

# FORTNIGHTLY ENGINEERING REVIEW

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## Belarusian President's Visit: Strengthening Technological and Industrial Ties with Pakistan

# Belarus ready to share technologies with Pakistan

**D**uring his visit to Pakistan, Belarusian President Aleksandr Lukashenko emphasized the importance of deepening bilateral collaboration in high-tech sectors, including agricultural machinery, mining, information technology, and heavy machinery manufacturing. This visit marked a significant step toward advancing technological cooperation between the two nations.

logical expertise, stating that in today's world, even small- alongside larger nations. He expressed Belarus's eagerness to share its modernized technologies with Pakistan,

not only in the present but also in the future. He said, "We are ready to share our technologies — we have them, we are modernizing them, and we want to share them with you."

potential for collaboration in the production of high-tech agricultural machinery, an area where Belarus holds a strong global position. Given Pakistan's agriculture-driven economy, the two countries agreed to explore joint ventures in this field, aiming to introduce innovative agricultural solutions to Pakistan's farmers and enhance productivity through advanced machinery.

President Lukashenko also underscored the opportunities for cooperation in the automotive sector, particularly in the manufacturing of heavy-duty trucks and electric vehicles. Both countries agreed to collaborate on the sales, manufacturing, and servicing of vehicles, lever-



President Lukashenko highlighted Belarus's techno-

er countries like Belarus possess advanced technologies,

ness to share its modernized technologies with Pakistan,

"We are ready to share our technologies — we have

them with you." Both sides recognized the

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## Karachi Business Community Launches Air Karachi with Rs 5 Billion Investment

The business community in Karachi has announced the launch of a new airline, Air Karachi, with an initial investment of Rs 5 billion. The announcement was made by prominent businessman Hanif Gohar during a press conference at the Karachi Press Club on Tuesday, where he was accompanied by S.M. Tanveer, Chairman of the United Business

Sial, Karachi's business community has decided to establish its own airline under the name "Air Karachi." Gohar stated. He emphasized that, as Pakistan's largest economic contributor, Karachi deserves an airline to meet the growing demands of business and travel in the city. The shareholders of Air Karachi include prominent business figures such as Aqeel Karim Dhedhi, Arif Habib, S.M. Tanveer, Shehryar Tahir, Bashir Jan Muhammad, Khalid



Group. Air Karachi, which is registered with the Securities and Exchange Commission of Pakistan (SECP), is currently awaiting licensing approval from the federal government. During his address, Gohar shared that the airline will begin operations with a fleet of three leased aircraft, with plans to expand in the near future. "Inspired by the success of Air

Tawab, Zubair Tufail, and Hamza Tabani. Air Vice Marshal Imran Majid Ali has been appointed as the airline's Chief Executive Officer (CEO). Gohar expressed optimism that the airline's licensing would be granted soon, allowing operations to begin. He noted that Air Karachi's launch is expected to improve connectivity, create employment opportunities, and strengthen Pakistan's aviation sector. -- ERMD

## Belarus ready to share technologies with Pakistan

Contd from page 1

aging Belarus's automotive technology and Pakistan's manufacturing capabilities. Public and private sector partnerships were also discussed to drive these initiatives forward. The visit also focused on enhancing connectivity and logistics, with both sides emphasizing the importance of optimizing transportation

laborate in the fields of science and technology, signing two agreements for joint scientific projects under the framework of the Joint Commission on Science and Technology. These projects are set to foster innovation and knowledge exchange in critical areas, further solidifying the technological partnership between Belarus and Pakistan. Further, both nations

manufacturing. The goal is to not only boost technological cooperation but also enhance people-to-people connections through art, music, literature, and other cultural activities. At the conclusion of the visit, 15 significant agreements and MoUs were signed, including the "Roadmap for Comprehensive Cooperation between Pakistan and Belarus for 2025-2027." This roadmap



networks to facilitate smoother trade. A memorandum of understanding (MoU) was signed between Pakistan's National Logistics Corporation (NLC) and Beltamozhservice, aimed at streamlining maritime and land routes. This agreement is expected to reduce trade costs and improve the efficiency of trade between the two countries. In addition to trade and industrial cooperation, the two countries agreed to col-

committed to expanding trade in pharmaceutical products, medical devices, and health-related items. Addressing regulatory barriers to market access, they discussed the importance of enhancing trade facilitation and creating policies that would streamline the exchange of these products. Both sides also agreed to foster cultural exchanges and strengthen educational ties, including the promotion of programs in agricultural

outlines a clear framework for future collaboration, emphasizing technology transfer, scientific cooperation, and joint ventures in sectors critical to both nations' economic growth. The signing of these agreements marks a new chapter in Belarus-Pakistan relations, with both countries committed to deepening cooperation in key sectors of mutual interest, such as technology, manufacturing, and trade. -- ERMD

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## Why 'Engineering Accreditation Board attracts extra attention PEC Boilers Begin Operations with Formation of Groups, Committees

By **Manzoor Shaikh**  
The Pakistan Engineering Council

(PEC) has formed 14 groups, each with a specific mandate outlined in official notifications. Among these groups, the Engineering Accreditation Board (EAB), led by Dr. Aneel Kumar, has drawn significant attention across Pakistan.

These groups, often referred to as 'committees,' are traditionally seen as a political tool to keep engineers loyal to the ruling group.

The groups include one board, the Engineering Accreditation Board (EAB), which has 18 Governing Body (GB) members. There are also six committees: the Accreditation Moderation Committee (AMRC) with 6 GB members, the Accreditation Moderation Committee (AMRC) with 5 GB members, the Act & Byelaws

Reforms (WG-PECIR) with 6 members, the Working Group on Public Sector Institutions Issues (WG-PSII)

Attention  
The EAB always attracts attention because it is led by influential engineers who

had a different perspective, believing that seniority alone is not enough, and other factors are important.

background played a crucial role in his selection. The decision-makers felt confident that he would not suc-

ceed. The New EAB and Its Design



Setting politics and principles aside, the board's structure, which includes a new committee, is both interesting and a source of concern for many engineers. According to the mandate outlined in the notification, the board will:

- Formulate and review accreditation policies, procedures, standards, and criteria for undergraduate and postgraduate engineering programs.

with 6 members, the Working Group on Technical Codes & Standards (WG-TC&S) with 4 members, and the Working Group on Young Engineers Affairs (WG-YEA) with 6 members.

