

FORTNIGHTLY ENGINEERING REVIEW

The voice of engineers

Founded by Najam ul Hassan (Marhoom)

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Why are engineers afraid of technologists?

By Manzoor Shaikh

Engineers are more theoretical, analytical, and design-oriented while engineering technologists are more hands-on and applications-oriented. This is what Google tells you if one asks the search engine about the difference between the two lots. And also in Pak-



istan, neither engineers nor technologists possess any other definition.

Then why engineers in the country are averse to technologists and are adamant to herd them behind by creating a new register in the Pakistan Engineering Council (PEC) for them and allocate few seats in the governing body for them?

The technologists are part of a separate stream around
Contd on page 02

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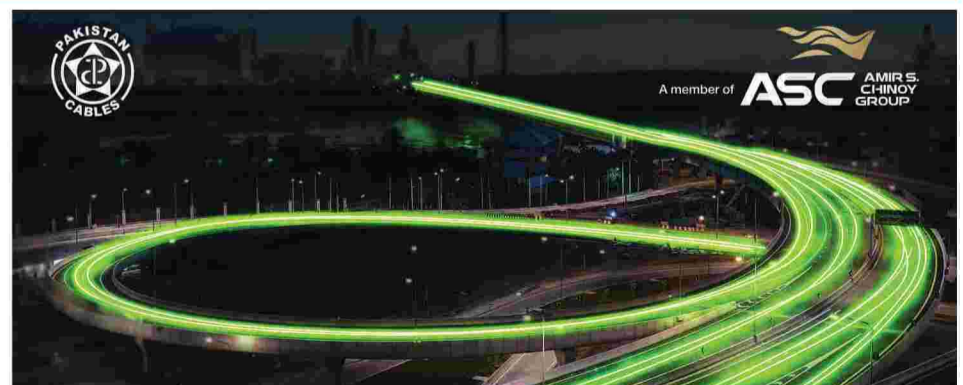
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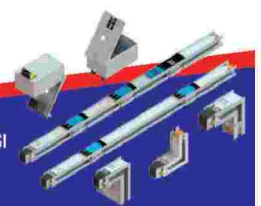
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Why are engineers afraid of technologists?

Contd from page 1
the world connected with the Sydney Accord as are the engineers streamed through the Washington Accord. Both accords are separate as well as knitted in the backdrop of the sphere of engineering and technology and thus developed separately with freedom but have made miracles together.

Neither the Washington Accord which as per its objective 'is a multi-lateral agreement between agencies or bodies that are responsible for providing accreditation and recognition to undergraduate-level engineering qualifications' nor the Sydney Accord that is specifically focused on academic programmes dealing with engineering technology are in clash with each other. Then why is that commotion in Pakistan?

Engineering Review's exchange of views with a variety of engineers in and around the PEC unearthed a number of engineers who are in favour of registering technologists in the PEC while an equal number of their brethren are against it. The logics that both categories put forth are interesting as well as funny. For instance the proponents of registering technologists with the council say since they are the part and parcel of the sphere of engi-

neering and technology, they cannot be separated. They work alongside with the engineers on all projects where engineers have lead roles like designing, planning and thinking and technologists work under them in the field. If they are registered with the council with a separate register and given some represen-

get their Act passed from the parliament. Also, the technologists are sharp and faster, they have moved their proposal for the separate Service Structure and ultimately will get it approved from the parliament. In other words, they shall leave engineers behind. Therefore, they should be registered with the council so

cue them of the losses due to depleting admissions in those institutions.

The protagonists react to this thought sharply saying since the role of engineering council and the engineer is clearly enshrined in the Act of the parliament and the decisions of the apex court of Pakistan, technologists cannot

huge number of technologists and thus the objective of the council will come to an end.

Interestingly enough both groups want technologists to linger at the tail of engineers. The former, allowing them in as their minors, and the latter through keeping them at bay

document with the relevant ministry for registration of the technologists with the council. Upon discourse, the protagonists raised the issues in Quetta meeting of the GB of the council with force.

The most significant part of this 'Engineers Vs Technologists Saga' seems to have been built on fear factor—fear of losing control over decision making which in the countries like Pakistan has a huge stake. Because, how is it possible that the NTC would overshadow PEC and eventually become cause of death of the council in a country whose parliament passed PEC Act and same parliament would give a nod to the legislation on the cost of the council? Also, how would technologists be able to get separate service cadres in a country whose bureaucrats and also their aides in the engineering community care not to pay heed to engineers for the same demand?

The NTC a new body of technologists is young enough exhibiting spirit and naturally would look to be active and of course it is not a threat to engineers anyway. But a sloth lot of engineers may surely use technologists activity to further their vested interest. ■



tation, we shall develop at the faster rate as a nation. They claim other developing countries follow such model. With adopting this way, they believe they shall be able to get rid of National Technologists Council (NTC) formed on PEC pattern and ultimately overshadowing the council. If they did not do it they shall

that they are ceased from overshadowing the engineers' council. The exchange with this lot also brought to surface an interesting alleged move that some top leaders of the council have made commitments with the private universities for registering technologists with the council. And, the major objective is to res-

be made part of the council. They say registering technologists with the PEC no matter through a separate register and also giving them a specific representation in the government body would ultimately create for them a full status as the engineers enjoy in the council. The council would not be able to exist against a

and frustrating their plans.

The proponents, some of them revealed to ER, had decided in a GB moot at Karachi this year to activate relevant forums of the council to discuss the issue before reaching any consensus but some high ranking employees of the council and leaders arbitrarily moved the

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Climate change disastrous health impacts appear in 70 countries

Climate change has disastrous health impacts. As a medical humanitarian organization, Medecins Sans Frontieres/Doctors Without Borders (MSF) is already seeing these impacts on the people we treat in over 70 countries around the world.

This year, powerful Cyclone Mocha hit Myanmar and Bangladesh and destroyed not only communities, but refugee camps. In years past, we have seen strong typhoons such as Haiyan in 2013, which laid waste to the central Philippines and caused widespread flooding in Indonesia which has submerged homes and destroyed properties.

But it is not just cyclones and super typhoons. July 2023 was recorded as the planet's hottest month in 174 years, resulting in Canadian wildfires, major heatwaves in France, Spain, Germany, Poland and Italy, and marine heatwaves along coastlines from Florida to Australia.

In short, these weather events are happening all over

the globe with greater frequency and impact. While these are the most obvious, climate change has other impacts on health, particularly on disease.

MSF is responding to high levels of vector-borne, food-borne, and water-borne diseases in our projects which is worrying, as this is projected to increase as the climate crisis accelerates. It is predicted that there will be 15 million more cases of malaria yearly, with 30,000 deaths linked to that, in addition to what we are already seeing now. One billion more people are expected to be exposed to dengue, not only in Asia Pacific, where it is much more prevalent, but across the world. European Union officials recently warned that there is a growing risk of mosquito-borne viral diseases such as dengue and chikungunya in Europe due to climate change. We have seen cholera outbreaks in at least

30 countries. While this is due to multiple factors, climate change is most definitely one of them. Climate change is also linked to food



insecurity and malnutrition. With extreme weather events such as heat waves and increased rainfall come droughts and floods that impact farming and fishing communities, affecting everything from the yield of crops grown, to the animals that till the soil, to the number of fish caught in nets. It does not end there. Other impacts of climate change include the spread of non-communicable diseases; forced displacement and migration; and the emergence of conflicts, among others. And all of these are expected to intensify over time—unless we take urgent action. Humanitarian organizations like MSF are already seeing these impacts and treating patients in the most vulnerable communities. But we can only do so much. We are seeing huge needs everywhere we go, from Asia Pacific to the Middle East, and the African nations. Countries with limited resources are enduring the worst of the devastation brought by the climate crisis. Our Rohingya patients in Cox's Bazar, Bangladesh—who have endured decades of persecution and are already burdened by being contained in the world's largest refugee camps—are repeatedly threatened by floodings and cyclones that come their way. Our patients in the island nation of Kiribati face climate and environmental changes that threaten their livelihoods and exacerbate their disease risks. We have been sounding the alarm. We see these huge needs brought about by the climate crisis, and we fear that these needs are outstripping our capacity to respond. We need the

countries most responsible for this global warming of 1.2 degrees Celsius above pre-industrial levels to help those who are most affected,

to take responsibility, and to provide financial and technical support to those most vul-

nerable. Governments of the most affected countries, including in Asia Pacific, must not only compel the top polluters to help them mitigate and manage the impacts of climate change, but also put in place policies and affirmative climate actions in addressing and reversing the impact of these issues. Already we are seeing commitments from world leaders. At their recent meeting,

Group of 20 nations have committed to a greener and more climate-resilient health

system. ASEAN -- which has five of the world's 20 most at-risk countries located in the region—has announced an ambitious strategy to work toward carbon neutrality. The COP28 agenda in November has an increased focus on health, relief and disaster response. This is an important and critically urgent moment. These commitments are ambitious, but member states of these regional blocs must see them through and take real action. Today, we are dangerously off track and urgent action needs to be taken now. The climate crisis requires a whole-of-society approach. People and organizations must also understand that our own behaviors are a part of the problem. We need to respond together, in solidarity with all, for the health of all. — JP/ERMD

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SBTi approves Pakistan Cables science-based emissions reduction target

Pakistan Cables, the pioneer wires and cable manufacturer in Pakistan, has become the country's first building material company to have its science-based emission reduction targets validated and approved by SBTi. The Science Based Targets Initiative (SBTi) drives ambitious climate action in the private sector by enabling organizations to set science-based emissions reduction targets.

