنرمند افراد کیلئے روزگار کے بہترین مواقع وسیع تعداد میں موجود ہیں لیکن ہمارے نوجوان طبقے میں ٹیکنیکل ٹریننگ کے حصول کی خواہش انتہائی کم ہے اور ہر کوئی یونیورسٹی کی ڈگری حاصل کر کے اعلیٰ سرکاری نوکری حاصل کرنے کا خواہشمند ہے۔ علاوہ ازیں ملک میں ٹیکنیکل ایجوکیشن کے اداروں کی بھی کمی ہے اور ان کی مجموعی تعداد 3500 کے قریب ہے جہاں بامشکل پانچ لاکھ افراد کو تربیت دینے کی سہولت دستیاب ہے۔ ایسے میں ضرورت اس بات کی ہے کہ ان اداروں کی استعداد کار بڑھانے کے ساتھ ساتھ ان میں دی جانے والی تعلیم اور تربیت کا معیار بھی مزید بہتر بنایا جائے۔ اس حوالے سے خوش آئند بات یہ ہے کہ پنجاب حکومت نے ٹیوٹا پراجیکٹس میں پبلک پرائیویٹ پارٹنرشپ کو فروغ دینے کا فیصلہ کیا ہے تاکہ ٹیوٹا کے اداروں میں مارکیٹ کی ڈیمانڈ کے مطابق جدید کورسز کروانے کے علاوہ غیر ملکی لینگویجز کورسز بھی متعارف کروائے جاسکیں۔ علاوہ ازیں انٹرنیشنل مارکیٹ میں اسکلڈ جاب کیلئے پنجاب اوورسیز ایمپلائمنٹ پروموٹنگ اتھارٹی کے قیام کی تجویز پر بھی اتفاق کیا گیا ہے۔ اسی طرح دیگر صوبوں اور وفاقی حکومت کو بھی یہ سمجھنے کی ضرورت ہے کہ اقتصادی ترقی اور بیروزگاری کو کم کرنے کے لئے ٹیکنیکل ٹریننگ کورسز کا فروغ اور ان میں جدت لانا وقت کی ضرورت ہے۔

اگر پاکستان نے دنیا میں ایک ترقی یافتہ ملک کے طور پر خود کو منوانا ہے تو یہ ہنرمند، تعلیم یافتہ اور صحت مند انسانی وسائل کے بغیر ممکن نہیں ہے۔ یہاں یہ امر قابل ذکر ہے کہ پاکستان سے نوجوانوں کی بڑی تعداد روزگار کے حصول کے لئے بیرون ملک جاتی ہے لیکن بدقسمتی کی بات ہے کہ مناسب مہارتوں کی کمی کی وجہ سے انہیں بہتر رسمی ملازمتیں کم ہی ملتی ہیں۔ اس لئے ہمیں اپنی تعلیمی پالیسی میں ہنگامی بنیادوں پر تبدیلی کی ضرورت ہے۔ ہمیں یہ سمجھنے کی ضرورت ہے کہ یونیورسٹی سے فارغ التحصیل افراد کیلئے پاکستان سمیت دنیا بھر میں ملازمتیں کم ہو رہی ہیں۔ یہی وجہ ہے کہ ترقی یافتہ ممالک کے نوجوان بھی اب پیشہ ورانہ سکولوں میں جانے اور مارکیٹ پر مبنی ہنر حاصل کرنے کیلئے کالج چھوڑ رہے ہیں۔ حکومت کو چاہئے کہ ملک کے مستقبل کو محفوظ بنانے کیلئے اعلیٰ ثانوی سطح تک معیاری لازمی تعلیم کو یقینی بنانے کیساتھ ساتھ مارکیٹ پر مبنی پیشہ ورانہ تربیتی اداروں کی تعداد میں بھی خاطر خواہ اضافے کرے۔■

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LOS ANGELES FIRE

By Muhammad Tariq Haq | ESL

In a world where vice beats virtue every hour,
—Natural disasters reveal a divine power.

In storms and quakes, His might is made clear,
—A reminder that He is the All Seer, the All Knower.

Blasts, floods, and fires are but gestures,
—God does not err; we are the transgressors.

Not mere acts of fate, but tests from our Creator,
—Every disaster calls us to surrender.

Corruption spreads through land and water,
—Reflecting our collective blunders.

Yet in every trial, there's a chance to recover,
—To amend and fare better.

When poverty and hardship strike,
—For humanity, let us stand, all together.

The earth will tremble as the end draws near,
—Discharging burdens, as a reminder.

In this life, we must prepare,
For accountability, which we all fear, is near.

