I&E INDUSTRIES & ENVIRONMENT

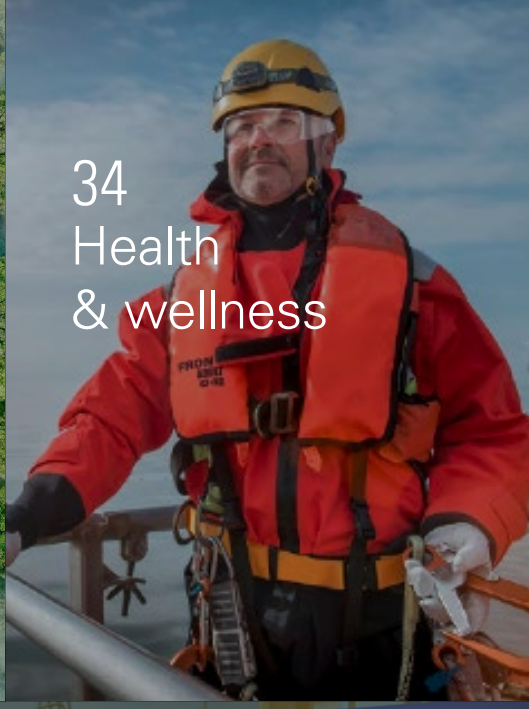
3RD QUARTER 2022

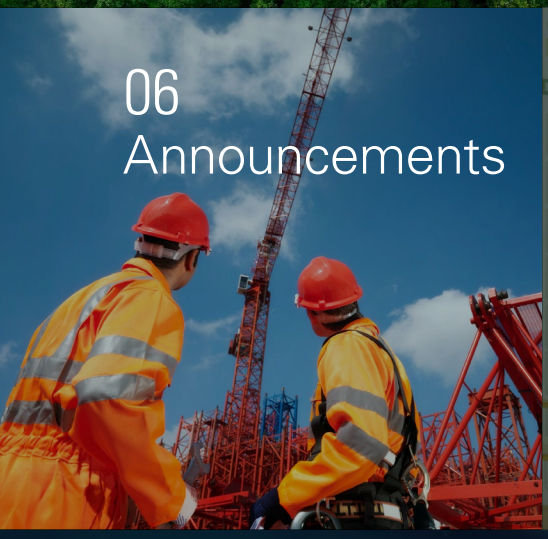
Thought, Information, and Innovation

A quarterly newsletter on technical updates & news about SGS Pakistan - October 2022

SAFER
GREENER
SMARTER

SGS





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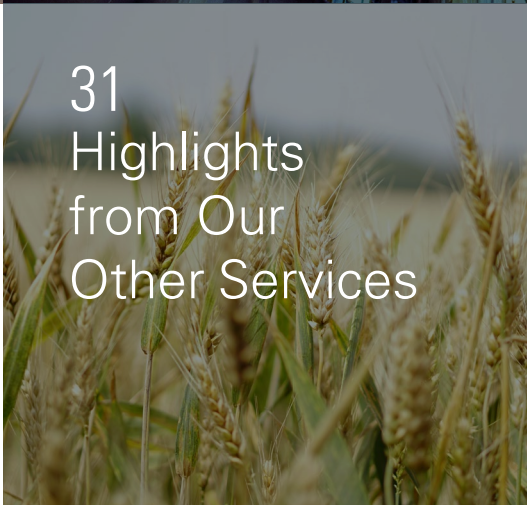
To return to the contents section, click on in the upper right-hand corner of the pages.

Let us know you thoughts on this issue of the SGS Inside Newsletter here.



A word from our leadership team

Abdul Razzaq Lakhani
Managing Director - SGS Pakistan

Today, I take immense pleasure that since its inception in 1952, SGS Pakistan has evolved into a dynamic team of specialists in disciplines of quality verification and is widely recognized for its state-of-the-art testing laboratories and advance inspection. I have always believed technology is a powerful enabler for businesses and communities and is making economies more resilient and sustainable. This is especially true for industries, where pathways for innovation can unleash enormous economic opportunity. SGS has been a pioneer in anticipating the technological needs of its customers and addressing the industry challenges with its innovative solutions.

Our special consideration this year, as an active contributor to the society is to focus on the sustainability and green solutions. Indeed, this has been a challenging year for Pakistan, a year in which devastating floods has adversely affected many lives and overall economy. Sustainability isn't just a buzzword; it's a way of life and I am grateful to share that as an organization we have managed to achieve much success in our endeavors to help the industry meet their sustainability goals.

I hope this newsletter serves as a knowledge hub to keep pace with latest technological news, trends and developments within SGS and around the globe and will pave ways for industries to create more efficient and safe business environment.

Keep Reading! Keep Safe!

Muhammad Aqeel
Business Manager – Industries and Environment Services

Greetings!

Welcome to the 3rd quarterly issue of I&E Newsletter 2022.

Firstly, I would like to share my gratitude with all our valued readers, for the positive feedback on our previous two editions. Your interest gives us strength to continue our knowledge sharing journey by gathering news from SGS and around the globe and bring it to you in the form of this e-newsletter.

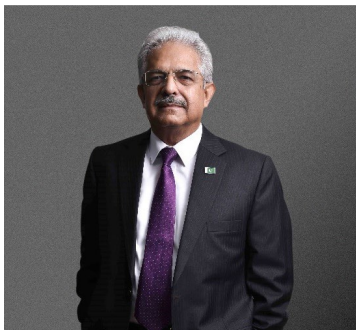
At SGS, we are committed to enhancing value for our stakeholders by bringing innovative solutions to make business and processes efficient, safe and profitable. This newsletter serves as one such platform where we share latest industrial trends and our new developments, which focuses on integrity and longevity of the critical assets in key industrial sectors. It also showcases technological advancements in the ambit of inspection and engineering that would be of great benefit to meet today's industry challenges.