"We plan to drive sustainability by investing in continuous process improvement and cleaner energy to reach our targets by 2030," said Fahd K. Chinoy, CEO at Pakistan Cables. "By setting science-based targets, Pakistan Cables is accelerating its efforts to align with ongoing global efforts to reduce global warming".

The Company's science-

based emission reduction targets are part of its long-term vision to develop its net zero strategy and is actively working to establish long-term science-based net zero targets that are aligned with SBTi's net zero criterion.

Earlier in 2021, Pakistan Cables became one of the 26 Pakistani companies and the only building materials company that signed the pledge for Business Ambition 1.5°C ahead of COP26. To date, the Company has planted 50,000 trees approximately at the Pakistan Cables Urban Forest situation in the Nooriabad factory, which is the country's first and largest Miyawaki-based Urban Forest on an industrial estate.

Furthermore, Pakistan Cables has the 14001:2015 certification, which reinforces the Company's commitment to ensure its products meet the highest environmental standards and mitigate environmental impacts.

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The Science Based Targets Initiative (SBTi) drives ambitious climate action in the private sector by enabling organizations to set science-based emissions reduction targets. The SBTi is a partnership between CDP, the United Nations Global Compact, the World Resources Institute (WRI), and the World-Wide Fund for Nature (WWF).

A LESSON FOR YOUNG SALES ENGINEERS AND BUSINESSMEN AUSTRALIA'S TRIUMPH IN THE WORLD CUP:

A Showpiece of Strategy, Leadership, Entrepreneurship and Management In a stunning display of cricketing ability, Australia emerged victorious in the Cricket World Cup.

Muhammad Tariq Huq | ESL

Australia showcased a remarkable strategy that set them apart from their competitor. They perfectly analyzed their opponents; the wicket; the evening dew factor; and devised a game plan to exploit the vulnerabilities of a near perfect India.

Then there was exceptional leadership. The Australian team was led by a captain who inspired his teammates and made bold decisions. No captain on that day would have opted to bowl first after winning the toss. His leadership style instilled a sense of fearlessness in the players to seize crucial moments. The catch of Rohit Sharma was a classical example!

Entrepreneurship too played a vital role. They constantly sought innovative ways to outshine their opponents. The unorthodox field placements to dry up the boundaries of Kohli, Rahul and Suryakumar was breathtaking; unconventional bowling changes to use up the quota of non-regular bowlers while the Indians were suffering from fear of defeat was

not less than a masterpiece. This clearly allowed their best bowlers to be saved for the last part of the Indian innings and deliver the decisive blow which they did.

Tactics also played a crucial role in Australia's journey to the top. Their bowlers executed well-thought-out plans, exploiting the weaknesses of the opposition batsmen. The batsmen, on the other hand, displayed a blend of defensive and aggressive techniques, according to different match

planning, organising, directing and controlling were fully on the display! The manager's ability to identify talent and nurture it played a vital role. The team selection was so good that strength on the bench was as good as the playing eleven!

In conclusion, Australia's triumph in the Cricket World Cup was a proof of their exceptional strategy, leadership, entrepreneurship, tactics, and management. On the other hand, India, while talented, fell short in certain areas that prevented them from winning. In particular, bowling changes left everyone guessing!

Finally, the connection between the Australia's victory and business is that

same level of strategy, entrepreneurship, management and implementation is required in business too! The one who does it better emerges victorious every time like Australia with six trophies under its belt as against the second best India and West Indies with only two apiece! Aussies unlike Pakistanis do not believe in the luck factor; though at the end of the day Lady Luck also decides to walk away with the BEST!



situations. While Travis Head was going at a strike rate of over hundred percent, his colleague was playing it like a test match!

Effective management was another key factor. There was a great camaraderie on and off the field; teamwork was at its pinnacle! The team management provided the necessary guidance, and support systems to help the team excel on the field. All the four elements of management viz

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POWER of “FIVE S APPROACH” and HSSE

by Engr. Muhammad Tariq Haq

Once upon a time, in a small town, there stood a large power plant with problems all around. Its halls were abuzz with the whispers of safety hazards, and its machinery cried under the weight of neglect and inefficiency. But only a handful of people knew that a group of five friends was determined to transform this unsafe and inefficient power plant into an example of safety and efficiency.

The first one of them was Seiri. With a keen eye for detail and a passion for order, Seiri had a great ability to spot what was important and what was not. As they explored the power plant, Seiri pointed out the clutter, the unnecessary items, and the wasteful practices. With determination in their eyes, the friends began to sort through the chaos, separating the critical from the non-critical, the useful from the wasteful. It was like unearthing hidden diamonds from the debris.

Next came Seiton, the second friend. Armed with a knack for organization and a love for efficiency, Seiton knew that setting things in order was the key to success. Together, they prioritized the chosen items, assigning them

their rightful place within the power plant. They employed techniques like the 80/20 rule

become a way of life, ingrained in their DNA. Seiso led the charge, encour-

ing the progress they had made. The power plant thrived under their watchful eyes, as self-discipline became the driving force behind its success.

And so, the power plant that was once beset with safety hazards and inefficiency transformed into a safe and efficient haven. The five friends, Seiri, Seiton, Seiso, Seiketsu, and Shitsuke, had turned the tides, breathing new life into the heart of the small town. Their journey was a proof to the power of friendship, determination, and the Five S approach. It was a story worth telling; a tale of triumph over

adversity, and a reminder that with commitment and teamwork, anything is possible. ■



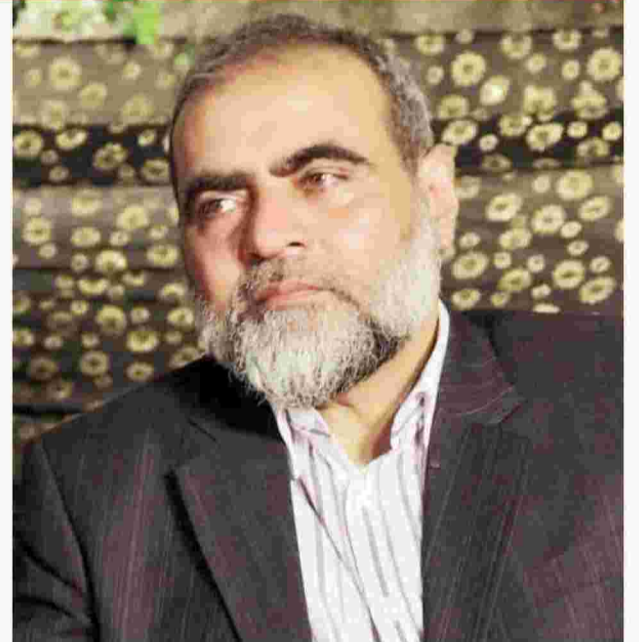
and Pareto analysis to ensure that the most important tasks received their due attention. As they worked, the power plant began to breathe, as if relieved to have a sense of purpose and usefulness once again.

But the journey was far from over. Seiso, the third friend, believed in the power of continuous improvement. They knew that HSSE practices should not be a mere switch that could be turned on and off. No, HSSE had to

aging their friends to make HSSE a 24/7 commitment. Regular checks became a habit, like a ritual before stepping into the unknown. They embraced technology, creating HSSE systems that would serve as a guiding light in the darkest of times. With each small step, they raised the bar, surpassing their previous best practices and pushing the power plant towards greatness.