—In times of sorrow, let compassion rise higher,
Let mutual love and mercy take over.

Fear and hunger, bereavement, loss, and pain,
—With patience, must we bear.

Steadfast we stand, stronger
—He will guide us, together with endless mercies and favours.

Let kindness flow for every shed tear,
—Let sympathy grow, whenever anyone suffers

Every messenger calls us to repent,
—With repentance to God, we will prosper

With prayer and patience, let our hearts endeavour,
—Helping one another in every disaster.

As long as we repent,
—No catastrophe will ever occur.

May the sufferings of LOS ANGELES soon be over
—Together with Gaza massacre

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

FORTNIGHTLY ENGINEERING REVIEW The voice of engineers

Member All Pakistan Newspapers Society

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• جلد نمبر: 50 • شمارہ نمبر: 02 • جنوری: 16-31, 2025 • فون: +92-21-32215961-2, 32632567

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یو آئی ٹی یونیورسٹی میں روزگار میلے کا انعقاد

ٹیک فیسٹ پروجیکٹ کی نمائش میں 50 سے زائد پروجیکٹس نمائش کے لیے رکھے گئے

بہترین تعلیم کے ساتھ ساتھ طلبہ کو روزگار کے مواقع فراہم کرنے کے لئے یو آئی ٹی یونیورسٹی میں کریئر فیئر 2024 کا انعقاد کیا گیا۔ روزگار میلے میں 50 سے زائد بڑے ملکی اور ملٹی نیشنل کمپنیوں نے شرکت کی جن میں انجینئرنگ، سافٹ ویئر ڈویلپمنٹ، کمپیوٹر سائنس، آئی ٹی، تعلیمی، فیشن، فائنانس، بینکنگ، ہیلتھ سیکٹر، اور سوشل سیکٹر سے تعلق رکھنے والے ادارے شامل ہیں۔ مختلف کمپنیز نے طلبہ سے انٹرویوز کئے اور انٹرویو پاس کرنے والے طلبہ کو نوکریاں بھی آفر کیں۔

اس موقع پر وائس چانسلر ڈاکٹر ولی الدین کا کہنا تھا کہ کریئر فیئر کا مقصد جامعہ سے فارغ التحصیل ہونے والے طلبہ وطالبات کو ملازمت کے مواقع فراہم کرنا کے ساتھ ساتھ زیر تعلیم طلبہ وطالبات کو انٹرنشپ کے مواقع فراہم کرنا بھی شامل ہے، اکثر جامعات کے طلبہ کو نوکری کے لئے پریشان ہوتے دیکھا ہے ہماری ہمیشہ یہی کوشش رہی ہے کہ ڈگری پروگرام کے دوران ہی طلبہ میں ایسا ہنر پیدا کردیں کہ انہیں نوکری کے لئے پریشان ہونے کی ضرورت نا پڑے اور پریکٹیکل زندگی میں داخل ہوتے ہوئے اپنی صلاحیتوں کو منوانے کا موقع ملتا ہے۔

کریئر فیئر میں طلبہ وطالبات نے بھرپور جوش وجذبے سے شرکت کی اور کہا کہ یونیورسٹی کی جانب سے ایسے مواقع فراہم کرنا ایک احسن اقدام ہے۔ یو آئی ٹی یونیورسٹی میں ٹیک فیسٹ 2024 کے نام سے پروجیکٹ ایگزیبیشن کا بھی انعقاد کیا گیا، ایگزیبیشن میں فرسٹ ایئر اور سیکنڈ ایئر کے طلبہ وطالبات نے الیکٹریکل انجینئرنگ اور کمپیوٹر سائنس سے تعلق رکھنے والے طلبہ نے مختلف پروجیکٹ کی نمائش کی۔■