In this edition, we would like to share our efforts particularly for green solutions. Today, an active commitment to sustainability is expected to be at the center of every organization's value proposition and it is integrated into all operational and financial business models. I am pleased to share that SGS is committed to help organizations achieve its sustainability goals with its comprehensive range of sustainability services, as we truly believe;

Today & Future is about Sustainability, Managing Quality and Accelerate Change

Lastly, I would like to express my gratitude to Editorial team spearheading this project and the rest of our team for contributing to this issue.

Happy Reading!



Mr. Mohammad Wasi Khan
Chairman – Cnergyico Pk Limited

Message from our esteemed Client - Cnergyico Pk Limited

Technological innovation and advancements have the power to reshape the future of societies for the better. The field of emerging technologies, including artificial intelligence and industrial robots, has been growing by leaps and bounds.

At this juncture, I believe it is important to have a platform for technological discourse that keeps pace with the latest developments and where knowledge can be shared. Therefore, it is heartening to see SGS Pakistan taking the initiative through a newsletter with the objective of sharing knowledge and fostering innovative ideas.

SGS Pakistan, being the leading testing, inspection, and certification company, is widely recognized for embracing technology, digital capabilities, and innovative thinking. At Cnergyico as well, the use of modern technology and innovative approach to effectively solve complex problems has always been a core part of business philosophy.

It is hoped that this newsletter becomes a repository of useful resources for industries in Pakistan that seek to adopt new technologies, understand the mechanism of technological transfer, and invest in research and development. An uptick in R&D investment, or even investments in mature technologies, can help improve Pakistan's industrial output and have a positive effect on the country's economy.

Message from Editorial Board

Dear All,

It gives us great pleasure to bring forth our 3rd quarterly newsletter of the year 2022.

This year so far has been tremendous in terms of innovation and digitalization for SGS. As the world is advancing towards adapting technological changes, our team at SGS is determined to bring more and more innovative solutions to the industry.

This issue will give you a sneak peek into many of SGS innovative developments, including new capabilities, new and expanded services that will benefit your businesses by ensuring risk-free operations while enhancing the profitability. For more holistic reading on topics of technical interest, you can also find case studies, technical papers and articles on diversified topics authored by our subject matter experts that will surely deepen your understanding on the industry challenges and their available solutions

Our usual gratitude to Muhammad Aqeel – Business Manager of Industries & Environment Services, SGS Pakistan, for his continued conviction and support in the creation of this newsletter.

Happy reading to all our valued readers.

Editorial Board

Ms. Urooj Fatima

Ms. Iqra Akbar

Inside your newsletter

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- Corrosion Monitoring: Assuring Safe and Reliable Facility Operations
- Digitalization & Innovation – SGS Nubia for the Hospitality Industry

04 Events and participations

- SGS sponsored & participated in 8th Int'l Summit on Environment, Health & Safety.
- SGS Sponsored and participated in Asset Integrity Management Summit Oman
- SGS Participated in 3rd International Corrosion Conference –CorPak 2022
- SGS exhibited in "Pakistan Chemical Expo "Surfing the New Waves" 2022
- SGS attended 16th OSHW Conference & Awards 2022

05 Major webinars and workshops

- SGS organised session on "Applicable HSE Requirements for Industrial Warehouses"
- Webinar on "Importance of Process Safety Framework & Process Hazard Analysis (PHA) Techniques"
- Webinar on "Significance of Knowing the Health of Civil & Steel Structures through Integrity Assessment Process as per the Guidelines of ISO 13822"
- Webinar on "JOURNEY TO NET ZERO- Importance of GHG Emissions Accounting, Reporting & Verification"
- Webinar on "How to minimize plant downtime by adopting NII (Non-intrusive inspection) approach"

06 Highlights from our other services

- SGS first accredited Fumigator in Pakistan by the Grain & Feed Trade Association (GAFTA)
- Bringing automation in food testing through GDS Bolt
- SGS now offering GMO Testing for Organic Cotton
- SGS organized Seminar on "Innovative Approaches Towards Risk Associated with Food Supply Chain"
- SGS organized Cybersecurity Technical conference- Role of Standardization, Governance & Certification in Data Security & Privacy

07 Health & wellness

- Managing Mental Health to realise your true potential
- SGS celebrated safety month with theme "See something, Say something"
- Spot the safety issues- Select the nine safety issues to test your knowledge.

01
Announcements

SGS one of the first companies in Pakistan to acquire 'DROPS Train the Trainer' certificate from DROPS International

SGS is pleased to announce that we have acquired "DROPS Train The Trainer" certificate from DROPS International. After securing DROPS (DROP OBJECT PREVENTION SCHEME, UK) Certification for Survey on Land Drilling Rigs earlier this year, this is another step towards ensuring safety and precaution in the oil and Gas sector, especially in drilling operations.

Why your teams need to be trained?

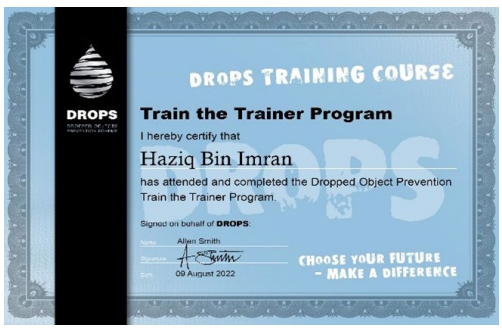
Drop Objects have always been the leading cause of Near Miss, Potential Incidents, injuries, and Fatalities on the workplace especially in the Oil & Gas drilling industry. Hence, it is essentially important for your staff to undergo necessary training. The DROPS Training / Awareness Course is specifically designed to raise awareness of dropped object prevention throughout the oil and gas industry and beyond. The Training focuses strongly on the basics of dropped object hazard identification, risk assessment and effective risk management. The program based upon Industry and DROPS Forum lessons learned and associated best practices. The training is suitable for offshore and onshore audiences and captures the best practice and lessons learned by the DROPS Workgroup and its members.