A Quick Analysis  
Interestingly, all 14 groups are formed from the pool of the Governing Body, which has 40 members directly elected through elections and 20 nominated members across the country. Most nominations are politically motivated. For the first

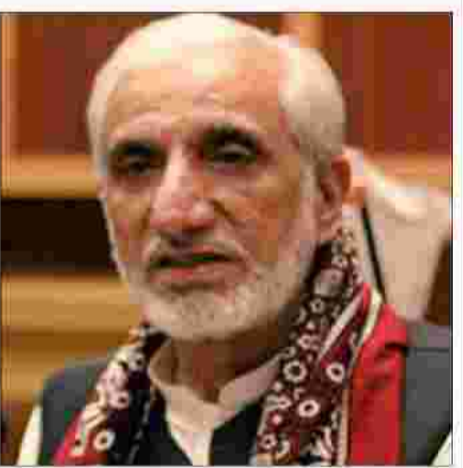
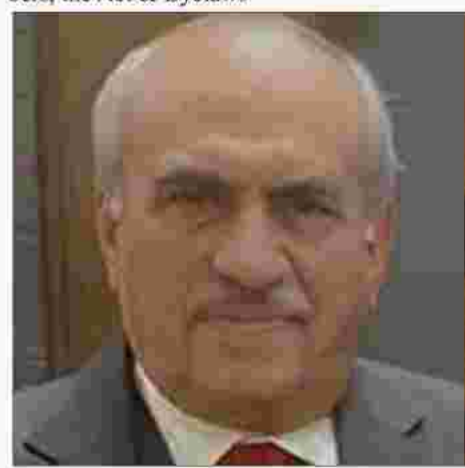
control significant leverage. The board is responsible for planning, managing, implementing, and monitoring the accreditation process across the country. Its convener particularly has influence over universities and, in some cases, uses this power in various ways. PEC has many unfortunate stories related to the board's activities, most of which are buried in dusty files.

The unfortunate reality of the leadership in influential boards is that, during

An engineer familiar with the council's affairs suggests that Dr. Aneel Kumar's personal and family

cumb to pressure or compromise during a time when universities and the engineering sector in Pakistan are in dire

Contd on page 6



Committee (ABC) with 5 GB members, the Engineering Professional Development Committee (EPDC) with 13 GB members, the IPEA Monitoring Committee (IPEA-MC) with 7 members, and the Qualification Equivalence Committee (QEC) with 5 members. Additionally, there are 7 working groups: the Working Group on Construction Industry Development (WG-CID) with 5 members, the Working Group on Industry Academia Linkages Development (WG-IALD) with 7 members, the Working Group on PEC Assets Development & Management (WG-PECAIDM) with 5 members, the Working Group on PEC Institutional


time in a decade, no engineer from outside the GB has been included in any group or committee.

Dr. Sarosh Lodhi, the Senior Vice Chairman of the council, and Engr. Mukhtiar Shaikh have appeared in only one group each: the Working Group on Technical Codes & Standards (WG-TC&S) and the Working Group on PEC Assets Development & Management (WG-PECAIDM), respectively. Both Lodhi and Shaikh, political rivals, find themselves on the same side. It is possible they themselves selected only one group to work with, or they may have been sidelined by the creators of the groups.

Why the EAB Attracts

their tenures, the engineering profession in Pakistan has lost much of its appeal. Many universities have struggled to fill seats in various engineering disciplines.

This time, however, a relatively young and lesser-known engineer, Dr. Aneel Kumar, Pro Vice Chancellor of Mehran University of Engineering and Technology (MUET), Jamshoro, has been appointed to lead the board. Many in the engineering community claim Dr. Sarosh Lodhi, the Senior Vice Chairman, wanted to lead the board, but his wish was unfulfilled. His supporters argue that he was the most senior and deserving candidate. However, Chairman Engr. Waseem Nazir

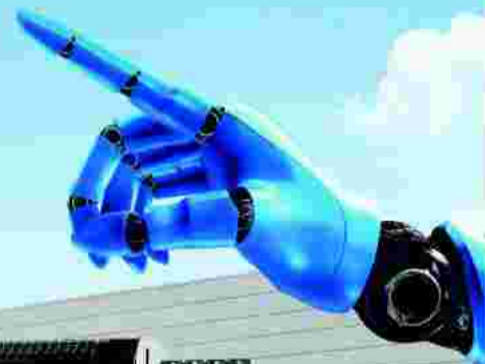



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# ZTBL, Wateen Launch Advanced Security Operations Center to Protect Customer Data

Zarai Taraqati Bank Limited (ZTBL), Pakistan's leading agricultural financing bank, has partnered with Wateen, a pioneer in Pakistan's ICT sector and a recognized leader in managed cybersecurity services. This strategic collaboration aims to establish a state-of-the-art Security Operations Center (SOC) to protect critical digital infrastructure and safeguard the data of over half a million ZTBL customers.

The partnership was formalized with the signing of an agreement between Tahir Yaqoob Bhatti, President and CEO of ZTBL, and Adil Rashid, CEO of Wateen, with senior representatives from both organizations in attendance. ZTBL has been at the forefront of digital innovation, offering a wide range of modern banking services, including internet banking, WhatsApp banking, mobile banking, ATM services, on-the-go digital services

through MCO tablet applications, digital onboarding, RAAST integration, state-of-the-art customer support centers, and USSD-based banking. Under this partnership,



Wateen will manage ZTBL's cybersecurity operations, providing round-the-clock monitoring, advanced threat detection, and rapid incident response to ensure the security

of the bank's digital assets. Wateen will also enhance ZTBL's overall cybersecurity measures, protecting it from evolving cyber threats. ZTBL's President and CEO,

Tahir Yaqoob Bhatti, emphasized, "At ZTBL, safeguarding our customers' trust and securing their data are our top priorities. With our broad range of digital banking serv-

ices and this partnership with Wateen, we are strengthening our commitment to maintaining the highest cybersecurity standards while continuing to empower Pakistan's agricul-

ture sector." Adil Rashid, CEO of Wateen, highlighted the importance of the partnership, saying, "We are proud to collaborate with ZTBL to

strengthen their cybersecurity framework. As cyber threats grow more sophisticated, securing the financial sector is more crucial than ever. Our goal is to protect ZTBL's crit-

ical data, ensuring its operations remain resilient, while setting a higher standard for cybersecurity across the industry." Wateen's expertise in

banking regulations and cybersecurity makes it the ideal partner for financial institutions like ZTBL. The new SOC will incorporate advanced technologies such as artificial intelligence, machine learning, and real-time threat intelligence, ensuring the security of ZTBL's IT infrastructure against emerging threats. The partnership also complies with key regulatory standards, including those set by the Federal Board of Revenue (FBR), the State Bank of Pakistan (SBP), the National Cyber Security Policy 2021, Pakistan Telecommunication Authority (PTA), PCI DSS, and ISO 27001. This reinforces ZTBL's reputation as a secure and compliant financial institution.