Seiketsu, the fourth friend, understood the importance of consistency. They knew that to maintain the gains achieved through their efforts, standardization was crucial. Together, they established standards, developed checklists, and utilized control charts to eliminate errors and reduce variability. Fail safe, foolproof, poka-yoke techniques were developed. The power plant became a well-oiled machine, where every process had its place and every task was executed flawlessly. They integrated gauges, jigs, fixtures, and equivalents into their daily work management, like puzzle pieces that fit perfectly into the grand design.

Finally, Shitsuke, the fifth friend, brought the power of self-discipline to the forefront. They created an environment that inspired and motivated, decorating the power plant with slogans, posters, and visuals that reminded everyone of their commitment to HSSE. The friends benchmarked against the best-in-class performance, like warriors competing with champions to reach new heights. They led by example, walking the talk and inspiring others to follow suit. Audits became a matter of routine, evaluating their approach and recogniz-



About the Author

The author is a Mechanical Engineer from NED (1977-82 batch) and MBA from IBA (1985-90 batch). His professional experience started from Abbott laboratories, followed by almost twelve years in Philips Lighting Factories! Since last thir-

ty years, he has been associated with power generation business; last eighteen as Founder and CEO of Energy Solutions (Pvt) Limited-ESL! He has taught for a while in business schools courses like strategic management, personal selling; production & quality management etc.

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Fire Safety Management & Prevention

The safety of workers is always on the agenda of the EHS (Environment Health & Safety) department.

The employer is always legally responsible and obliged to provide a safe working environment. This also concerns everything related to Fire Safety Management. The latter also lies within the responsibilities of the EHS department.

What are the regulations and standards for fire safety? What are the procedures for fire safety management?

The fire risk is a reality and the numbers can speak for themselves. According to Allianz Global Corporate & Specialty's Global Claims Review, 2022, fires and explosions (excluding wildfires) are the leading known cause of company insurance losses, just before natural disasters phenomena. With 21% of the value of all claims, the average claim loss is estimated at 1.5 million euros.

In the United States of America (USA), OSHA (Occupational Safety & Health Administration), workplace fires/explosions are esti-

imated to cause the death of 200 workers and more than 5000 injuries every year. These incidents cost businesses around 2.3 billion dollars in terms of property damage.

In the United Kingdom (UK), there are around 22 000 workplace fire incidents. Workplace fire incidents keep

in terms of human lives and costs for businesses. However, there are always laws, regulations and standards to help companies put in place a fire safety management system to protect their human force, assets and properties.

Fire safety in the regulatory framework

about protecting the lives of every being and the environment.

For example in England and Wales, The Regulatory Reform (Fire Safety) Order 2005 covers general fire safety, and other procedures related to the workplace. The latter contains guidance on all the

Let us start with the basics of the generation of a fire incident. The most common and known as the "Fire Triangle": Heat (activation energy) - Oxidiser (generally Oxygen) - Fuel (flammable product). The combination of these 3 elements will generate fire, causing incidents and

Fire risk assessment
The hazards related to fire safety may differ from one workplace to another, and they depend on the type of industry/activity of the company. However, based on the fire triangle, as described above, we have 3 sources for fire. Therefore, the EHS officer/manager should identify all the areas that contain these sources, such as electrical equipment, hot substances, heater, etc.

It is important to go through all the areas, premises and warehouses of the company to completely cover all aspects of fire hazards in the risk assessment. All the working procedures should be reviewed to analyse if there is any source of ignition handled by the operators during their daily activity.

In addition to a classical risk assessment, the fire safety risk assessment chart details more aspects to be covered, such as emergency exits and procedures, fire detection alarms (also monitor their periodic maintenance), fire fighting equipment, emergency evacuation plan, storage/removal of dangerous flammable/combustible substances, and many more detailed actions to be considered depending on the company's activity and location.

In addition to the identification of fire hazards, you must identify the people at risk too. It is them that you should put on top of the list in terms of safety and of course after comes the premises and equipment. You should identify your staff, their working posts and their location. This mapping is important to also understand who might be handling dangerous materials and help them recognise the best practices to implement to save their lives and their colleagues. This is one step in the evaluation, elimination and control of the hazards.

If you feel that you lack the experience and expertise to conduct a fire risk assessment, you can rely on many organisations to help you, such as your local fire and rescue authorities, which can give you great advice and they might carry out the fire risk assessment themselves.

Fire safety equipment
Once the fire risk assessment is completed, all safety measures and procedures are then defined and implemented. The aim is that after the evacuation of all the hazards, to eliminate them or control if they cannot be eliminated.

The evaluation of hazards will allow you to classify the different types of fuels that can start a fire. This is essential as based on their type you will be able to choose the adapted fire extinguisher. There are 4 classes of fuels and therefore necessitate adapted fire extinguishing equipment.

Class A: wood, paper, or any non-metal combustible



happening even with the huge investment of the UK government to reduce these risks: "in 2020/2021 the government spent 3.13 billion pounds on fire protection services".

Fire incidents cost greatly

Every country around the world has its legal framework regarding fire safety in general and workplace fire safety in particular. In every aspect of the legal framework (home or work-based), it is always

fire safety management and procedure to guarantee the safety of the workers and the surrounding environment.

In the USA, OSHA is responsible for issuing many standards regarding fire safety depending on the industrial activity of the workplace and specifies a list of hazards and possible solutions that can cause any fire incidents in the workplace.

In general, many laws and regulations are similar in some areas, especially when it comes to fire risk assessment by the EHS department, providing fire fighting equipment adapted to the work activity, fire alarms (periodically tested and monitored), personnel training, etc.

In addition, many other organisations have fire safety standards and training programs to guarantee that all procedures are respected, and help companies with their fire safety management. We can list, for example, the National Fire Protection Association (NAFPA), The International Fire Safety Standards (IFSS), British Standards Institution and their fire safety standards (BSI 7974 Fire Safety Engineering; BS 9999:2017 Fire safety in the design, management and use of buildings), Confederation of Fire Protection Associations Europe (CFPA Europe), and, of course, there are the ISO standards related to fire protection and safety (ISO 8421 standard series for fire protection, ISO 13943:2017 standard for fire safety - Vocabulary, ISO 23932-1:2018 standard of fire safety engineering).

All these guidelines, standards, laws and regulations will help to control or eliminate the causes of fire incidents, and if they occur the best conduct to have to save lives.

What are the causes of workplace fire incidents?

other disasters. If the incident/event's intensity is high, this could lead to fire explosions.

Therefore, the most common factors in workplace fire incidents are

Incorrect use of electrical appliances (poor workmanship, lack of maintenance, etc.)

Misuse of equipment (heaters too close to flammable or combustible materials, etc.)

Unsuitable storage of waste or other flammable/combustible materials

Incautious handling of fire or hot substances

There are many other reasons than the ones listed above, that can be the reason for fire incidents. Therefore, it is essential to conduct a thorough and rigorous fire risk assessment, in addition to other necessary procedures to implement to guarantee the safety of the workers.

Fire Safety Management and EHS

Responsibilities
"Safety is everyone's business". In companies and organisations, it is up to the employer to comply with all the safety regulations in collaboration with the EHS department. The employer must also provide all the necessary tools and equipment for the EHS department to be able to perform their tasks and guarantee the safety of workers. Therefore, fire safety management also lies in the hands of the employer and EHS.

Ensuring fire safety is no different from classical mitigation or controlling any hazards in the workplace. It starts with the risk assessment, eliminating/controlling the hazards, implementing the safety measures and procedures, and always reviewing the risk assessment.

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Class B: flammable non-metal liquids such as gasoline, oil and grease

Class C: electrical equipment, appliances and wiring

Class D: metallic flammable substances such as sodium, potassium and magnesium.

A special mention for Class K like grease of cooking oils used in the kitchen.

This is why it is so important to evaluate and identify the hazards and fuels to better understand how to control them in case of a fire incident via fire extinguishers.

In addition, you should define the best appropriate PPE (Personal Protective Equipment) to use when handling dangerous and flammable or combustible substances. So, make sure that all the concerned workers are well-

equipped and that they comply with the safety measures in place.

Moreover, fire detection and warning systems should be installed in the workplace. They should be periodically checked to ensure that they properly function. This is a legal requirement that an employer should not forget.