سپر کمپیوٹر سے کروڑوں گنا تیز چپ تیار کرلی گوگل کا دعویٰ

کروڑوں برس میں ہونے والا کام محض 5 منٹ میں ہوسکے گا، مزید تحقیق جاری

چپ جوہری فیوژن ری ایکٹرز کے ڈیزائن، ادویات، بہتر بیٹریاں بنانے میں معاون ہوگی

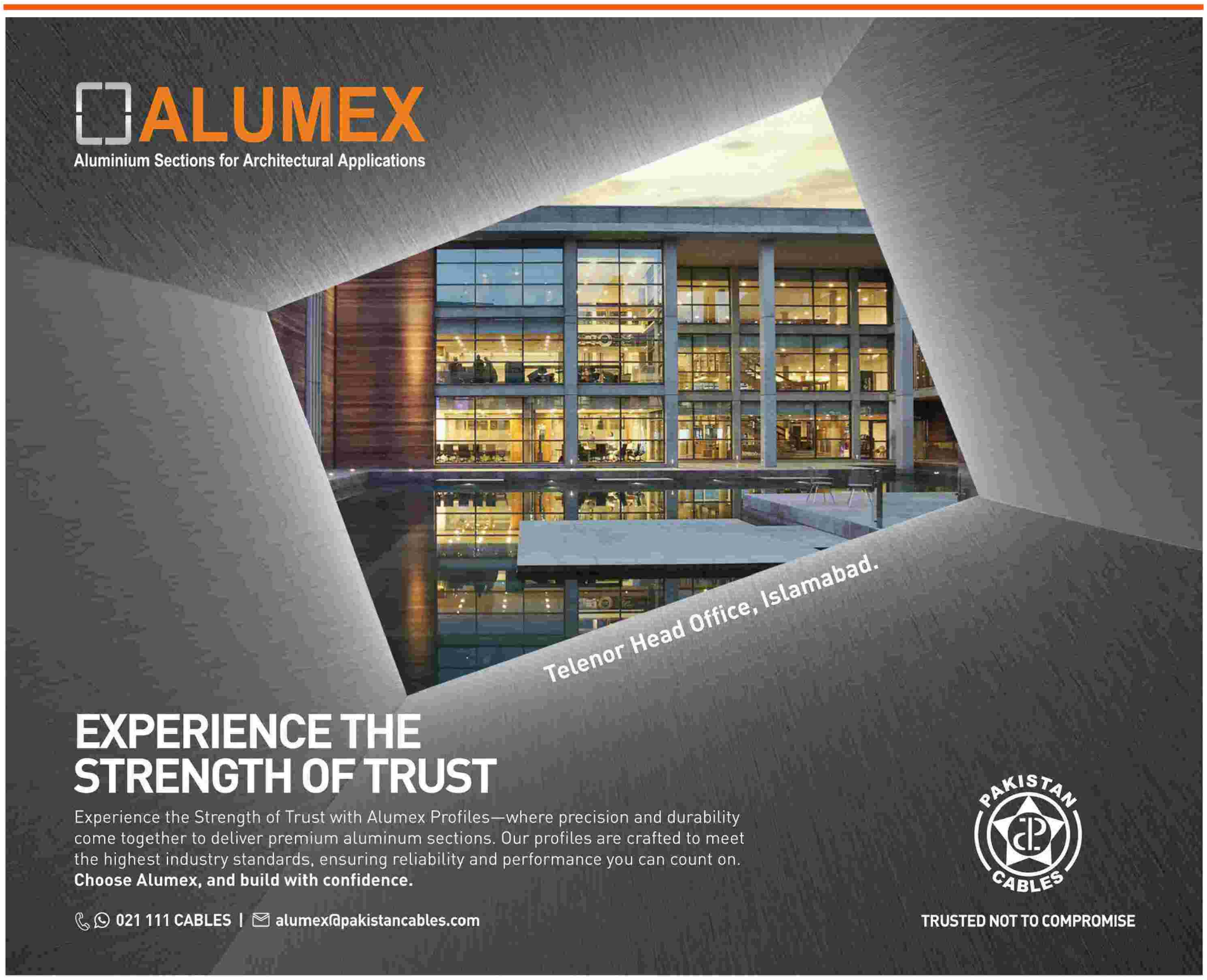
امریکی کمپنی گوگل نے دنیا کے تیز ترین سپر کمپیوٹر سے بھی کھربوں گنا تیز چپ تیار کرنے کا دعویٰ کیا ہے۔ گوگل کا کہنا ہے کہ جس کام کو کرنے میں آج کی دنیا کے تیز ترین سپر کمپیوٹر کو کروڑوں سال لگیں گے وہ کام ان کی چپ محض پانچ منٹ میں کرسکتی ہے۔

گوگل کی کوانٹم اے آئی لیب کے سربراہ ہارٹمٹ نیوین کا کہنا ہے کہ کمرشل ایپ لیکیشنز میں استعمال کی جاسکنے والی کوانٹم چپ کی تخلیق میں مزید کئی سال لگ سکتے ہیں۔

ہارٹمٹ نیوین کے مطابق ابتدائی طور پر یہ ایپلی کیشنز ایسے کاموں کی نقل کرنے میں استعمال کی جائیں گی جہاں کوانٹم اثرات اہم ہوتے ہیں۔ ان میں جوہری فیوژن ری ایکٹرز کے ڈیزائن، ادویات کی تیاری، گاڑیوں کی بہتر بیٹری بنانے اور اس نوعیت کے دیگر کام شامل ہیں۔