Through this collaboration, Wateen will provide comprehensive, continuous surveillance of ZTBL's IT systems, proactively protecting against cyber threats and strengthening customer trust. This initiative underscores Wateen's leadership in managed cybersecurity and ZTBL's commitment to data integrity and security.

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# Schneider Electric Pakistan Empowers Panel Builders with Latest Industry Insights

**S**chneider Electric Pakistan team recently concluded a series of technical sessions across Karachi, Lahore, and Islamabad, aimed at empowering panel builders with the latest industry insights and solutions. The events brought together industry experts from KSA (Kingdom of Saudi Arabia) and Pakistan to share knowledge and best practices.

The sessions focused on a wide range of topics, including energy efficiency, automation, and sustainability. Participants had the opportunity to engage with experts, ask questions, and participate in interactive quizzes. By equipping panel



builders with the necessary skills and knowledge, Schneider Electric's team in Pakistan aims to drive innovation and sustainable practices in the industry.

"We are committed to fostering a strong and knowledgeable panel builder community," said Mr. Kamran Sultan, Country leader for Panel Builder & Distribution. "These technical sessions are a testament to our dedication to supporting our partners and driving industry growth", Kamran Sultan added.

Through these technical sessions, Schneider Electric reaffirms its dedication to fostering a thriving ecosystem of skilled professionals who can drive the future of automation and energy efficiency. ■



## Graduating Career Fair 2024 Successfully Concludes at NED University

**T**he Graduating Career Fair 2024, organized by the Directorate of Industrial Liaison (DIL) at NED University of Engineering & Technology, brought together students, employers, and industry leaders for a vibrant net-

and non-engineering disciplines, featured participation from over 40 local and global industries representing diverse sectors. Government representatives were also present, emphasizing the fair's importance in fostering public-private partnerships.

The fair offered graduating students a platform to connect with employers through company booths, on-campus recruitment

for Dr. Sarosh Hashmat Lodi emphasized, "This event serves as a bridge between students and employers, providing first-entry career opportunities while strengthening industry-academia collaboration."

Dr. Ali Zulqarnain, Director of Industrial Liaison, added, "This full-day event achieved



industries marked the Career Fair 2024 as a significant milestone in NED University's commitment to preparing graduates for the professional world. ■



working event aimed at bridging the gap between academia, industry and government.

The event, held across all faculties of NED University, including both engineering

drives, and interviews conducted in video conferencing halls. Students explored opportunities for job placements, internships, industrial visits, final year design projects (FYDPs), and other collaborative activities.

Speaking on the occasion, Vice Chancel-

its objectives by connecting students with industries and fostering meaningful partnerships."

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## Revolutionizing healthcare in Pakistan AKUH Introduces 3D-Printed PEEK Implant Procedure

The Aga Khan University Hospital (AKUH) has successfully introduced 3D-printed PEEK implants,

times. They provide an affordable, high-quality alternative to expensive imported implants.

Dr. Shahzad Shamim, a neurosurgery expert at AKUH, highlighted that

low- and middle-income patients. Additionally, it contributes to environmental sustainability by minimizing the carbon footprint of imports. Since their introduction, AKUH has successfully



designed and manufactured in-house, revolutionizing healthcare in Pakistan. These custom-made implants, used for complex bone replacement surgeries, are strong, lightweight, and body-compatible, offering better integration, reduced infection risks, and improved recovery

these implants improve surgical precision and patient outcomes. AKUH is the only hospital in Pakistan with FDA-approved, DRAP-approved facilities to produce these implants, ensuring world-class standards.

The local production of PEEK implants reduces costs and enhances healthcare accessibility, especially for

treated 14 patients, with plans to expand the use of these implants in more surgeries.

This innovation represents a major step forward in making advanced, personalized medical care more accessible in Pakistan, aligning with AKUH's mission to provide top-tier healthcare at lower costs. — ERMD

## PEC Boilers Begin Operations with Formation of Groups, Committees

Contd on page 3  
Education in Pakistan and the Accreditation Manual (2019).

Evaluate engineering programs and oversee decision-making, the operations of APMC, AMRC, and VCC, and the rationalization of student intake based on demand and supply.

consultation is necessary to ensure transparency and appropriate action in the activities that the AMRC is expected to oversee. In other case, the board will lose its significance and may fail to bring about the change.

Politics Supersede Principles  
As in many spheres in

it, even though the election committee had reached a consensus for the physical recount of the votes for the positions of chairman and senior vice chairman. The victories of Mohsin Khan and Madad Al Shah in the count have highlighted discrepancies in the vote-counting process.

Politics also appears in



If the Accreditation Planning and Management Committee (APMC) is responsible for planning and scheduling all types of accreditation visits, forming accreditation teams, and ensuring the appropriate academia-industry ratio, it would be crucial to have the approval of the board and its convener for all activities to be carried out by the committee. This

Pakistan, engineers are not immune to political influence. Dr. Sarosh Lodhi's grievances became public after his supporters advocated for his nomination to lead the EAB. They believe Lodhi, as the most senior member, deserved the position. However, on the issue of a recount of votes, which was demanded by Lodhi's rival, Raghbir Shah, Lodhi opposed

other corners of the PEC. Engr. Abdul Qadir Shah, an ally of Engr. Waseem Nazir and head of the National Engineering Association (NEA), has reportedly requested an office in the PEC headquarters in Islamabad. Insiders suggest that Shah and his supporters have asked the chairman to allocate an office to the former PEC leader, though the reasons remain unclear. ■

## Pakistan HVACR Society and Edhi Foundation Signed MoU

Pakistan HVACR Society, Karachi Chapter Chairman Aley Muhammad and Chair-

Technology. The signing ceremony was held in the society's office. Aley Muhammad welcomed the delegates and said that it is our duty to disseminate

between industry and academia. We hope that HVACR Society will help us in grooming the students and in internships in industry. Dr. Lubna Mahmood from STEVTA, Masood Say-



man, Edhi Foundation, Faisal Edhi Signed a MoU for the betterment of the students of Edhi Institute of Science &

nate the knowledge and groom the HVACR professionals. He also gave a briefing about the activities of society. Faisal Edhi said it is good to know that HVACR Society is bridging the gap

eed, Principal, Edhi Institute and from Pakistan HVACR Society Khalid Mansoor, Farrukh Ashraf, Abdul Basit Karim, Rashid Shafiq, Najam ul Islam were present at the ceremony.