All fire equipment should be carefully checked and maintained to make sure that they function in case of fire. Fire equipment can vary from one place to another depending on the work activity and substances used.

Evacuation plan and training

To complete the fire safety procedures, you should elaborate an evacuation plan to lead everyone to safety in case of an incident.

The evacuation plan must

specify a clear passageway for escape routes that must be clearly marked, available exits for workers to escape, emergency doors and lighting where necessary, train employees so that they do not panic and have good reflexes if an incident occurs and finally determine a safe meeting point.

A successful evacuation plan necessitates also training and drills to make sure that multiple aspects are well respected by the employees and that the fire alarm systems are working alongside the emergency exits, lighting and all the necessary equipment for fire safety.

Maintenance and testing of all fire safety equipment is an obligation. Any faults or anomalies detected during the maintenance and testing must be reported immediately and

the problem should be directly fixed. Moreover, you must train the staff on how to handle fire extinguishers and all the related fire safety measures, especially recruits.

Finally, you should never forget to review the risk assessment to make sure that all the hazards are always detected, and sometimes the procedures can change which can lead to the appearance of new hazards. Hence, the importance of reviewing the fire risk assessment.

Fire safety management with digital technology

Fire safety management is a rigorous and very detailed procedure that can produce a lot of administrative work.

Starting from the legal monitoring for safety measures, to performing the risks assessment, the implemented measures and fire safety equip-

ment, the evacuation plan, and all the records of the drills and training of employees are all information and data that should be handled carefully.

Relying on a digital tool can greatly lighten the administrative burden of fire safety management and can be time-saving. A dedicated platform will allow the centralisation of all the information, records and files in the same place. Dynamic dashboards coupled with dedicated sensors will be automatically fed with real-time data from the field. Fire safety systems/equipment are now autonomous, and can be connected to the platforms thanks to connected objects.

The maintenance of safety equipment is essential so that it always remains operational when needed. Here too, digital proves all its interest with computer-aided management

solutions (CMMS).

Fire safety management should be rigorously prepared as the stakes are high. It has its own identity in terms of management, and it is directly related to the principles of health and safety at work.

Therefore, it is an essential task for the EHS manager to master and monitor as many aspects depend on it. Relying on adequate tools will greatly help achieve fire safety objectives, prevent disasters and involve all parties concerned in fire safety awareness and practices. Finally, I was inspired by the Scottish Fire and Rescue Service phrase "Working together for a safer workplace".

By Youssef Nohra, EHS, Environment & Sustainability Specialist & Content Manager at BlueKanGo. Courtesy QHSC

Fire Prevention Engineering Innovations in High-Risk Areas

In the field of fire prevention engineering, advancements in technology have been crucial in mitigating risks and improving safety measures in high-risk areas. From intelligent fire alarm systems to innovative fire-fighting techniques, these developments aim to minimize the devastating impact of fires.

Novel Approaches to Fire Prevention Engineering Innovations in High-Risk Areas we will explore some cutting-edge approaches that have revolutionized fire prevention practices in high-risk areas and examine their benefits.

1. Advanced Fire Detection Systems

Traditional fire alarm systems rely on manually triggered smoke detectors or heat sensors to detect fires. However, the latest innovations have brought about intelligent fire detection systems, leveraging technologies such as artificial intelligence (AI) and IoT (Internet of Things). These systems utilize advanced sensors, cameras, and algorithms to detect fires more accurately and swiftly. Key features include:

- Multi-sensor fusion for enhanced detection accuracy
- Real-time monitoring and alerts through connected devices

Integration with building management systems for immediate response

Statistics show that early detection can reduce fire-related fatalities by up to 50% in high-risk areas. With the adoption of advanced fire detection systems, the response time can be significantly reduced, enabling prompt evacuation and fire-fighting measures.

2. Automated Fire Suppression Technologies

While traditional fire suppression systems, such as sprinklers and fire extinguishers, have proven effective, modern technologies have further enhanced their capabilities. Automated fire suppression technologies minimize human intervention and provide rapid response to fire incidents. Notable innovations include:

Water mist systems for efficient firefighting while minimizing water damage

Gaseous suppression systems that displace oxygen in enclosed spaces

Intelligent foam systems optimized for specific high-risk scenarios

These advanced systems not only improve the speed and effectiveness of fire suppression but also prevent collateral damage caused by traditional methods. By tackling

fires at an early stage with precise and tailored suppression mechanisms, the spread and intensity of fires can be contained, reducing potential loss and ensuring the safety of occupants.

3. Fire-Resistant Construction Materials

High-risk areas, such as residential complexes and industrial facilities, require robust fire-resistant construction materials to prevent fire spread and minimize hazards. The development of novel materials with enhanced fire-resistant properties has been a game-changer in fire prevention engineering. Key advancements include:

Fire-resistant composites with superior structural integrity

Advanced flame retardant coatings for various surfaces and materials

Insulation materials that can withstand high temperatures

By employing these innovative materials, the overall fire safety of buildings and structures can be significantly improved. Research shows that the use of fire-resistant construction materials can reduce fire-related property damage by up to 85%.

4. Virtual Reality Fire Training

Training firefighters and occupants of high-risk areas is vital for effective emergency response. Virtual reality (VR) fire training has emerged as a highly effective and immersive method for preparing individuals to handle fire incidents. Key benefits:

Realistic simulations of various fire scenarios

Safe practice without exposing trainees to actual fire hazards

Interactive training modules for rapid skill development

Virtual reality fire training offers a cost-effective and scalable solution for fire safety education. It enables

trainees to experience realistic fire situations, test their decision-making skills, and learn how to effectively navigate hazardous environments. Proper training plays a crucial role in minimizing panic and increasing overall safety during fire incidents.

Key Takeaways

Advanced fire detection systems with AI and IoT integration improve early fire detection and response time.

Automated fire suppression technologies reduce human intervention and enhance the speed and effectiveness of fire suppression.

Fire-resistant construction materials minimize fire

spread and property damage.

Virtual reality fire training offers immersive and realistic training experiences for firefighters and occupants.

As technology continues to evolve, the field of fire prevention engineering will witness further innovations. These advancements will work hand in hand with traditional fire safety measures, ultimately minimizing the devastating effects of fires in high-risk areas. By embracing novel approaches and staying updated on the latest developments, we can create safer environments for everyone. – Courtesy UO

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Variants of Plants and Practices for Cogeneration

Engr. Dr. Muhammad Nawaz Iqbal

A Stirling engine or a reciprocating engine may be used in smaller cogeneration units.

The radiator and exhaust are used to remove heat. Because small gas and diesel engines are less expensive than small gas or oil-fired steam-electric plants, the systems are popular in modest

capacities. Some cogeneration facilities use biomass, as well as commercial and municipal solid waste, as fuel. Some CHP plants generate heat and electricity using waste gas as the fuel. Waste gases include sewage gas, landfill gas, gas from coal mines, gas from animal waste, and gas from flammable industrial waste. For added technical and environmental performance, some

cogeneration plants combine gas and solar photovoltaic generation. These hybrid systems can be scaled down to the level of a building or even a single residence.

Five main technologies are used in micro CHP installations: microturbines, IC engines, Stirling engines, closed-cycle steam engines, and fuel cells. The most affordable of the so-called microgeneration technologies

for reducing carbon emissions, according to one author's 2008 analysis, is MicroCHP based on Stirling engines. When using natural gas, it depends on steam reforming to transform natural gas into hydrogen before it is used in the fuel cell. As a result, this continues to emit CO₂ (see reaction), although running on this can be a reasonable solution (temporarily) while waiting for the


hydrogen to start being dispersed through the (natural gas) piping system. An electricity-producing condensing furnace that runs on natural gas or propane is another example of a Micro CHP system. It combines the cogeneration fuel-saving method, which creates useable heat and electricity from a single combustion source. The condensing furnace is a forced-air gas system with a secondary heat exchanger that enables heat to be recovered from water vapor as well as heat to be collected from combustion products down to the ambient temperature. A water drain and vent to the side of the building are used in place of the chimney.




be contaminated. Industries typically need to treat proportionately more boiler makeup water since boiler-feed water from cogeneration units has significantly lower return rates than 100% condensing power plants. The feed water for boilers must be totally demineralized and oxygen-free, and the higher the