Objectives for training

- To understand and define what is a potential dropped object
- To know how to identify a potential dropped object and the common causes
- To review methods for the control and prevention of potential dropped objects
- To understand roles and responsibilities in respect of potential dropped objects
- To consider options for maintaining awareness and continuous improvement in the fight against dropped objects.

Prepare your team for dropped object safety

If you want to make sure that your people understand the seriousness of these issues, inquire about our comprehensive dropped object prevention training at haziq.imran@sgs.com.



08 of our auditors certified as Greenhouse Gases Lead auditors (GHG Protocol & ISO 14064-1)

Environmental catastrophes as a potential result of global warming are a threat to both people and the natural world and can lead to unforeseeable consequences. Climate change is the most important challenge of the 21st century because it requires a willingness to approach economic growth in new ways. Companies are under increasing pressure to take voluntary measures to combat global warming over and above their basic legal obligations. This is the time when it is becoming increasingly important for companies to determine their greenhouse gas emissions.

SGS understand its role to reduce the greenhouse emissions and hence operates a climate change Program on a global level, our experience is based on the validation and verification of over 1,000 greenhouse gas inventories and projects. To further this agenda, 08 more of SGS Pakistan auditors have been successfully certified as Greenhouse Gases Lead auditors. Our auditors are trained to work closely with companies to help reduce the level for GHG emissions

What includes in ISO 14064?

- ISO 14064 provides industry and government with a set of tools to develop programs aimed at reducing Greenhouse Gas (GHG) emissions.
- The ISO 14064 standard comprises three parts that respectively inform on: GHG Inventories (Part 1); GHG Projects (Part 2); and act as guidance for validation and verification of GHG Information (Part 3).

Why choose SGS?

As a world leader in verification, inspection, testing and certification, we are the first choice for companies looking to manage their GHG emissions. As a designated Operational Entity (DOE), accredited under the United Nations Framework Convention on Climate Change (UNFCCC), SGS verifies approximately 40% of Certified Emission Reductions CERs issued worldwide. SGS was voted best verifier in the EU Emissions Trading Scheme in 2006 and 2007. SGS operates in both the Kyoto compliant and the voluntary markets providing validation and verification services in the Clean Development Mechanism (CDM), Joint Implementation (JI), EU ETS, Chicago Climate Exchange (CCX), California Climate Action Registry (CCAR), and The Climate Registry (TCR). Verification is in accordance with the ISO 14064 and Greenhouse Gas Protocol Standards for projects and inventories.

SGS Pakistan proudly announces its collaboration with global digital solution provider- Bringing the digital revolution to Asset Integrity Management

Asset integrity and maintenance are of critical importance to ensure continued production and to aid in ensuring a safe working environment. It is crucial in managing industrial assets effectively to achieve operational excellence, long-term profitability while ensuring reliability, integrity, and safety of the assets and the smooth operation of the plant without any failures, leaks, accidents, and unplanned shutdowns.

While several organizations are relentlessly trying to ensure asset integrity, SGS has joined hands with one of the leading software solution providers to provide credible solutions to clients to improve Decision-Making, Increase Life Span, Raise Productivity, make better predictions, monitor performance, Gain competitive advantage and more.

We now offer simple-to-use and fast-performing software solutions for Asset integrity management that are reducing risks and improving productivity for businesses. We provide cloud-based platform that delivers the smart and sustainable approach to maximizing asset productivity and instrumentation safety.

02

Insight on new developments

SGS first to offer Closed Proximity Radiography in Pakistan- Reducing Radiation, Minimizing Disruption

SGS Pakistan takes immense pleasure to announce the induction of Closed Proximity Radiography (CPR) technique into our portfolio of NDT Services.

Industrial Radiography is an almost indispensable tool for securing the mechanical integrity of structures, pressure vessels, pressure piping and other engineering objects. It is a modality of non-destructive testing that uses ionizing radiation to inspect materials and components with the objective of locating defects and degradation in material properties that would lead to the failure of engineering structures. In almost all the major sectors including Oil and Gas, construction, manufacturing and power, radiography has long been playing a pivotal role needed to ensure quality and reliability of assets.

However, every technique has its own limitations and challenges, while radiography is essentially important, it is also associated with dangerous radiations which is a potential threat to human health. We at SGS continually aim to stay abreast with the continuous industrial advancement and innovation in the techniques to make processes safer, reliable, profitable and more complaint towards the regulatory requirements. The inclusion of Close proximity radiography CPR technique is a step towards achieving this objective. CPR is a way of carrying out radiography that partly supersedes the traditional methods and overcomes the problems of disruption associated with radiography.

What is Closed Proximity radiography (CPR)?

- CPR is the concept of controlling the radiation utilized for RT, allowing for radiographic inspection without restrictive shooting windows (24/7 radiography concept) in close proximity to other trades, and without impacting critical sensor systems.
- CPR is achieved by utilizing a system of X-ray or Gamma emitting devices incorporating specific collimation with rigid and / or flexible shielding to reduce the Primary Beam and scattered radiation to safe levels at the desired barrier distance.
- While conventional Radiography possesses high radiation hazard, CPR has largely reduced the radiation area and allows continuity of operations.

Key benefits of CPR

- Radiography can be performed near other trades such as welders, pipe fitter, etc. during turnarounds or outages rather than clearing the area or shooting in windows.
- Normally just 1-3M area boundary would be required with Se-75 source.
- Can be used for Cost saving due to continuous working
- Longer Half-life (120days)
- Improved productivity with 24/7 continues operation, no shift loss, eliminate false alarms from plant radiation-based equipment with parallel CPR RT activity.
- Less risk of radiation incidents
- Easier to monitor barriers
- Emergency exits remain accessible

AIMSight – IoT based structural health monitoring solutions

Sudden and catastrophic failure of ageing industrial assets due to structural deficiencies threatens asset owners with potentially massive financial and operational consequences. Standard NDT inspection methods in the structural engineering, oil & gas and power industries are unable to provide continuous information on evolving defects. The true condition of degradation, cracking, corrosion, and stress on your assets remains uncertain and cost-effective maintenance planning is a challenge.