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# CATCH\_VR Team Organizes Awareness Seminar ‘Immersive Technologies: Exploring the Future of AR/VR and AI in STEM Education’

An engaging and insightful Awareness Seminar on Immersive Technologies was successfully held at Hayat School, Hyderabad. The event was organized in collaboration with Mehran University of Engineering & Technology (MUET) and QUEST teams as part of the EU-funded CBHE project, CATCH\_VR. The seminar aimed to educate participants on the transformative potential of Augmented Reality (AR), Virtual Reality (VR), Artificial Intelligence (AI), and digital technologies in shaping the future of STEM (Science, Technology, Engineering, and Mathe-

practical demonstrations, and hands-on experience with physical equipment and digital twins. Ultimately, this project aims to produce trainers who will train the workforce in STEM-based education using cost-effective Digital Twin technology. He also presented a memento from MUET to Prof. Wahid Bux Shaikh on behalf of the Vice Chancellor of MUET.

The seminar featured a distinguished lineup of speakers who shared their expertise and insights. Prof. Dr. Pardeep Kumar Harani, Chairman of the Software Engineering Department at QUEST, Nawabshah, discussed the role of immersive technologies in advancing software engineering education and national initiatives.



behind the event for their enthusiasm and active engagement.

The seminar emphasized the importance of exploring immersive technologies as tools for education, innovation, and problem-solving in the context of Industry 4.0. Participants left the seminar inspired to delve deeper into AR, VR, and AI technologies and their real-world applications.

Finally, souvenirs were presented to the speakers by the Director of Hayat School and College.



tics) education.

The event was made possible with the generous funding and support of the CATCH\_VR Project. Prof. Dr. Bhawani Shankar Chowdhry, S.I., expressed gratitude to Prof. Wahid Bux Shaikh, Director of Hayat

Dr. Shoaib Soomro, Assistant Professor in the Electronic Engineering Department at MUET, Jamshoro, provided valuable insights into the optical engineering applications of VR/AR technologies, drawing from his extensive research experience. He also



School and College, for providing the venue and encouraging student participation, which significantly contributed to the event's success. Prof. Chowdhry also mentioned that the goal of the "Capacity building in Teaching of AR/VR (CATCH\_VR)" project is to enhance the capacity of higher education institutions through Augmented Reality (AR) and Virtual Reality (VR) using Digital Twinning. This project, with a consortium of educational institutions from both Europe and Asia, focuses on Graduate Engineering Education. The initiative involves a participatory learning approach,

interacted with the school students and staff, demonstrating a prototype for interactive 3D visualizations of STEM concepts. Prof. Dr. B.S. Chowdhry (Sitara-e-Intiaz), Professor Emeritus at MUET, Jamshoro, highlighted the intersection of immersive technologies with these fields and their societal impact.

The seminar concluded with a vote of thanks from Saba Umrani, the host and Research Assistant at the National Centre of Robotics and Automation and Artificial Intelligence (NCRAAI). Saba expressed heartfelt gratitude to all the speakers, participants, and the team



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# Harnessing Wind Power Technological Advances in Wind Turbines

Engr. Dr. Muhammad Nawaz Iqbal

Significant technological advancements in wind power have been made, especially in the efficiency and design of wind turbines. Thanks to materials, control systems, and aerodynamic advancements, modern wind turbines can now spin faster and at higher sizes. The enlargement of turbines, with larger blades and taller towers, is a significant development in these developments. At higher elevations, where wind speeds are often stronger and more steady, larger turbines can capture more wind energy. Advances have significantly influenced the development of wind turbine technology in aerodynamics. Aerodynamic profiles that maximize energy capture and curved blades are only two examples of the more advanced features added to rotor designs. Modern wind turbine efficiency rises as a result of improved aerodynamics, which decreases turbulence and improves the conversion of wind energy into rotational motion. Higher capacity factors, which result from these developments, allow wind turbines to produce a greater percentage of their potential output over time.

Lighter and harder materials for components of wind turbines have been

developed thanks in part to materials science. Turbine blade weight has been decreased without sacrificing structural integrity because to the usage of modern materials like carbon fiber and fiberglass. Large turbines may be installed in multiple locations more affordably and with less difficulty due to

pletely built with sensors and control systems to allow for grid interconnection and optimal performance. To optimize energy extraction and react to shifting wind conditions, sophisticated control algorithms modify the rotor's orientation and the pitch angle of the turbine blades. Real-time data on the effi-

by these intelligent technologies.

A key area of advancement for wind power harvesting is offshore wind technology development. The steady and powerful winds generated over open waters are used by offshore wind farms. Increased offshore wind development potential has resulted from

diversify the sources of wind energy. Grid reliability is improved and wind energy's intermittent nature is addressed by the integration of wind turbines with energy storage devices. Wind farms can store excess electricity while high wind periods and release it during low wind periods thanks to energy



the lighter blades' ease of assembly, installation, and transportation. In addition, these materials' resilience guarantees wind turbines a longer working life, which adds to wind energy's overall sustainability. Modern wind turbines are now com-

ciency of turbines is also made possible by sensors and monitoring systems, which raises the total dependability of wind farms and enables predictive maintenance. The operability and efficiency of wind turbines are improved

technological advancements in foundation and floating platform designs that allow wind turbines to be installed in deeper waters. Land use restrictions related to onshore projects are lessened by offshore wind projects, which also help to

storage technology like batteries. Because of this integration, the power supply is more dispatchable and reliable, which increases the amount of wind energy that can be used to balance the grid and meet peak demand.