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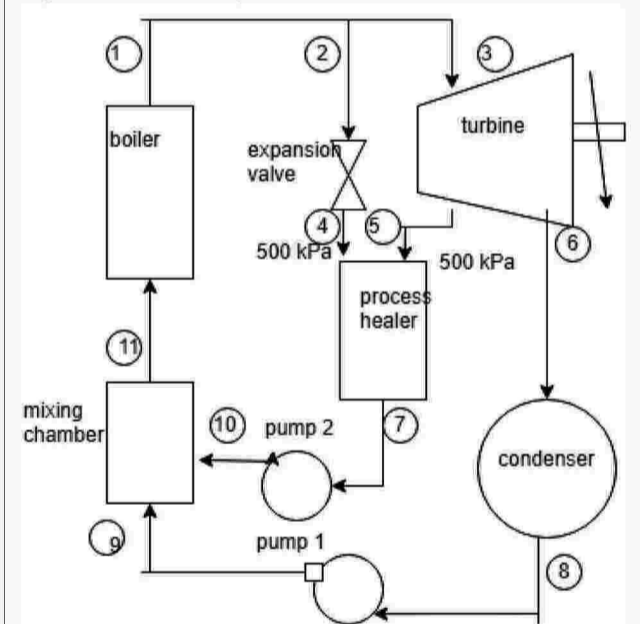
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In pulp and paper mills, refineries, and chemical factories, cogeneration is still prevalent. The heat is often recovered in this "industrial cogeneration/CHP" at higher temperatures (over 100 deg C) and used for process steam or drying tasks. Compared to low-grade waste heat, this is more valuable and adaptable, although there is a minor loss in power generation.

Smaller industrial cogeneration units are a viable off-grid solution for a range of remote applications to cut carbon emissions. These units have an output capacity of 5 MW to 25 MW. Compared to utilities, industrial cogeneration units typically operate at much lower boiler pressures. One of the causes is that returning condensate to cogeneration units may

pressure, the more important it is that the feed water be as pure as possible.

The use of sugarcane bagasse for energy production has advantages for the environment over the use of fossil fuel-based thermoelectric plants, such as natural gas, because it emits less CO₂. Along with the benefits to the environment, cogeneration utilizing sugarcane bagasse offers advantages in terms of efficiency when compared to thermoelectric generation, thanks to the use of the generated energy. While some of the heat generated during thermoelectric generation is lost, with cogeneration, this heat may be utilized in the manufacturing processes, improving the process' overall efficiency. ■

A Gift from Pak HVACR Society, Karachi Chapter



Pakistan HVACR Society renovated a Cold Storage System and handed it over to Government College of Technology, SITE, Karachi. On this occasion Engr. Abdul Ghani Memon, Director, Regional Directorate STEVTA, Karachi, Engr. Ghulam Rasool Maka, Principal, GCT College, Engr. Zeeshan Ahmed Siddiqui, Chairman, Pak HVACR Society, Karachi Chapter, Mr. Ayaz Ali Khan, Mr. Aly Muhammad, Mr. Khalid Mansoor Mr. Qaiser Ashraf and other members of society are present there. KM Engineering and Mujahid Engineering Services are the key supporters in the renovation of the Cold Storage.

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Sir Syed University organized a workshop on Fostering Innovation

The Department of Computer Science and Information Technology of Sir Syed University of Engineering & Technology (SSUET) organized a workshop on Fostering Innovation: Exploring a Multidisciplinary Approach to Final Year Projects through Brainstorming. The chief guest of the session was the renowned motivational speaker Asad Ullah Chaudhry.

environment fueled by new technologies, trends, and other elements. Responding to the changes, corporate leaders need to keep their fingers on the pulse of the market to identify opportunities for innovation and mitigate potential threats.

ment with the idea, and how to take it to SEED funding. Don't ask companies for funding, convince them to invest money in your projects, assuring them a fair return. Companies give money to increase funding. You can earn through mass customiza-

ment tool to quickly and easily define and communicate a business idea or concept. A business plan is made when we have data available. Company objectives are derived from the company vision and strategy for building a successful company. Product

for the last 25 years. Earlier, there was a trend of presenting research papers from 2009 to 2011, then people started to patent their papers. Now is the trend of converting projects into products. We should look at how we can make final-year projects interdisci-

successful story to move forward.

The Chairperson of the Business Administration Department, Dr. Ammad ul Haq, said that every project can not be marketable. Only one or two projects may be up to the mark among hundreds



of projects. It is not necessary to come up with new ideas every time, but you can revitalize or regenerate the previous ideas with a new look. Any concept that is contributing to economic prosperity is a new idea.

Chairperson of the Computer Science and IT Department, Prof. Dr. Waleej Haider

Expressing his view, Vice Chancellor SSUET, Prof. Dr. Wali Uddin, said that business innovation is the process of generating new ideas or approaching existing products, services, business models, and concepts in new ways. The business world is a fast-paced

Speaking on the occasion, the President of the Sir Syed University Alumni Association, Asad Ullah Chaudhry, said that the projects must have the features needed to make them marketable. We should know how to commercialize projects, how to exper-

tion. Renowned motivational speaker Asad Ullah Chaudhry said that you can make a business plan if it has penetration in the market. Companies do business on business models. The Business Model Canvas (BMC) is a strategic manage-

ment objectives, on the other hand, are derived from the product strategy and vision.

Addressing the session as Convenor, Dean of the Faculty of Computing & Applied Sciences, Prof. Dr. Muhammad Asif said that we have been doing final year projects

plinary. Why can't we take our projects to international forums when we have multiple disciplines but our participation is not at an international level? We want Sir Syed University to participate in the ITCN Asia 2024 exhibition. We just need one suc-

said that supervisors of FYP themselves must be properly trained, who are going to guide students in preparing the projects. It is necessary for supervisors to make a business map and to learn about the business models and modules.

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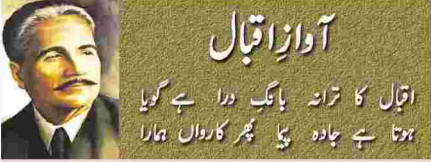
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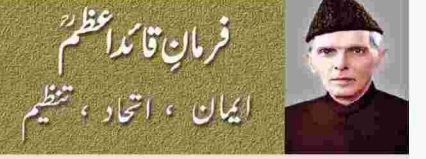
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موجود ہیں، موجودہ صورتحال کے باعث 60 فیصد نوکریاں ختم ہو چکی ہیں۔ روزگار
نہ ہونے کی وجہ سے امن و امان کی صورت حال بگڑتی جا رہی ہے، بجلی اور گیس مہنگی
ہونے کی وجہ سے حالات خراب ہو رہے ہیں، ڈالر کی بڑھتی ہوئی قیمت کی وجہ سے
صنعتیں بند ہو رہی ہیں۔ بجلی چوری روکنے کے لیے ریاست کو بڑے فیصلے کرنا ہوں
گے۔ تیس فیصد بجلی کی ریکوری نہیں ہو رہی، افسر شاہی کے گھروں اور دفاتر کے بل
ادا نہیں ہو رہے۔ کپیسٹی سیمٹ پر بجلی گھروں سے معاہدوں پر نظر پانی کیوں نہیں کی
جاتی۔ اگلے سال دو ہزار ارب روپے کپیسٹی سیمٹ کی مد میں ادا کرنا ہوں گے۔

پاکستان میں مہنگائی کی شرح میں اضافے کی دو بنیادی وجوہات ہیں، جن میں
سے ایک تو معاشی بحران ہے، جو پوری دنیا میں ہے جب کہ دوسری وجہ سیاسی بحران
اور انتظامی معاملات میں کمزوری ہے۔ معاشی ماہرین کہتے ہیں یہ بہت مشکل ہے کہ
پاکستانی معیشت کی ڈائریکشن کی جاسکے اور اگر ایسا کر لیا گیا تو یہ بھی معاشی
مشکلات کا حل ثابت نہیں ہوگا۔ کسی بھی ملک کی معیشت کو ڈائریکشن کرنے کے لیے
ڈالر کا ہونا ضروری ہوتا ہے، جس کے لیے ڈالر خریدنے پڑیں گے لیکن کیونکہ ملک
نے پہلے بہت زیادہ قرضہ لیا ہوا ہے اس لیے یہ ممکن ہوتا دکھائی نہیں دیتا کہ اسے مزید
قرضہ ملے گا۔ اہم بات یہ بھی ہے ہر ملک کی اپنی معیشت ہونی چاہیے اور اگر کوئی
ملک کسی دوسرے ملک کی مانیٹری پالیسی کے رحم و کرم پر ہوتو یہ الگ سے خطرناک ہو
سکتا ہے۔ اسی لیے کنورٹیبلیٹی سے پہلے یہ بھی دیکھنا پڑے گا کہ مالیاتی خسارے یا
معاشی عدم احکام جیسے مسائل کو حل کیا جائے لیکن اگر وہ برقرار رہتے ہیں تو یہ بھی مسئلے کا
حل نہیں یعنی معیشت کو ڈائریکشن کرنا کوئی علاج نہیں ہے۔ ہماری انتظامی کمزوری
یہ ہے کہ حکومت ڈالر کی اسٹیلنگ روکنے میں ناکام ہے، اور یہاں جو انٹرنیٹ ٹریف
اسٹریکچر بنایا گیا ہے، اس کو ہم ٹھیک نہیں کر سکتے کیونکہ ہم نے انرجی کے حل کے لیے
مختلف کمپنیوں سے معاہدے کیے ہیں لیکن ہم ان معاہدوں کو پورا نہیں کر سکتے۔