NDT meets IoT your virtual NDT inspector for condition monitoring

To address this challenge, SGS has partnered with AIMSight to provide permanent, Realtime, sensor-based asset health monitoring solutions. SGS is in a unique position to partner with asset owners in the transition from conventional NDT to IoT asset health monitoring. AIMSight's groundbreaking NDT defect monitoring sensors provide owners with actionable data that supports reliable operational and financial decision-making. With AIMSight, SGS becomes a leading provider of permanent, real-time, sensor-based asset health monitoring solutions. The unique five-step approach identifies and monitors defects to dramatically improve the reliability of the NDT inspection process - inspections are performed more frequently and consistently through automated data acquisition using proven and standardized NDT techniques.

5-step process for structural health monitoring

The simple five-step process combines results from inspection data and monitoring data which enables owners to better manage critical maintenance investment. Owners can be assured that the most worrying defects are under permanent surveillance.

- Pre-Inspection
- AIMSight sensor installation
- Permanent monitoring
- Secure data acquisition and data fusion
- Analytics and client reporting

How can we Help protect critical assets?

- Assess the impact of construction work on the structural integrity of the building.
- Assess the impact of climate change on the integrity and safety of assets
- Enable permanent surveillance of the most worrying structural defects and / or the building's general structural behavior
- Support safe extension of the building's life
- Allow you to effectively design corrective action during constructions
- Ensure construction site safety and building serviceability
- Provide a one stop platform for building monitoring requirements

Why use AIMSight technology?

- **Monitoring technology** is the result of several leaps in sensor design and data analytics radial miniaturization of well-established NDT instruments and sensors and optimized image processing for accurate displacement detection.
- **Versatile** the chip-based solution is compatible with the most relevant AIM Sensors
- **Dynamic NDT** more than a snapshot of an assets' condition, the technology tracks the evolution of structural behaviors and defects, and their real time response to stress events.
- **Certified IoT** Advanced self-check features inspired by NDT & certification procedures
- **Multi-modal NDT** several parameters can be measured – crack length and opening, temperature, stress, acceleration and vibration, displacements – at selected frequencies.

Where is AIMSight Technology used?

- **CIVIL STRUCTURES** Historical and Residential buildings, Tunnel construction sites, Railway bridges, Highway / road bridges and dams etc.
- **OIL & GAS** Offshore platforms
- **POWER** Hydropower penstocks, Rotary power machinery equipment foundations

Strengthening civil and structural integrity assessment services through addition of

- **Pull-out testing capability up-to 300KN**
- **HILTI PS-300 Ferroscanner**

Development of pull-out testing capability up to 300 KN

Cut and Pull Out (CAPO) test has been the essential testing requirement for integrity assessment of chemically anchored / drilled rebars and anchor bolts used for the modification, extension and strengthening of existing structures.

SGS has enhanced its testing capability to measure the pull out force up to 300 KN by which we can measure the integrity of epoxy grouted rebars and can also measure the pull-out force of metallic base plates fixed by anchors.

Pull-out testing capability up to 300KN

Rebar scanning has always been an essential activity to assess the integrity of any structure. Traditional scanners are not accurate enough to conduct integrity.

Since in-placed rebars information is significant for any structure assessment,

SGS has procured advanced Rebar scanner – PS 300 to enhance its capability and to produce most reliable and precise results to perform structure integrity assessment.

Ferro-scanning – More In-depth and precise survey technique for reinforced concrete structures

Ferro scanning is NDT technique, which is performed on the concrete structures. This test provides information regarding steel reinforcement diameter, spacing, and concrete cover. It also produces 3D visual scan images to determine steel reinforcement details in RCC structure.

Key Advantages

Smart algorithm helps accurate depth measurements for rebar up to a depth of 7.8", with precise size determination up to 4.7".

The PS 300 can be used for quality control and acceptance inspections.

This revolutionary device can be used to produce assessment documents including stats and visual presentation in 2D/3D views of subsurface conditions within scan areas.

User-friendly, and intuitive information can be extracted directly from the device for use in structural analysis and reporting

Redefine your Sustainability objectives through Integrated Sustainability Solutions

We are living in a complex world, where megatrends are increasingly shaping consumer and company behavior. Companies of all sizes are facing a growing social and regulatory focus on climate, natural resources, health and wellness, responsible consumption, and sustainable urbanization. SGS has been a leader in sustainability solutions and ESG services for over 30 years. With expertise in all major industries, the company understands each sector's pain points and has the technical expertise and logistical capabilities to ensure realistic sustainability outcomes.

SGS Sustainability Solutions

SGS Sustainability Solutions are a wide range of services that help organizations to implement better and more efficient processes, address stakeholder concerns, address risks and accomplish their sustainability goals. No matter the level of maturity of an organization's sustainability journey, our Sustainability Solutions offer multiple integrated options to improve environmental, social and governance performance, reduce risks and negative impacts, and increase its own Value to Society.

Sustainability Solutions

Our Solutions are based on our own leading sustainable practices and our expertise in supporting companies in all sectors worldwide.

Services can be selected individually, to address one specific environmental, social or governance topic, in one or more pillars. We can also provide a comprehensive framework to address sustainability in a holistic way and accompany an organization in its sustainability journey.