Wind power is now more competitive due to lower costs and more efficient and simplified turbine production processes. The production of wind turbines has benefited from economies of scale thanks to developments in supply chain optimization, automated manufacturing, and precision engineering. As a result, wind energy is becoming more and more cost-competitive with traditional methods of generating electricity, which is propelling wind power's global acceptance. This is measured in terms of the levelized cost of electricity. Repowering wind turbines refers to the process of updating or swapping out existing turbines for newer, more effective units. Repowering projects take advantage of the most recent breakthroughs in technology to improve the performance of already-existing wind farms. This method maximizes energy output while extending the

lifespan of wind projects, which makes repowering an economically feasible option for maximizing the performance of aged fleets of wind turbines. Concerns about the wind turbines' acoustic impact have been addressed by noise reduction technology. Aerodynamic noise from wind turbines is reduced by innovations such blades with serrated trailing edges and better tower architectural designs. Developments in noise reduction technology facilitate the better cohabitation of wind farms with neighboring communities, which leads to less harm to the environment wind projects. In wind turbine design, monitoring, and optimization, digital twin technology has proven to be an effective instrument. Real-time simulations and performance analysis are made possible by digital twins, which are virtual versions of actual wind turbines. With the use of this technology, wind turbine dependability and efficiency are increased overall. It also makes scheduled servicing, efficiency improvements, and performance predictions easier. The development of wind power technology has been fueled by advancements in wind turbine technology. These developments have improved the overall performance, economic viability, and long-term viability of wind power. They range from bigger and more effective turbines to breakthroughs in aerodynamics, components, automation, and smart technologies. Further advancements will probably be brought about by ongoing research and development activities as the wind power sector keeps evolving, which will support wind power's continued expansion and integration into the world's energy system. ■



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Sales Blog for Young Engineers and Entrepreneurs

**SUCCESS WITHOUT INTEGRITY IS FAILURE**

Muhammad Tariq Haq | ESL

In a previous blog, we discussed how the pinnacle of salesmanship parallels the missionary work of prophets. This post focuses on the stories of three prophets, one of whom qualified to marry the pious daughter of a noble. Prophet Moses: In Surah Al-Qasas, Vers-

born into a lineage of prophets. His journey involved intense trials, including being thrown into a well by jealous brothers; then being sold into slavery and imprisoned. However, these tests prepared him for greater challenges. While in prison, he interpreted a king's dream, advising on grain storage during a future drought.

His wisdom led to his release, but he insisted on verifying his character and



es 26-27, one of Shu'ayb's daughters said, "O my father, hire him. Indeed, the best one you can hire is the strong and the trustworthy." These verses highlight the values of strength and trustworthiness that Shu'ayb valued in Moses, emphasizing the importance of integrity in relationships.

Prophet Saul (Talut): In Surah Al-Baqarah, verses 246-248, Allah appointed Saul as king over the Israelites. His selection was based on three main criteria:

1. Physical Strength and Leadership: He was strong and capable of leading in battle.
2. Knowledge and Wisdom: Saul was endowed with understanding vital for effective governance.
3. Divine Support: Allah enhanced his stature signified by the arrival of the Ark of the Covenant.

These criteria show that true leadership stems from strength, knowledge, and divine endorsement emanating from personal integrity rather than mere social status.

Prophet Joseph: Unlike many, Joseph was



integrity first. Upon being vindicated, he requested a position over Egypt's treasures, demonstrating that trust and competence are vital when assigning leadership roles.

These three prophetic stories teach essential leadership and management principles: the significance of a integrity, strong character, physical prowess, trustworthiness, competence, and selflessness. Aspiring leaders—whether Chairmen, MDs, or General Managers—should cultivate these traits to achieve success in their personal and professional lives. Divine support also comes to them! Yes, only to them! Otherwise, despite looking like winning, they end up losing in the final analysis! ■

**QAU Unveils Smart Solutions for Road Safety in Islamabad**

A comprehensive briefing on the progress of the project titled "Optimum Use of Existing

project is supported by the Higher Education Commission (HEC). During the session, Vice-Chancellor of QAU, Prof. Dr. Niaz Ahmad Akhtar (S.I.), was updated on the latest developments by Dr. Muhammad

violation monitoring. Dr. Zaman highlighted several innovative solutions developed under the initiative, including a dashcam system to monitor transport violations, a smart journey planner for route optimization,



Resources: A Prototype Model of Road Safety in Islamabad (GCF-744)" was held at Quaid-i-Azam University (QAU). The

Zaman, Dr. Imran Sabir, and their dedicated team. The project aims to enhance road safety in Islamabad by integrating smart technologies into traffic management and

and a smart parking application. These tools are designed to make efficient use of existing resources, reduce costs, and improve both safety and traffic efficiency. ■

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Engineering Review

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# Localizing SDGs: Building Institutional Capacity

By Prof. Dr. Abdul Sattar Saand

In an era where sustainability is no longer an option but a necessity, the Quaid-e-Awam University of Engineering, Science & Technology (QUEST), Nawabshah, took a pivotal step forward by organizing a workshop titled "Localizing Sustainable Development Goals: Building Institutional Capacity (for Sectional Heads)." This event, held on 19th November 2024, aimed to equip the university's sectional heads with the knowledge, tools, and strategies to align institutional practices with the United Nations' Sustainable Development Goals (SDGs).

The workshop, facilitated by the esteemed Prof. Dr. Abdul Sattar Saand, Professor and Head of the Department of Electrical Engineering at QUEST, brought together sectional heads from various departments to explore how the global SDGs could be localized within the university's operational and academic framework. The session was inaugurated by Prof. Dr. Saleem Raza Samo, Vice Chancellor of QUEST, who, in his opening remarks, emphasized the importance of sustainability in academia and its far-reaching impact on society.

Dr. Samo highlighted the university's commitment to integrating the SDGs into its academic, administrative, and community outreach programs. "This initiative," he stated, "is not just about meeting targets; it's about fostering a culture of responsibility and innovation that resonates beyond the university walls."

The workshop focused on the following key objectives:

- Awareness Building: Enhancing understanding of the 17 SDGs and their relevance in the institutional and local contexts.

cross-departmental collaboration to develop actionable plans that align with SDG principles.



sessions. Prof. Dr. Saand provided valuable insights into the localization of SDGs, emphasizing the need to tailor global

showcasing successful implementations of SDG-related initiatives. These examples inspired participants to think creatively and collaboratively about their roles in advancing sustainability.

The workshop concluded with the formulation of a preliminary action plan, outlining department-specific contributions to the SDGs. Participants expressed a renewed sense of purpose and responsibility, with many committing to tangible steps toward embedding sustainability in their departments.

Key takeaways from the workshop include:

- The establishment

mitment to community outreach programs that align with the SDGs.

The workshop's success was a testament to the leadership and vision of Prof. Dr. Saleem Raza Samo, whose unwavering commitment to sustainable development has positioned QUEST to become the hub for a SDG localization among higher education in district shaheed Benazirabad. Special appreciation was extended to Prof. Dr. Abdul Sattar Saand for his expertise and dedication in facilitating the session.