یہ بات کرنا اب کافی نہیں کہ جو چوکا سو چوکا، جلد بازی نہیں کرنی چاہیے۔ روز
لوگ مر رہے ہیں۔ روز خود کشیاں ہو رہی ہیں۔ اس میں کتنا وقت مزید لگے گا؟ اصولی
طور پر تو آئی ایم ایف سے کیے گئے معاہدے میں جن شرائط پر اتفاق کیا گیا ہے، وہ
عوام کے سامنے آنی چاہیں۔ ملک کا طاقتور مراعات یافتہ طبقہ اس قدر سنگین بحران
میں بھی اپنی مراعات سے دستبردار ہونے کے لیے تیار نہیں ہے۔ ادھر عوام کی حالت
یہ ہے کہ ان کی مالی حالت اس قدر پتلی ہو چکی ہے کہ وہ طاقتور طبقے کی مراعات کا
بوجھ نہیں اٹھا سکتی۔ عالمی مالیاتی اداروں کو پاکستان کے حقائق سے مکمل آگہی ہے آئی
ایم ایف ہو یا کوئی چین جیسا دوست ملک ہو لیکن دین کے معاملے میں سب کا رویہ
ایک جیسا ہی ہوتا ہے۔ اس لیے کسی عالمی مالیاتی ادارے یا ملک کو اپنے معاشی یا
سیاسی بحران کا وے سے دادر قرار دیا اور اصل اپنے آپ کو بچانے کی کوشش کے سوا کچھ
نہیں۔ پاکستان میں سرکاری مراعات یافتہ طبقے کا حجم بہت بڑھ گیا ہے پاکستانی
معیشت میں انتظام نہیں رہا کہ وہ اس مراعات یافتہ طبقے کا بوجھ اٹھا سکے۔

مہنگائی اور اور جنگ کے ستارے عوام کو نگران حکومت نے ریڈیف اپنے کا پلان
بنالیا ہے، حکومتی ذرائع کا کہنا ہے کہ تین سو بیس ٹن تک نکلی استعمال کرنے والے
صارفین کے بلوں میں ریڈیف ملے گا۔ دوسری جانب، اس موقع پر جب کہ بجلی کے
بلوں کی ادائیگی کرنے سے عوام قاصر ہو رہے ہیں، ان پر کپیسٹی چارجز کی مد میں
1.3 ٹریلین روپے کا مزید بوجھ ڈالا جا رہا ہے، جو روڈوں پر بند پڑے پاور پلانٹس
کو ادا کیے جانے ہیں۔ بلوں میں فیول پرائس ایڈجسٹمنٹ کے علاوہ سہ ماہی ایڈ
جسٹمنٹ نے رہی سہی کسر پوری کر دی ہے۔

ماہرین کے مطابق مالیاتی توازن برقرار رکھنے اور آئی ایم ایف کے دباؤ کے
پیش نظر موجودہ نگران حکومت کے لیے کسی بھی ٹیکس کی وصولی میں کمی یا تاخیر ممکن
نہیں۔ ملک میں بجلی مہنگی ہونے کی بنیادی وجہ کپیسٹی چارجز کا نفاذ ہے جو کہ ملک کی
بجلی کی پیداواری صلاحیت کو برقرار رکھنے کے لیے اضافی فنڈس ہیں۔ حکومت نے
آئی ایم ایف کی شرائط کو پورا کرنے اور ملک میں بجلی کی بلا قطل فراہمی کو یقینی بنانے
کے لیے کپیسٹی چارجز کو ضروری اقدام قرار دیا ہے۔ تاہم، بہت سے لوگوں نے اس
پالیسی کی منطق اور انصاف پر سوال اٹھائے ہیں، خاص طور پر جب ملک کو اب بھی
مسلسل لوڈ شیڈنگ اور بجلی کی بندش کا سامنا ہے۔ بھاری بلوں نے عام پاکستانیوں
کے لیے بے پناہ مشکلات کھڑی کر دی ہیں جو پہلے ہی مہنگائی، بے روزگاری،
غربت اور کرپشن سے نبرد آزما ہیں۔ اس پوری صورت حال میں سب سے بری خبر
یہ ہے کہ نگران وزیر اعظم کی جانب سے خواہ کتنے ہی اجلاس بلائے جائیں، آئی ایم
ایف سے کیے گئے معاہدے کے تحت ملک میں بجلی کی قیمتیں برقرار رہیں گی۔

بین الاقوامی منڈی میں ایندھن کی قیمتیں کم ہونے کے باوجود پاکستان میں بڑھیں
گی۔ پاور ڈیویژن کے مطابق بجلی کا گروتھی قرضہ مسلسل بڑھ رہا ہے اور اس میں
اضافے کی بنیادی وجہ بجلی کی تقسیم کار کمپنیوں کے لائن لاسز اور چوری ہیں، جب کہ
بجلی کے بلوں کی پوری وصولیاں نہ ہونے کی وجہ سے بھی گروتھی قرضہ بڑھ رہا ہے۔
آئی ایم ایف نے پاکستان کے ساتھ حال ہی میں کیے گئے تین ارب ڈالر کے
معاہدے میں بجلی کے شعبہ میں اصلاحات کرنے اور گروتھی قرضے کو روکنے کی شرط
رکھی ہے۔ حکومت نے گزشتہ ایک سال میں بجلی کی قیمتوں میں 81 فیصد قریب
ضافہ کیا ہے مگر اس کے باوجود بجلی کا گروتھی قرضہ 400 ارب روپے سے بڑھا
ہے۔ حکومت کو بجلی کے شعبہ میں 23 فیصد چوری ہے، جسے لائن لاسز کہا جاتا ہے، کو
سستی بجلی کی فراہمی یقینی بنانے کے لیے کم کرنا ہوگا پاکستان میں بجلی کے ترسیلی نظام
سے بڑی خرابیاں اپنی جگہ لیکن بجلی کی چوری بھی ایک نہایت ہی اہم مسئلہ ہے جو ہر
سال 520 ارب روپے کی بجلی چوری کرنے کا باعث بن رہا ہے۔ جب بجلی چوری
ہوتی ہے، تو چوری شدہ بجلی کی قیمت جملہ صارفین پر تقسیم کر دی جاتی ہے۔ اس سلسلے
میں چند شہروں میں بجلی چوری کی شرح 37 فیصد ہے۔ سکھر میں 35 فیصد بجلی چوری ہوتی

ہے۔ حیدرآباد میں 32 فیصد، کوئٹہ میں 28 فیصد، لاہور میں گیارہ فی صد،
گو جرانوالہ، ٹوبہ ٹیک سنگھ اور فیصل آباد میں بھی نو فیصد بجلی چوری ہوتی ہے۔ بجلی کی قیمتوں
میں حالیہ اضافے سے جہاں گھریلو صارفین پریشان ہیں، وہیں خدشہ ظاہر کیا جا رہا
ہے کہ برآمدات متاثر ہوں گی۔ پاکستان میں مہنگے ذرائع سے بجلی کی پیداوار بڑھ
رہی ہے۔ پاکستان میں ٹیکسٹائل کی صنعت کے لیے بجلی کی قیمت علاقائی ممالک کی
نسبت کہیں زیادہ ہے۔ بھارت میں ٹیکسٹائل انڈسٹری کو بجلی آٹھ سینٹ، بنگلہ دیش
میں 10 سینٹ اور ویت نام میں چھ سینٹ میں فراہم کی جا رہی ہے۔ بجلی کے بلوں
پر بھاری ٹیکسز، کراس سبسڈیز اور بجلی کی تقسیم کار کمپنیوں کی نااہلی کا ہوجو صارفین پر
ڈالا جا رہا ہے اور موجودہ حالات میں ملکی برآمدات عالمی مارکیٹ میں دیگر ممالک کا