انہوں نے کہا کہ ولو آج تک بنایا جانے والا سب سے بہترین کوانٹم کمپیوٹر ہے۔ رواں سال فروری میں ایپل نے اعلان کیا تھا کہ انھوں نے ایپل کے آئی میسجز کی انکرپشن کو کوانٹم پروف بنادیا ہے تاکہ کوانٹم کمپیوٹرز کا استعمال کرتے ہوئے ان میسجز تک رسائی حاصل نہ کی جاسکے۔

اس سینٹر کے سربراہ مائیکل کتھبرٹ ولو کو کسی بریک تھرو سے زیادہ ایک سنگ میل کے طور پر دیکھتے ہیں۔■



3D printing strategy can upgrade soft robots and extend their lifespan

Over the past decades, robotic systems have been rapidly advancing, fueled by the continuous introduction of more advanced electronics, mechanical components and software solutions.

As a result, robots can easily become obsolete and outdated as newer systems emerge.

Singapore University of Technology and Design recently introduced an approach for the continuous upgrading of soft robots, which could in turn reduce electronic waste originating from the field of robotics. This approach, introduced in a paper published in Science Robotics, relies on a three-dimensional (3D) printing strategy that employs a newly formulated gel.

"Our group has been actively researching soft robotics for several years, with a particular focus on developing innovative multi-material additive manufacturing techniques," Pablo Valdivia y Alvarado, senior author of the paper, told Tech Xplore.

"Unlike traditional robots, soft robots present unique challenges when it comes to repair, often resulting in significant waste. For instance, when new functionalities emerge or a soft robot sustains severe damage, older prototypes are frequently discarded, much like consumer products."

"As an added advantage, our approach can handle multiple materials, making it adaptable to consumer products as well," said Valdivia y Alvarado. "We hope this innovation will not only advance soft robotics but also find broader applications in other devices, promoting sustainability across industries."

The new approach devised by the researchers relies on an innovative in-situ additive manufacturing process that can be used to repair and upgrade soft robots with high levels of precision and efficiency. The first step of this process entails the 3D printing of a gel support onto the targeted surfaces of the soft robot that needs to be upgraded.

"This gel is specifically optimized to maintain its shape under gravity, eliminating the need for a container," explained Valdivia y Alvarado. "Once applied, the system prints multi-material components or features directly onto the robot's surfaces covered by the gel. The gel acts as a stabilizing medium, securely holding the new features in place and ensuring stable curing. After curing is complete, the gel can be easily washed away with water, leaving the newly added features seamlessly integrated."

Notably, the support gels utilized by Valdivia y Alvarado and his colleagues are highly versatile and compatible with various surfaces or materials. This means that their approach could be adapted and applied across various soft robots, and potentially also to other electronic devices.

To assess the potential of their approach, the researchers used it to upgrade a batoid-like soft robot, adding tactile sensors, a passive whisker array and actuated hooks. They also repaired parts of the robot's synthetic skin that were torn and damaged by the whiskers.

In the future, this promising manufacturing process could be applied to other robots that are now viewed as outdated or damaged. It could also potentially be used to repair and upgrade other electronic systems, including smart appliances, smartphones and other devices.

"The key advantages of our approach include the broad material compatibility of the printable gel supports and its potential for significantly extending the life of soft robots," added Valdivia y Alvarado. "Our group is now working on other new additive fabrication approaches that emphasize sustainability and material circularity for soft and material-based robotics." - TP

Sky-high prices? Estimating the cost of climate-neutral aviation in the future

Aviation currently contributes to about 4% of the global warming that has been observed. As demand for flights is likely to continue to increase, researchers and governments are looking for solutions to make aviation climate-neutral by 2050 at the latest.

The majority of experts agree that air fares will become more expensive as a result. But how much more? There is also some debate about which technology is best for decarbonizing aviation.

According to a new study by researchers at ETH Zurich and the Paul Scherrer Institute published in the journal Nature Communications, air fares could rise by about 50% compared to current prices if synthetic fuels were to replace the fossil fuel kerosene throughout the world by 2050.

"When looking at this potential increase, it should be taken into account that air fares have fallen by over 40% in the last 25 years," says Anthony Patt, ETH Professor of Climate Policy and co-author of the study. "If this trend were to continue, a climate-neutral flight in 2050 would cost roughly the same as a flight today."

Two technological approaches

The authors of the study compare two approaches for reducing the climate-damaging effects of aviation. In the first, airplanes continue to use petroleum-based kerosene. However, an equivalent amount of CO2 is extracted from the atmosphere as that emitted by the jet engines, for example by filtering it directly from the air and storing it underground. The ETH spin-off Climeworks launched this technology onto the market a few years ago.