The event ended with a note of gratitude, who recognized the active participation of the sectional heads, and international NGOs I HUMAN APPEAL and NOWPND the collaborative spirit that defined the workshop.

This workshop marks a significant milestone in QUEST's journey toward becoming a sustainability-focused institution. By empowering its leadership and fostering a culture of innovation and collaboration, the university is not only contributing to the global SDG agenda but also ensuring a brighter, more sustainable future for its community.

This transformative initiative is a shining example of how academia can lead the way in driving meaningful change and making sustainability a reality.



- Capacity Development: Empowering sectional heads to incorporate sustainability-focused strategies in their departmental goals and activities.
- Collaboration and Implementation: Encouraging

- Monitoring and Evaluation: Introducing tools to assess the impact of SDG-driven initiatives within the university.

The workshop included interactive presentations, group discussions, and brainstorming

objectives to address local challenges effectively. Participants actively engaged in identifying ways their respective departments could contribute to the goals.

Case studies from other institutions were presented,

of an SDG Task Force at QUEST to monitor progress and provide guidance.

- Plans for integrating SDG-focused topics into the university's curriculum and extracurricular activities.

- Strengthened com-

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## ریکوڈک حصص کی فروخت

# سعودیہ سے معاہدے کا مسودہ تیار کرنے کیلئے مذکراتی ٹیم تشکیل

تا بنے، سونے کے ذخائر کی نئی فرہیبلیٹی جنوری تک آئینا امکان، منصوبے کی قدر بڑھے گی، سعودیہ کا 150 ملین ڈالر گرانٹ کا بھی عندیہ

حالیہ لاگت 5.8 ارب ڈالر، 3 ارب ڈالر ڈیٹ فنانسنگ درکار، امریکی ایگزیم بینک اور دیگر اداروں نے بھی اظہار دلچسپی کیا

عندیہ دیا تھا۔ ISIFC ایسی ٹیم کو بھی قابل ذکر غیر ملکی سرمایہ کاری کا لین دین مکمل نہیں کر پائی ہے اور سعودیہ معاہدے کی کامیابی اس کے باقی وجود کے لیے اہم ہے۔ علیحدہ طور پر گولڈ ہیراک اور پاکستان منرلز بھی اس منصوبے کے لیے غیر ملکی فنڈنگ کو محفوظ بنانے کے لیے کام کر رہے ہیں۔ امریکہ کے ایسے ایکسپورٹ پورٹ بینک (انجیرم) کے لیے ترقیاتی قرض دہندہ کا درجہ مانگا ہے۔ یہ بینک ریکوڈک منصوبے کو قرض دینا چاہتا ہے۔ تاہم اسلام آباد ایک خود مختار مالیاتی ادارے کو اس طرح کی خصوصی حیثیت دینے میں ٹھیکہ ہٹ کا شکار ہے۔ اس منصوبے کی کل لاگت کا تخمینہ تقریباً 5.8 بلین ڈالر ہے جس میں سے تقریباً 3 بلین ڈالر ڈیٹ فنانسنگ کے طور پر درکار ہیں۔ امریکی ایگزیم بینک کے علاوہ دیگر اہم غیر ملکی قرض دہندگان نے بھی ریکوڈک پر ایکٹ کی مالی معاونت میں دلچسپی ظاہر کی ہے۔

حصص کے معاہدے پر دستخط کے وقت 10 فیصد حصص کی ادائیگی کی پیش کی گئی اور 5 فیصد حصص کے لیے دوسری قسط سرمایہ کاری کے قرضے پر ادائیگی کی تجویز دی گئی ہے۔ ریکوڈک منصوبے کے 50 فیصد حصص کینیڈین ہیراک گولڈ کے پاس ہیں اور باقی 50 فیصد حصص وفاق اور حکومت بلوچستان کے درمیان مساوی طور پر تقسیم ہیں۔ حکام نے کہا کہ بین الاقوامی مشیروں کو 15 فیصد حصص کی تخصیص کو حتمی شکل دینے میں دو ماہ سے بھی کم وقت لگے گا۔ نقد پیشکش کے علاوہ سعودی عرب نے کان کنی والے علاقے میں مزید 150 ملین ڈالر کی گرانٹ کا بھی

کوسونے اور تانے کے ذخائر کی مقدار کے بارے میں نئی فرہیبلیٹی سٹڈی کی تکمیل کے بعد اس پر وجہ کی قیمت میں نمایاں اضافہ ہوگا۔ وزیر دفاع خواجہ محمد آصف کی زیر صدارت کاہنہ کمپنی کا اجلاس ہوا جس نے مذکراتی ادارے کو معاہدے کو حتمی شکل دینے کے لیے متعدد کام کرنے کا اختیار بھی دیا۔ ٹی بی ٹی کی تشکیل سے متعلق سوال کے جواب میں خواجہ آصف نے کوئی تبصرہ نہیں کیا۔ منار منرلز کے ذریعے سعودی عرب کے پی آئی ایف نے ریکوڈک پر ایکٹ میں حکومت کے 15 فیصد شیئرز وونٹوں کے ذریعے حاصل کرنے کی پیشکش کی ہے۔

پاکستان نے قیمت کو حتمی شکل دینے اور ریکوڈک تانے اور سونے کی کانوں کے منصوبے میں اپنے 15 فیصد حصص کی سعودی عرب کو فروخت کیلئے تجارتی معاہدے کا مسودہ تیار کرنے کیلئے مذکراتی ٹیم تشکیل دے دی، مذکراتی ٹیم کو اختیار دیا گیا ہے کہ وہ بین الاقوامی مشیروں کی جانب سے پراسر ریفرنس کرنے کے طریقہ کار کا جائزہ لے لے اور سعودی پیشکش کا جائزہ لے۔ یہ ٹیم سعودی عرب کے پبلک انٹرنیشنل فنڈ کے ساتھ ریکوڈک کے 15 فیصد حصص کے لیے نقد پیشکش، پاکستان منرلز کی طرف سے ادائیگی پیش کرنے کی واپسی اور 150 ملین ڈالر کی سعودی گرانٹ کی پیشکش پر بھی بات چیت کرے گی۔ بین الاقوامی حکومتی تجارتی لین دین پر کاہنہ کمپنی نے پارلیمانی ایکٹ کے تحت مذکراتی ٹیم کی قیام کی منظوری دی تھی۔ چند ہفتے قبل اسلام آباد کو 15 فیصد حصص لینے کی سعودی پیشکش مانی گئی۔ اب توقع ہے