- Sustainable Use of Natural Resources
- Sustainable Energy
- Sustainable Business Practices
- Sustainable Infrastructures
- Sustainable Production
- Sustainable Living

SUSTAINABLE ENERGY

Our solutions help you increase energy efficiency, generate, or use renewable energy, and reduce greenhouse gas emissions. We benchmark clean energypractices utilizing our powerful Sustainability Engine.

Featured services

- Energy Audits and Optimization
- Energy Savings Measurement and Verification
- Inspection and Monitoring Services for Renewable Energy Systems
- Self-Consumption Feasibility
- GHG Verification Against Corporate Voluntary Schemes
- Greenhouse Gas Accounting and Verification (ISO 14064)
- Product Carbon Footprint

SUSTAINABLE USE OF NATURAL RESOURCES

Our solutions increase efficiency in the use of natural resources, maximizing their utility and value end-to-end thus contributing to their protection.

Featured services

- Precision Agriculture
- Quality Testing of Grains and Oilseeds
- FSCTM and PEFC Certification
- Tailing and Effluent Treatment for the Mining Industry
- Soil and Water Monitoring and Testing
- Water Footprint Certification
- Fugitive Emissions Testing

SUSTAINABLE PRODUCTION

Our solutions help you track impacts across the entire value chain, allowing you to increase health & safety and traceability, promote sustainability in your supply chain and contribute to a circular economy.

Featured services

- Life Cycle Assessments
- Zero Waste to Landfill
- Supply Chain Management
- Supplier Audit Programs
- Environmental Management Systems
- Workplace Health and Safety Management Systems
- Wellbeing and Mental Health Assessments

SUSTAINABLE INFRASTRUCTURES

Our solutions enable you to address the inclusion of sustainability concerns in the development and use of buildings or in relation to transportation.practices utilizing our powerful Sustainability Engine.

Featured services

- Construction Safety
- Green Building Services
- Building Contaminants Testing
- Building Information Modeling Services (BIM)
- Road Safety Services
- Renewable Transport Fuel Obligation Verification
- E-mobility Services

SUSTAINABLE LIVING

Our solutions help you ensure the quality and safety of your products for final consumers, improving health and well-being.

Featured services

- REACH & RoHS
- R&D Support for the Health Industry
- Medical Device Audit & Certification
- Food Safety and Compliance
- Toxicological Risk Assessment
- blue sign® Certification
- Toy Testing and Certification

SUSTAINABLE BUSINESS PRACTICES

Our solutions allow you to make your commitment to sustainability more tangible and identify areas of opportunity related to sustainable finance, risk management, ethical practices, efficiency, and productivity.We benchmark clean energy practices utilizing our powerful Sustainability Engine.

Featured services

- ESG Assurance, Consulting and Due Diligence
- Cybersecurity
- SGS Digi Comply
- TCFD Consultancy
- CSR Management Systems
- SGS Academy
- Lean Management

As a purpose-driven company, our goal is to add long-term value to society across our whole value chain. This means that we are committed to using our scale and expertise to spread positive impacts beyond our company and accompany our clients on their own journey towards value creation. Our commitment to maximizing our positive impact and extensive experience in accompanying organizations on their sustainability journeys are our best credentials for offering best-in-class sustainability services across all sectors.

03 Technical corner

Journey to NET ZERO Emissions

Author: Ms. Ammara Naqvi

Co-Author: Ms. Ramsha Kulsoom

It is believed the calamity is real as are its impacts, evident from influences on natural phenomena to shaping life and cities, climate change is now determining our every action leading to development of more stringent regulations around globe for protecting our environmental, social, and economic vulnerabilities. In an attempt to flourish sustainability amid crisis the administrative bodies and industries functions unanimously to accomplish set target of 'NET ZERO' by 2050.

The pressure for Pakistan being an agrarian economy while ranked 8th on Global Climate Risk Index for past two decades calls for an immediate strive to mitigate potential anthropogenic sources. The national efforts associated with international climate protocols, known as Multilateral Environmental Agreements (MEAs) mainly includes UNFCCC, Kyoto Protocol and Paris Agreement, currently followed by first ever Pakistan Climate Conference 2022 and increasing momentum of Net Zero signatories nationwide since second half of 2021.

A Glimpse of Treaties

Kyoto Protocol to UNFCCC was adopted in 1997 with the commitment to mitigate GHG emissions in industrialized countries and established the foundation of carbon market.

Paris Agreement, 2015 prominently set goal to keep global warming well **below 2°C** above pre-industrial levels with ambitious efforts to **limit it to 1.5°C.** Adopted by **nearly 200 parties**, the agreement has strong ties with global net zero race by mid-century.

Net Zero Concept

Net zero refers to a state in which the Greenhouse Gases going into the atmosphere are balanced by removal out of the atmosphere.

Net zero program provides a track to reach climate stability and offers an accounting strategy that assist in measuring progress on the way to shift. The platform encourages growing sets of climate conscious participants without immediate disturbance to their short-term return besides enumerating benefits to businesses. The targets are achievable by understanding matter in question therefore pertinent definitions by IPCC glossary are stated.

Net Zero CO2 emissions are achieved when anthropogenic CO2 emissions are balanced globally by anthropogenic CO2 removals over a specified period, also referred to as Carbon neutrality.

Net Zero Emissions are achieved when anthropogenic emissions of greenhouse gases to the atmosphere are balanced by anthropogenic removals over a specified period. Simply net zero requires diminishing GHG emissions to a level where the remaining are re-absorbed by the natural sinks.

All of the different terms (Carbon Neutral, Net Zero, Climate Neutral) point to the different ways in which emissions sources and sinks are accounted for in context, and help to indicate what is, and is not included in the calculation or a target. As Net Zero is the internationally agreed upon goal for mitigating

global warming in the second half of the century, and the IPCC concluded the need for net zero CO2 by 2050 to remain consistent with 1.5^{O}C.