In the second approach, airlines replace an increasing amount of kerosene with synthetic fuel without the need to modify turbines or aircraft. This fuel is produced from captured CO2 combined with sustainably produced hydrogen, the latter produced from water either using electricity or with a solar reactor. The latter technology was developed at ETH Zurich and brought to market by the ETH spin-off Synhelion.

Synthetic fuels the cheaper option

The researchers show that synthetic fuels would be the cheaper option if air traffic continues to increase. The reason for this is that aviation's impact on the climate is not limited to CO2 emissions.

"As a result of condensation trails and other non-CO2 effects, such as those relating to the release of soot particles or nitrogen oxides, the overall impact of aviation on the climate can be up to three times greater than that of CO2 emissions alone," says Nicoletta Brazzola, lead author of the study and postdoctoral researcher in the Professorship for Climate Policy at ETH Zurich.

Unlike the warming from CO2 emissions, which lasts for centuries, the non-CO2 effects are short-lived, and hence respond immediately to the volume of aviation. As the volume of aviation grows, these short-lived effects can rise quite quickly. Truly climate neutral aviation requires offsetting these non-CO2 effects with additional removal of CO2 from the air.

Synthetic fuels have one significant advantage: they burn more cleanly than fossil kerosene and cause far fewer damaging non-CO2 effects. This also means that less additional CO2 needs to be removed compared to an aircraft fueled with fossil kerosene. The researchers explain that this works out cheaper. In the case of an emit-and-compensate approach based on kerosene, ticket prices would be about 55% to 75% higher than they are today. With synthetic fuels, they would only go up by 45% to 60%.

A rocky road ahead

However, Brazzola, the author of the study, believes that the road to climate-neutral aviation will not be a straightforward one. "To achieve climate-neutral aviation, we will need to massively scale up supply of these fuels, producing large quantities of green hydrogen and building CO2 transport and storage infrastructure," says the ETH researcher. "This will be an unprecedented challenge."

The actual cost of producing synthetic fuel depends on the price of its energy inputs, with solar and wind offering the lowest costs. The least expensive inputs, in sufficient quantities to serve the global market, are to be found outside of Europe.

"We would expect to see global production chains for synthetic fuels rather than European ones. This global market makes the renewable energies required for the production of these fuels a lot cheaper," says ETH Professor Patt.

For example, large solar energy plants could be located in areas of Northern Africa or the Arabian Peninsula that are exposed to a lot of sunshine. There are also other countries with significant potential for renewable energies, such as the U.S., South Africa, Chile and Australia.

CO2 and kerosene need to be more expensive

The key question for Patt is whether the volume of sustainable kerosene will increase quickly enough, as the market is still very small at present. The ETH professor believes that the right political conditions will play a vital role in this.

For example, a law came into effect in the EU in 2025 that initially requires 2% sustainable fuel to be blended into fossil kerosene. This is to increase to 70% by 2050. A similar regulation is set to come into effect in Switzerland in 2026.

"These measures are a step in the right direction, but they need to be expanded further. The price of CO2 would also have to go up to make fossil kerosene more expensive and therefore more unattractive," says Patt. -- TP

New AI tool detects fake news with 99% accuracy

The researchers Dr. Uchenna Ani, Dr. Sangeeta Sangeeta, and Dr. Patricia Asowo-Ayobode from Keele's School of Computer Science and Mathematics, used a number of different machine learning techniques to develop their model, which can scan news content to give a judgment of whether a news source is trustworthy and genuine or not.

The method developed by the researchers uses an "ensemble voting" technique, which combines the predictions of multiple different machine learning models to give an overall score.

Impressively, this technique was accurate in identifying fake news news 99% of the time, which significantly exceeded the researchers' predictions and expectations.

Their hope is that now the method can be further refined as AI and machine learning systems become more sophisticated, enabling them to eventually produce a model that is 100% accurate at identifying fake news.

One of the lead authors Dr. Uchenna Ani, Lecturer in Cyber Security at Keele, said, "In our constantly evolving digital communication landscape, the widespread dissemination of false information is a significant concern. It compromises the integrity of public discourse and has the potential to threaten both local and national security via influencing biased mindsets, views, and actions.

"The risk posed by misinformation, disinformation, or fake news to the credibility of online news platforms, particularly on social media, highlights the urgent need for innovative solutions. We aim to enhance the capabilities of our AI solution through further research to help nip this problem in the bud."

The researchers recently presented their findings at the 44th SGAI International Conference on Artificial Intelligence in Cambridge, United Kingdom. -- TP