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# آئیڈیاز ملکی سطح پر تیار رہیموٹ کنٹرول روبوٹ حیدر کرار متعارف

ہائپر ڈیمینا لوجی کے حامل چھوٹے سائز کے جنگی ٹینک میں 500 راؤنڈ لیجانے کی صلاحیت بارودی سرنگوں کو ناکارہ بنانے والا روبوٹ اور اسٹال پر موجود اسلٹ ڈرون بھی توجہ کا مرکز

آئیڈیاز میں تیار کی گئی ہے۔ پہلی مرتبہ ملکی سطح پر تیار کیا گیا رہیموٹ کنٹرول روبوٹ حیدر کرار متعارف کرادیا گیا۔ چھوٹے سائز کے جنگی ٹینک سے مشابہت رکھنے والے روبوٹ پر سینوں پوائنٹ سکس کوئی انتہائی ہلکے وزن نصب ہے، ہائپر ڈیمینا لوجی کے حامل اس روبوٹ کو گراؤنڈ اسٹیشن سے 8 کلومیٹر تک ہدف کا نشانہ بنانے کے لیے بھیجا جاسکتا ہے۔ حیدر کرار روبوٹ بجٹ 300 سے 500 راؤنڈ زکو اپنے ساتھ لے سکتی ہے۔ صلاحیت کا حامل ہے۔ بارودی سرنگوں کو ناکارہ بنانے والا روبوٹ اور آڈیو ٹیلی ویژن کے

ذریعے ہدف کو نشانہ بنانے والا اسلٹ ڈرون بھی توجہ کا مرکز ہے، رضا حیدر بیڈ آف ڈیپارٹمنٹ کرچی آئیڈیاز میں جاری دفاعی ڈیپارٹمنٹ ماڈرن و ایڈیٹر کے حامل اس روبوٹ کو ملٹری ضروریات کے پیش نظر بنایا گیا ہے۔

پیش رو ٹی وی ٹیلی ویژن کے اسٹال پر موجود اسلٹ ڈرون بھی توجہ کا مرکز ہے، جو آڈیو ٹیلی ویژن کے ذریعے کسی بھی ہارگٹ کو ٹریکنگ کے ذریعے لاک کر کے اس کو نشانہ بنا سکتا ہے، اسلٹ ڈرون 60 میٹر کا گریڈ کسی بھی ہارگٹ پر مار سکتا ہے۔

## دیامر بھاشا ڈیم کے التوا سے لاگت 1400 ارب تک جا پہنچی، احسن اقبال تعمیر میں پاکستانی یونیورسٹیوں، انجینئرنگ طلبہ کو شامل کیا جائے، اجلاس سے خطاب

وفاقی وزیر پلاننگ احسن اقبال نے کہا ہے کہ دیامر بھاشا ڈیم پاکستان کی آبی اور خوراک کی سکیورٹی کے لیے کلیدی منصوبہ ہے، اس میں شامل اور غیر ضروری التوا کی وجہ سے لاگت میں بے تحاشہ اضافہ ہو چکا ہے، سابق حکومت کی نااہلی کا خیرا زہر شیشے میں بھرتا رہے ہیں۔ ان خیالات کا اظہار انھوں نے منصوبے کی پیش رفت پر جائزہ اجلاس میں گفتگو کے دوران کیا۔ انھوں نے کہا 2018 تک اس ڈیم کی تعمیری لاگت کا تخمینہ 479 ارب روپے تھا۔

دسمبر 2020 میں فنانسنگ حاصل کیے بغیر جلد باڑی میں تعمیر شروع کر دی گئی، فنڈنگ کی کمی اور التوا سے منصوبے کی لاگت 479 سے بڑھ کر 1400 ارب تک جا پہنچی ہے۔ افسوس آج بھی ہماری فوڈ سکیورٹی کے لئے فنانسنگ چان مکمل نہیں۔



## Scientists synthesize color-changing semiconductor materials



$\text{MA}_2(\text{DMC})\text{PbI}_4$



$\text{MA}_3(\text{DMC})\text{Pb}_2\text{I}_7$

**S**emiconductor materials known as 2D halide perovskites can be used in devices such as solar cells and light-emitting diodes. Scientists led by Assoc Prof Nripan Mathews of NTU's School of Materials Science and Engineering have synthesized four unique types

of 2D halide perovskites.

The findings are published in the Journal of the American Chemical Society.

Dr. Ayan Zhumekenov, a research fellow at the school and lead author of the study, used a novel approach to create the new perovskites by incorporating dimethyl carbonate—a

non-toxic solvent—into methylammonium-based perovskite crystals.

By analyzing the new crystal structures, the scientists discovered that the structures' band gap could be tuned by adjusting the ratio of methylammonium to dimethyl carbonate in them. The band gap, which determines the color of the material, is

the energy required for an electron to break free from its bound state and become conductive.

The ability to engineer the width of the band gap is important for the various applications of perovskites. The new 2D halide perovskites also exhibit a dynamic "switchable" behavior.

The researchers

found that one of the perovskites could switch between two colored states, changing from orange to red when heated to 80 degrees Celsius and reverting to its original color when cooled to room temperature.

The scientists demonstrated that the color-changing reaction could be repeated for 25 cycles. This phenome-

non of thermochromic switching opens the door to applications such as smart coatings and heat-sensitive inks that change color at different temperatures.

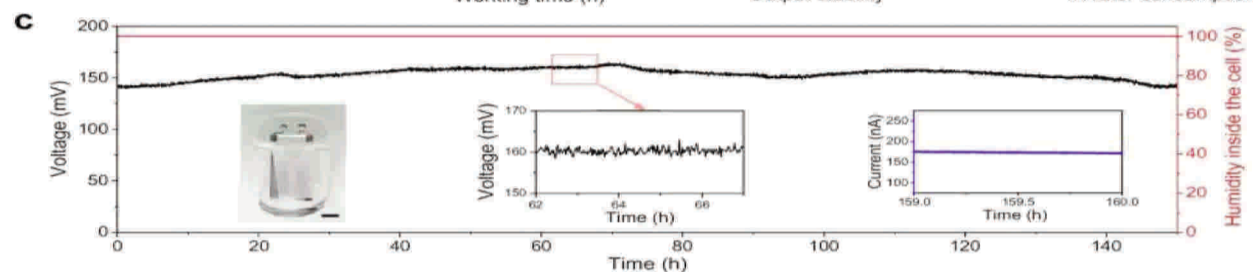
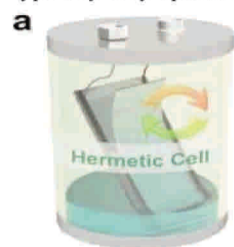
The scientists hope their innovation will pave the way for technological applications of 2D halide perovskites in optoelectronics and beyond. (TP)

# New hydrovoltaic cell continuously generates electricity with little water and no sunlight

**T**eam of engineers at the Chinese Academy of Sciences has modified the approach used to generate electricity with a hydrovoltaic cell, building one that uses little water and no sunlight. Their study is published in the journal *Nature Communications*.