Attaining comprehension of process introduces challenges for industries in the way forward, since the transition phase demands for great remediation in footprint including but not limited through carbon reduction at source, its sequestration, and offsetting. In addition, by enhanced utilization of clean fuel and renewable energy with its improved efficiency in power, utility, and transport sector. Incorporation of ultimate systems of solution tackling climate change, the circular economy can make vast difference yet benefiting businesses.

Virtues of Net Zero Pledge

Transitioning towards Net Zero might be one of the toughest trials ever confronted in human history, however we witness a significant chunk of world's prominent companies and countries adopting Net Zero showing cascade effect in market. The rationale behind action are sets of advantages not only for environment but for businesses as well.

- Enhancement of business reputation
- Reduce operational cost
- Attract investors and shareholders with sustainable mindset
- Opportunity for financial support of green projects
- Competitive edge over other businesses
- More resilient business against local/ international disruptions
- Exhibiting compliance to laws and regulations
- Geared for upcoming rigid environmental constitutions
- Fulfilling social and environmental responsibilities

The Fundamental of Net Zero

- Understand your GHG emissions
- Reduce Operational GHG emissions
- Engage with the Supply Chain to reduce Scope 3 emissions
- Design and implement a carbon removal strategy
- Verify and Report annually on progress

SGS Integrated Approach to Zero Net - Aligned with standards and best practice

ASSESS & BASELINE	TARGET SETTING	PRODUCT STEWARDSHIP
ISO 14064-1	SCIENCE BASED TARGETS (SBTS)	ISO 14067
CORPORATE GHG PROTOCOL	PAS 2060: DEMONSTRATION OF CARBON NEUTRALITY	LCA
CORPORATE VALUE CHAIN PROTOCOL		

SGS is recognized as a Global Leaders in the verification of greenhouse gas emissions and provides a range of services addressing mandatory and voluntary reporting of greenhouse gas emissions since 1997. SGS is accredited and active in all schemes worldwide e.g. EU ETS, UK ETS, CDM, Carbon Foot printing, JI, VCS, CCAR etc. businesses and organizations choose SGS because we deliver with the speed and accuracy needed to underpin the environmental integrity of emissions reporting/trading.

SGS is recognized as the Global benchmark for quality and integrity. We provide innovative services and solutions for every part of the environmental industry.

Our services for an organization's journey to net zero includes:

ENERGY AUDITS

ENERGY EFFIECIENCY PROJECTS

SUSTAINABLE WATER MANAGEMENT & FOOTPRINT

GREEN BUILDING SOLUTIONS

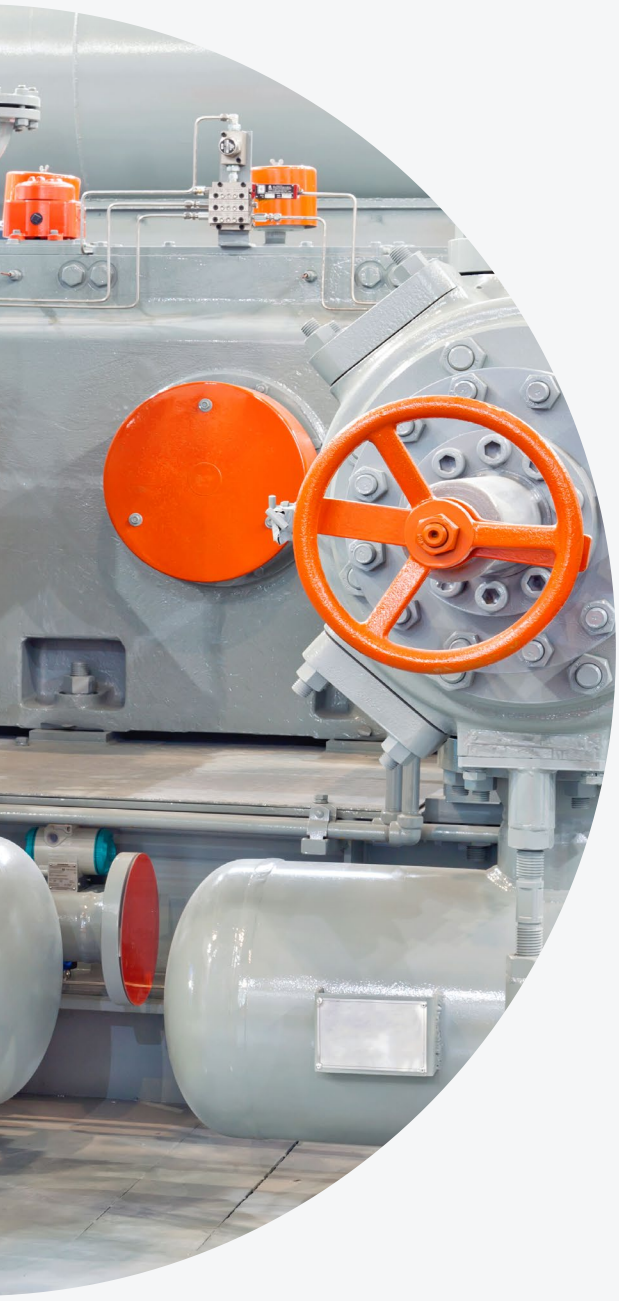
SUSTAINABLE WASTE MANAGEMENT

Non-Intrusive Inspection (NII) of pressure vessels – Minimize turnaround time

During the whole lifecycle of plant, Pressure vessels undergo periodic, statutory, and other testing to ensure continued safe and reliable operation. These inspections are carried out by means of internal visual inspection (IVI) with shutting down the vessel, however, there can be very high costs associated with shutting down a vessel (loss of production), isolating it and preparing it for entry. Indeed, these costs can be much higher than the cost of the inspection itself. Furthermore, the mechanical disturbances involved in preparing the vessel for internal inspection and reinstating it may adversely affect its future performance. Finally, and by no means least, man access may also be hazardous. In addition to these, several are the reasons for NII;

- To replace Internal Visual Inspection
- To check the integrity of pressure vessel without shutting down
- To inspect internal areas that is hard to access internally
- To minimize the down time during turn-around.
- To avoid Unplanned Shutdown
- To Minimize the cost of Inspection

There can, therefore, be significant advantages if inspections are performed from the outside of the vessel without breaking containment i.e., non-invasively



Non-Intrusive Inspection (NII) in lieu of internal visual inspection (IVI)

Non-Intrusive Inspection (NII) is being considered increasingly as an alternative to Internal Visual Inspection (IVI) as part of the integrity management of pressurized equipment.