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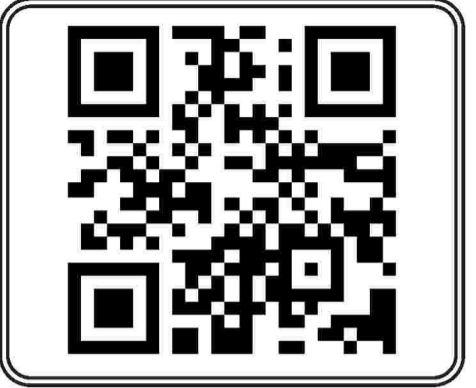
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سندھ میں گیس کے نئے ذخائر دریافت

ذخائر ضلع سجاول میں واقع شاہ بندر کے دریافتی کنویں ٹیم ایسٹ X-1 سے دریافت ہوئے کھدائی کا آغاز 8 اکتوبر 2023 کو ہوا، 2,545 میٹر کی گہرائی تک کھدائی کی گئی ہے۔ لوور گوروفارمیشن میں ہائیڈروکاربن کی جانچ کے لیے ٹیم ایسٹ X-1 کی کھدائی کا آغاز 18 اکتوبر 2023 کو ہوا، جسے 2,545 میٹر کی گہرائی تک اور گورنمنٹ ہولڈنگز (پرائیویٹ) لیمیٹڈ (جی ایچ پی ایل) کے ساتھ مل کر سندھ کے ضلع سجاول میں واقع شاہ بندر بلاک (162467) کے دریافتی کنویں ٹیم ایسٹ X-1 سے گیس کی دریافت کا اعلان کر دیا۔ پی پی ایل اس بلاک میں 63 فیصد کاروباری شراکت کے ساتھ آپریٹر ہے۔ دیگر شراکت داروں میں ایم پی سی ایل 32 فیصد جبکہ ایس ای ایچ سی ایل اور جی پی ایل دونوں کی انفرادی شراکت 2.5 فیصد ہے۔ یہ شاہ بندر بلاک میں دوسری دریافت

پاکستان ریلوے کے ایم ایل ون منصوبے کے ڈیزائن میں تبدیلی کی وجہ سامنے آگئی

پاکستان ریلوے کے ایم ایل ون منصوبے کی تفصیلات سینٹیٹ میں پیش کر دی گئیں

چیمبر مین سینٹیٹ صادق جھرنی کی زیر صدارت سینٹیٹ کا اجلاس ہوا جس میں پاکستان ریلوے کے ایم ایل ون منصوبے کی تفصیلات پیش کی گئیں۔ اس منصوبے سے متعلق اٹھائے گئے سوالات پر سینٹیٹ کو تحریری جواب میں بتایا گیا کہ منصوبے کی لاگت میں کمی کے لیے ڈیزائن میں کچھ تبدیلیاں کی گئی ہیں لیکن ڈیزائن میں تبدیلی کے دوران معیار اور سینٹیٹ پر کوئی مجموعی نہیں کیا گیا۔

تحریری جواب میں بتایا گیا ہے کہ ایم ایل ون منصوبہ 9 ارب 85 کروڑ ڈالر کی لاگت سے 9 سال میں مکمل ہوگا اور اسے 3 مراحل میں مکمل کیا جائے گا۔ منصوبے کا تاحال باضابطہ آغاز نہیں ہوا ہے، آغاز سے قبل اب تک منصوبے پر 11 ارب روپے سے زائد خرچ ہو چکے ہیں۔ تحریری جواب میں مزید وضاحت کی گئی ہے کہ منصوبے کے ابتدائی ڈیزائن پر 10 ارب 64 کروڑ جبکہ فیہیلٹی اسٹڈی پر 39 کروڑ روپے خرچ ہو چکے ہیں۔

ریلوے ایڈمنسٹریشن سے اجازت کی درخواست کر رکھی ہے۔

تحریری جواب میں یہ بھی بتایا گیا ہے کہ ایم ایل ون منصوبے کی اجازت کی درخواست کر رکھی ہے۔

تحریری جواب میں یہ بھی بتایا گیا ہے کہ ایم ایل ون منصوبے کی اجازت کی درخواست کر رکھی ہے۔



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گوادریسٹ بے ایکسپریس وے فیئر ٹو کی توسیع کا منصوبہ

پی سی ٹو تیار، 10.5 کلومیٹر کا منصوبہ گوادریسٹ پورٹ کو این جی آئی اے سے جوڑے گا

فنڈنگ حکومت کرے گی، فیرون پہلے ہی مکمل اور جون 2022 سے فعال ہے

حکومت نے گوادریسٹ بے ایکسپریس وے فیئر ٹو کی توسیع کا منصوبہ بتایا ہے جو گوادریسٹ پورٹ کو نیو گوادریسٹ پورٹ ایئر

حکومت پاکستان کرے گی۔

فیرون پہلے ہی مکمل ہو چکا اور 03 جون 2022 سے فعال ہے یہ تقریباً 19 کلومیٹر

جنوری 2015 کو منظور کیا تھا، 24 ستمبر 2017 کو جی پی اے اور سی سی سی کے درمیان معاہدے کے معاہدے پر دستخط کیے



پورٹ (این جی آئی اے) سے منسلک کرے گا۔ گوادریسٹ پورٹ کے مطابق وزارت ہماری ٹائم انجیر زکی ڈی پارٹنر ڈیولپمنٹ ورکنگ پارٹی (ڈی ڈی ڈی بی) نے ایسٹ بے ایکسپریس وے فیئر 2 کا پی سی ٹو تیار کیا ہے جو 10.5 کلومیٹر سے زیادہ پر محیط ہوگا۔ اس کی فنڈنگ

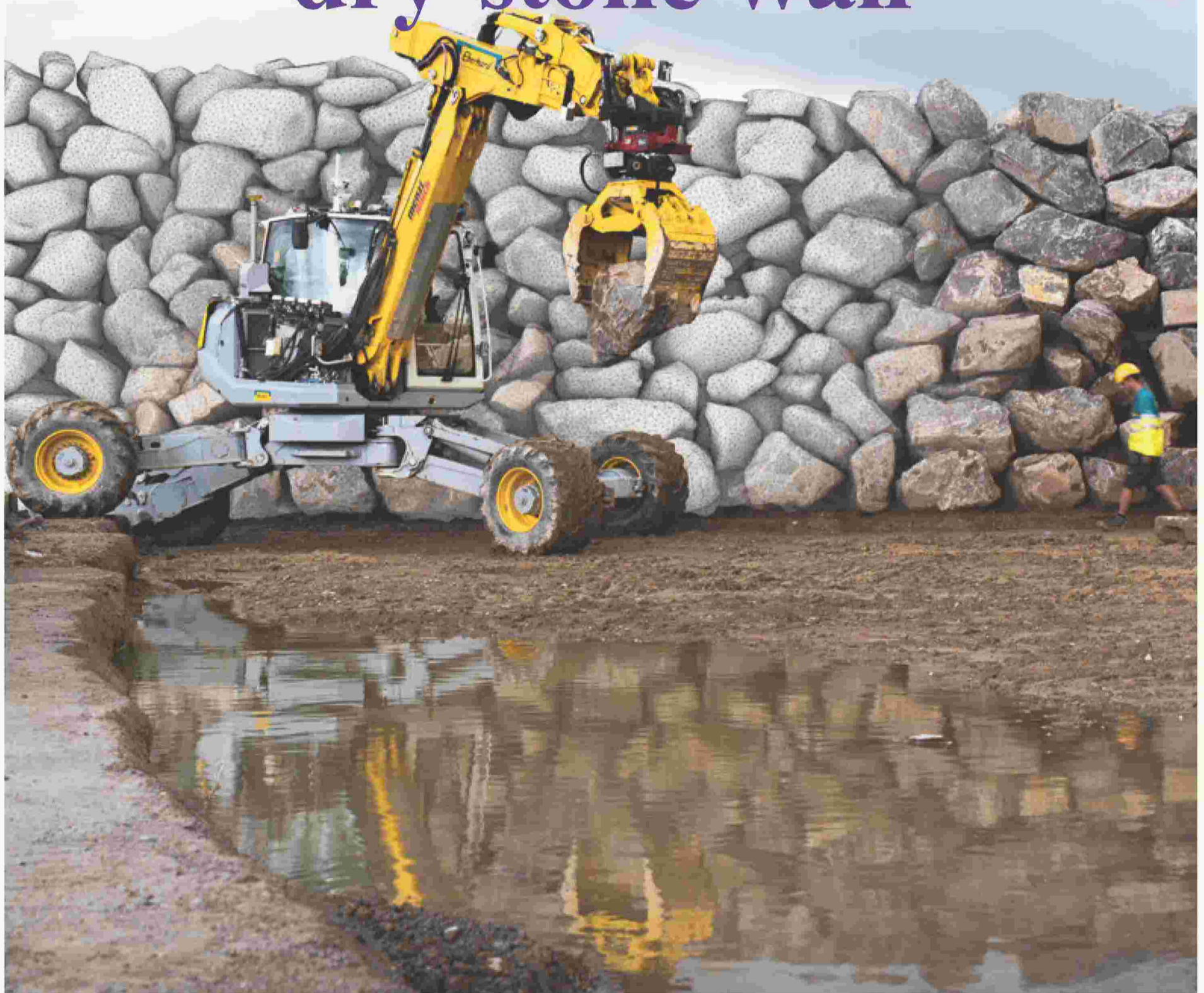
طویل چیلن سڑک ہے جو گوادریسٹ پورٹ کی مرکزی شاہراہ ہے جس کے ذریعے بندرگاہ کی پوری ٹریک سی پیک کے مقاصد کے مطابق گوادریسٹ پورٹ کا لاجنگ اور اقتصادی مرکز بنانے کے خواب کی تعمیر ہے۔ گوادریسٹ بے ایکسپریس وے فیئر کو ایکٹنگ نے 12