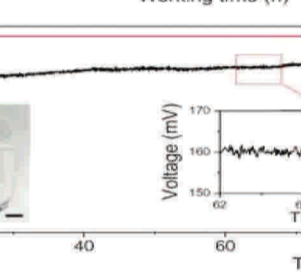
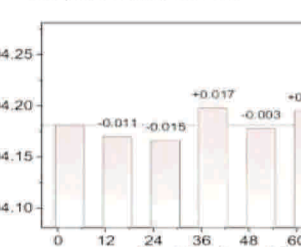
Hydrovoltaic cells generate electricity by capturing the energy from interactions between water and other surfaces. Such interactions typically rely on sunlight as the instigating power source. As the researchers with this new effort note, the traditional approach results in a hydrovoltaic cell

that needs a continuous source of water and that typically only operates in



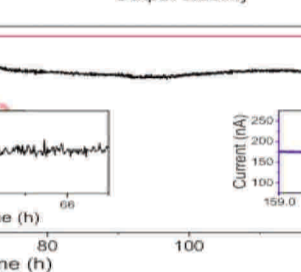
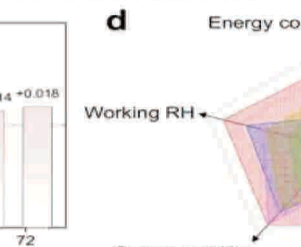
dry environments. In this new study, the team in China overcame both problems to create a new kind of hydrovoltaic cell.

To allow their cell to operate in virtually any climate, the research team



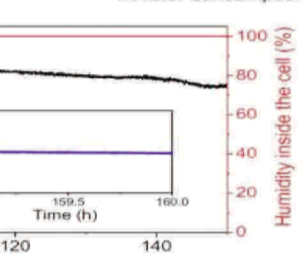
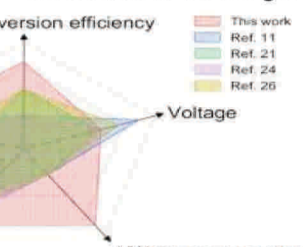
built their cell inside a hermetically sealed container—they call the result a hermetic hydrovoltaic cell (HHC). Inside, they placed a dou-

ble-layer wicking agent made of tissue paper and carbon black. A small amount



of water added to the HHC is continuously circulated due to changes in ambient temperature and capillary flow in the tissue paper.

The HHC generates power using the energy of ambient heat as the instigating



power source. Testing showed the cell is capable of producing electricity for up to 160 hours without the addition of any more water.

The researchers suggest such a cell would be an ideal candidate for people living in water-poor areas.

Further testing showed that exposure to strong sunlight increased electrical output. The researchers found this was due to energy from the sunlight increasing the rate of absorption by the black carbon, which in turn led to an increased moisture gradient.

The research team suggests their HHC could prove to be useful in places with limited electricity options, noting their cell is both low cost and requires little water. They also point out that its power source, ambient heat, is inexhaustible, meaning that once obtained, the cell could possibly function for as long as desired. -- TP

# The world's first geographically tailored urban wind turbine designed by AI

**A**I design specialists EvoPhase and precision metal fabricators Kwik Fab Ltd have unveiled the world's first urban wind turbine designed by AI, and tailored to the unique wind conditions of a specific geographic area. The team has called it the Birmingham Blade.

The collaboration between EvoPhase and Kwik Fab provides a solution to one of the most pressing issues in the green energy landscape—how to produce small-scale, affordable, generators of clean wind energy.

EvoPhase used its AI-driven design process to generate and test designs for their efficiency at wind speeds found in Birmingham, which—at 3.6 meters per second—are substantially lower than the 10 meters per second rating for most turbines.

"We needed a turbine that could capture Birmingham's relatively low wind speeds while managing turbulence caused by surrounding buildings," explained Leonard Nicusan, Chief Technology Officer of EvoPhase. "The design also had to be compact and lightweight to suit rooftop installations."

EvoPhase found the optimal design for curved blades which spin around a central point, and confirmed that it will be up to seven times more efficient than existing designs used in the Birmingham area.

Leonard explained why it was necessary to use AI to generate the design. "Using AI was essential for breaking free from the long-

pounds through conventional methods."

"Our evolutionary simulations have confirmed the Birmingham Blade is up to seven times more efficient than existing designs in Birmingham's wind speeds and urban environment. The final design is not just a prototype—it is a predictive solution that is ready for real-world use."

the Birmingham Blade to demonstrate the feasibility of manufacturing the design. An aluminum version will be sited on a roof space in Birmingham for evaluation and testing, and the final product is expected to be available by late 2025.

The EvoPhase—Kwik Fab collaboration provides a rapid design and prototyping service, and the team is now working on another design for the very different conditions in Edinburgh.

Paul Jarvis from Kwik Fab is confident that there is sufficient talent and space in Birmingham to deliver quick turnaround from design to prototyping for wind turbines that are geographically tailored to specific local conditions around the rest of the world.

He said, "We can take a complex design, and manufacture and ship a prototype for testing within weeks. We'd like to work with organizations that want to make the most of wind power, a source of sustain-

able energy that is free and present in every country."

Since its launch in 2023, EvoPhase has expanded its AI-powered evolutionary design approach to industries beyond wind energy, including the optimization of equipment for mixing, blending, and storing granular materials in the food, pharmaceutical, and chemical manufacturing sectors. -- TP



standing biases that have influenced turbine designs for the past century. AI allowed us to explore design possibilities beyond the scope of traditional human experimentation.

"We were able to generate, test, and refine over 2,000 wind turbine designs in just a few weeks, significantly accelerating our development process and achieving what would have taken years and millions of

Developed by a research group led by Dr. Kit Windows-Yule at the University of Birmingham, EvoPhase's AI-led evolutionary design process mimics natural selection. This approach allows for simultaneous optimization of many different parameters, avoiding traditional trade-offs between performance factors.

Kwik Fab produced the first iteration of