It is important to recognize that a transfer to a non-intrusive inspection strategy is likely to require a step-change in the administration and execution of the inspection. Inspection methods are likely to be more elaborate when compared with internal visual inspection. Therefore, the inspection must be controlled more rigorously, with the procedures (i.e. equipment, settings and reporting criteria) carefully scrutinized and monitored at all stages in order to ensure that the inspection objectives are met.

Non-intrusive inspection approach

NII represents a relatively new approach by comparison to IVI and many engineers responsible for inspection planning have yet to build up experience with and confidence in its application.

Non-intrusive inspections generally require a more sophisticated approach than internal inspections. A systematic assessment of each item of equipment to be inspected using NII. This is a staged process which sequentially considers:

1. When and where inspection is required
2. Whether NII is appropriate as a full replacement of IVI
3. The inspection plans
4. What inspection methods are appropriate
5. Requirements during inspection
6. Whether the inspection performed is adequate
7. Actions when the inspection performed does not meet the requirements
8. Approach to use of NII in support of deferment of IVI.

Suitability and Probability of detection for NDT techniques as a non-Intrusive inspection tool can depend critically on the type and extent of flaws or degradation mechanisms expected, Different non-intrusive inspection methods have different capabilities for detecting and sizing flaws, and therefore the more detailed knowledge is required of the types and locations of flaws, which may be present in a particular item of equipment than is the case for an internal visual inspection. Hence, one of the key sources of information for the NII assessment is the damage associated with the equipment. In practice, most rigorous integrity management systems will already incorporate a consideration of the type and likelihood of degradation expected for each contactor, as this is also a requirement for most RBI assessments.

The damage assessment is a formal review of the degradation mechanisms to which a particular plant item may be susceptible, along with a determination of the anticipated degradation rates. Typically following damages are associated with vessels:

- Uniform corrosion over whole or large area
- Localized corrosion / erosion or pitting
- Root corrosion / erosion in welds
- Corrosion or erosion in nozzles
- Cracking in or near weld
- Cracking at or near nozzles
- Blistering

Advance Inspection techniques are being used increasingly for the assessment of the true condition of pressure equipment. Due to the increased Probability of Detection (POD) these techniques can in many cases be used to replace the conventional statutory inspections. More and more, these techniques are used in a Non –Intrusive manner, thereby increasing the availability of the plant for production.

Benefits of non-Intrusive inspection

- Avoids man access which can be hazardous (possibilities of flammable or toxic residues which can be difficult to remove, adequate lighting may be difficult to achieve).
- Planning for turnaround / shutdown. Identifying what remedial work is likely at the next turnaround? Carrying out non-intrusive inspection allows the preliminary inspection to be made before the plant is shutdown, providing an opportunity for the turnaround to be shortened by long-lead time planning and preparation (for repair and maintenance based upon the NDT results) to be made in advance of the start of the turnaround.
- Shortening the turnaround. Shutdown duration may be reduced by carrying out most or all of the inspection work in advance of the shutdown, allowing the turnaround to be restricted to mechanical work.
- Removal of requirement to break containment. No need to isolate, drain and purge the vessel. This may include partial break of containment, for example access to water/coolant side of a heat exchanger without breaking hydrocarbon containment.
- Minimizes disturbances to the vessel which could create new problems.
- It may be possible to avoid the need to shut down the vessel operation entirely. Inspections can be made on a different cycle from any other maintenance, or the inspections may be made at reduced capacity or temperature, rather than having to isolate, drain and purge the vessel.
- Allows the inspection to be carried out when a potential problem is identified, without interfering with other operations. This might occur when either routine surveillance or unusual operating conditions suggest that damage might have occurred.

Maintaining the safety record- Are your LNG operations safe?

Industrialized and developed countries rely on LNG as one of the cleanest and safest of all energy sources. LNG receiving (also import or regasification) terminals are the final link in the LNG supply chain and represent the connection to consumers. Today, more than 60 import terminals are in operation and more than double this number are in the construction or planning phases. Since LNG import terminals are often located in, or close to, urban and thus densely populated areas, their design, equipment, materials arid operating procedures, need to aim at reducing risk.

Safety concerns

LNG is a hazardous material because of its cryogenic properties, dispersion qualities and flammability. Although industry officials claim the cold liquid gas is relatively safe, fire and explosion concerns related to vaporization of leaking LNG remain a primary public safety issue. If released, LNG will evaporate and mix with air.

Natural gas, when mixed with air, will burn if the mixture concentration is between 5 - 15% fuel. The hazard is not the vapor itself, but the possibility that it could be ignited. If the ignition is immediate or relatively soon after the start of the release, the fire size is determined by the LNG release rate, which fuels the fire. If the ignition is delayed, an LNG vapor cloud will develop and disperse as it expands and/ or moves downwind. This represents a potential hazard that cannot be ignored.

The fact that a potential accident could injure or kill many people attracts public interest. Accordingly, a company that intends to develop an LNG import terminal must ensure that the proposed

location is consistent with local, state and national environmental and safety guidelines, and must go through a strict licensing and permitting process. Investors or developers of LNG projects require an independent technical analysis of the facilities' design, as well as verification of their compliance with regulatory requirements and good industry practice. Safety focuses on preventing releases, mitigating consequences and sitting facilities so that the public is not exposed to any negative consequences.