گئے۔

فیرون کا سنگ بنیاد کی تقریب 22 نومبر 2017 کو اس وقت کے وزیر اعظم نے منعقد کی تھی، یہ منصوبہ گوادریسٹ پورٹ بندرگاہ کے لیے 1.1 بلین ڈالر کے وسیع تر ترقیاتی پیکیج کا حصہ تھا۔



Autonomous excavator constructs a 6-meter-high dry-stone wall



Until today, dry stone wall construction has involved vast amounts of manual labour.

A multidisciplinary team of ETH Zurich researchers developed a method of using an autonomous excavator to construct a dry-stone wall that is six metres high and sixty-five metres long. Dry stone walls are resource efficient as they use locally sourced materials, such

as concrete slabs that are low in embodied energy.

ETH Zurich researchers deployed an autonomous excavator, called HEAP, to build a six metre-high and sixty-five-metre-long dry-stone wall.

The wall is embedded in a digitally planned and autonomously excavated landscape and park.

The team of researchers included: Gramazio Kohler Research, the Robotics Systems Lab, Vision for Robotics Lab,

and the Chair of Landscape Architecture.

They developed this innovative design application as part of the National Centre of Competence in Research for Digital Fabrication (NCCR dfab).

Using sensors, the excavator can autonomously draw a 3D map of the construction site and localise existing building blocks and stones for the wall's construction.

Specifically designed tools and machine vision approaches enable the

excavator to scan and grab large stones in its immediate environment.

It can also register their approximate weight as well as their centre of gravity.

An algorithm determines the best position for each stone, and the excavator then conducts the task itself by placing the stones in the desired location. The autonomous machine can place 20 to 30 stones in a single consignment -- about as many as one delivery could supply. -- SD

Revolutionary breakthrough in the manufacture of photovoltaic cells

The University of Ottawa, together with national and international partners, has achieved a world first by manufacturing the first back-contact micrometric photovoltaic cells.

The cells, with a size twice the thickness of a strand of hair, have significant advantages over conventional solar technologies, reducing electrode-induced shadowing by 95% and potentially lowering energy production costs by up to

three times.

The technological breakthrough -- led by Mathieu de Lafontaine, a postdoctoral researcher at the University of Ottawa and a part-time physics professor; and Karin Hinzer, vice-dean, research, and University Research Chair in Photonic Devices for Energy at the Faculty of Engineering -- paves the way for a new era of miniaturization in the field of electronic devices.

The micrometric photovoltaic cell manufacturing process involved a partnership between the University of Ottawa, the Université de Sherbrooke in Quebec and

the Laboratoire des Technologies de la Microélectronique in Grenoble, France.

"These micrometric photovoltaic cells have remarkable characteristics, including an extremely small size and significantly reduced shadowing. Those properties lend themselves to various applications, from densification of electronic devices to areas such as solar cells, lightweight nuclear batteries for space exploration and miniaturization of devices for telecommunications and the internet of things," Hinzer says.

A breakthrough with huge potential

"This technological breakthrough promises significant benefits for society. Less expensive, more powerful solar cells will help accelerate the energy shift. Lightweight nuclear batteries will facilitate space exploration, and miniaturization of devices will contribute to the growth of the internet of things and lead to more powerful computers and smartphones," de Lafontaine says.

"The development of these first back-contact micrometric photovoltaic cells is a crucial step in the miniaturization of electronic devices," he adds.

"Semiconductors are vital

in the shift to a carbon-neutral economy. This project is one of many research initiatives that we're undertaking at the Faculty of Engineering to achieve our societal goals," says Hinzer.

Semiconductors are included in three of the five research areas at the Faculty of Engineering, namely, information technologies, photonics and emerging materials, and two of the four strategic areas of research at the University of Ottawa, namely, creating a sustainable environment and shaping the digital world.

This international partnership between Canada and

France illustrates the importance of innovation and research in micromanufacturing, leading the way to a future in which technology will become more powerful and accessible than ever.

It also marks an historic step in the evolution of the global scientific and technology scene.

This initiative was funded by the Natural Sciences and Engineering Research Council of Canada, the Fonds de recherche du Québec Nature et technologies, the Horizon Europe Framework program, Prompt Québec and STACE Inc. -- SD

How human faces can teach androids to smile

Robots able to display human emotion have long been a mainstay of science fiction stories. Now, Japanese researchers have been studying the mechanical details of real human facial expressions to bring those stories closer to reality.

In a recent study published by the Mechanical Engineering Journal, a multi-institutional research team led by Osaka University have begun mapping out the intricacies of human facial movements.

The researchers used 125 tracking markers attached to a person's face to closely examine 44 different, singular facial actions, such as blinking or raising the corner of the mouth.

Every facial expression comes with a variety of local deformation as muscles stretch and compress the skin.

Even the simplest motions can be surprisingly complex. Our faces contain a collection

of different tissues below the skin, from muscle fibers to fatty adipose, all working in concert to convey how we're feeling.

This includes everything from a big smile to a slight raise of the corner of the mouth.

This level of detail is what makes facial expressions so subtle and nuanced, in turn making them challenging to replicate artificially.

Until now, this has relied on much simpler measurements, of the overall face shape and motion of points chosen on skin before and after movements.

"Our faces are so familiar to us that we don't notice the fine details," explains Hisashi Ishihara, main author of the study.

"But from an engineering perspective, they are amazing information display devices. By looking at people's facial expressions, we can tell when a smile is hiding sadness, or whether

someone's feeling tired or nervous."

Information gathered by this study can help researchers working with artificial faces, both created digitally on screens and, ultimately, the physical faces of android robots.

Precise measurements of human faces, to understand all the tensions and compressions in facial structure, will allow these artificial expressions to appear both more accurate and natural.

"The facial structure beneath our skin is complex," says Akihiro Nakatani, senior author.

"The deformation analysis in this study could explain how sophisticated expressions, which comprise both stretched and compressed skin, can result from deceptively

simple facial actions."

This work has applications beyond robotics as well, for example, improved facial recognition or medical diagnoses, the latter of which currently relies on doctor intuition to notice abnormalities in facial movement.

So far, this study has only examined the face of one person, but the researchers hope to use their work as a jumping off point to gain a fuller understanding of human facial motions. As well as helping robots to both recognize and convey emotion, this research could also help to improve facial movements in computer graphics, like those used in movies and video games, helping to avoid the dreaded 'uncanny valley' effect. -- SD