Risk assessment and mitigation

The likelihood of an accident scenario must be considered in conjunction with the potential hazards such events pose and their impact on the public. However, the LNG industry has a good safety record, which is the result of prevention, control and mitigation measures. The industry uses advanced safety technologies and procedures, which are enforced and maintained through numerous standards, codes and regulations. Dedicated to support safe and reliable terminal operations, these include boiler and pressure vessel standards, building codes and pipeline systems. Moreover, technical risk can be lowered by adoption of proven designs, construction by experienced contractors, operations that follow best practices, as well as independent monitoring and supervision.

Regulatory background

The standards and specifications that regulate the design and the construction of LNG facilities may vary within different countries. Although host countries have unique siting and permitting regulations, they have one thing in common: each country requests that the highest safety, environmental and security standards are met. Due to the potential of an accident being caused by improper handling and storage of LNG, government authorities in every LNG importing country have enacted codes and regulations to govern design, construction and operation of LNG terminals and the tankers that serve them.

Depending on the region where the import terminal is planned to be built, the standards incorporate different approaches to assess its safety. For example, in the USA, the major design and operating criteria are found in the National Fire Protection Association's (NFPA) 'Standard for the Production, Storage, and Handling of LNG' (NFPA 59A) and 'LNG Facilities: Federal Standards' (49 Code of Federal Regulations, part 193). A consequence-based approach for accidents, as incorporated in the NFPA standard, has the benefit of requiring less analysis than the risk-based approach, and may be easier to communicate to the public. The limitation of this approach lays in its focus on worst case scenario consequences without taking into consideration the likelihood of occurrence.

The risk assessment methodology as set in the Canadian Standard CSA Z-276-2007, 'Liquefied Natural Gas (LNG) - Production, Storage, and Handling', incorporates maximum credible LNG release scenarios and hazard models to determine the severity and distances of the resulting hazards. Likelihood and consequences of failure are combined, and a standard of acceptable risk level is provided. Addressed factors affecting risk and safety include:

- Likelihood of the event occurring.
- Behavior of LNG should a release occur during the event,
- The potential zone of influence and severity of hazard.
- Potential hazards to the public outside the facility.
- Potential damage on adjacent property.
- Physical effects on the environment.
- Ship-to-ship transfer.
- Effects on the community and future development'.

In Europe, the primary governing safety standard is EN 1473, 'Installation and equipment for liquefied natural gas - design of onshore installations'. While EN 1473 covers many of the same aspects of LNG siting as NFPA 59A does in the USA, the European standard requires that the developer undertakes a site-specific hazard analysis. Under the umbrella of EN 1473, individual countries may have their own additional codes and requirements. African countries generally lack defined legislation for LNG. Instead, engineering contractors.

LNG storage tanks - the heart of every import terminal

As LNG projects are increasing in size and complexity, as well as conforming to regulations, quantifying and mitigating technical risks is necessary to control financing costs, project expenses and increase stakeholders return. More than 60% of the cost of an LNG receiving terminal is associated with the construction of LNG storage tanks, marine and offloading facilities, and the safety systems. Storage tanks represent the most expensive and time-consuming part within the construction of an LNG import terminal and thus, any minor interruption during tank construction can heavily impact the total project success. The purpose of the LNG storage tank is to maintain the liquid at -163 °C before it is vaporized and transferred into a pipeline to be delivered to the local gas market. Aboveground LNG storage tanks usually take between two to three years to build, while belowground tanks may take up to five years to construct'. The actual tank design is determined by site layout, regulatory and safety considerations. Typically, owners face two main decisions. First, they must decide whether to build storage tanks that are aboveground or that are partially or fully buried. Second, they must decide whether to build single or full containment storage tanks.

Conclusion

Every LNG project involves certain risks and challenges; it must be technically feasible, stay on schedule, within the projected budget, and quality and safety have to be assured. To ensure safe operations of LNG facilities and to protect the public, terminals are sited, designed, and constructed in compliance with applicable codes and regulations. Qualified third parties, such as SOS, conduct safety and code compliance audits and help the LNG industry to maintain its excellent safety record in the future.

Inspection & Classifications for Assets in Potentially Explosive Atmospheres

Author: Muhammad Ali Imran

Many industry sectors must deal with explosive environments. In addition to the obvious ones, oil, gas, petrochemicals and mining, the production of food, the manufacturing of pharmaceuticals, aircraft refueling are only a few examples of industries that operate in explosive (Ex) environments. They are all places where flammable liquids, vapors, gases and combustible dusts may occur in quantities sufficient to cause a fire and/or an explosion.

Electrical equipment installed in Potentially Explosive Areas increase the risk of accident if not properly selected, operated or maintained. Area classification is a method of analyzing and classifying the environment where explosive gas atmosphere may occur to facilitate the proper selection, installation, operation of equipment to mitigate the risk of fire and explosion. The overall objective of area classification is to minimize the probability of accidental ignition of explosive atmospheres. Protection is a two-part exercise: The equipment must be designed and manufactured to appropriate standards for a chosen "Type of Protection" and then must be installed, inspected, maintained, and repaired considering further standards for these activities.

Personnel competence critical to the Ex-industry

In hazardous areas, workers often operate in difficult conditions and risks are omnipresent. Therefore, they require specialized knowledge, skills, and experience.

The IECEx Certification system is the widely used, internationally recognized Conformity Assessment System, for equipment and services for use in explosive atmospheres. It deals with equipment that operates in any environment where there is a risk of explosion due to the materials used within it.

To support you in meeting your obligations, SGS offers a comprehensive range of Ex services for your installed equipment and systems in compliance with IEC 60079 standards.

Our subject matter experts include experienced personnel's with IECEx certification of Competency for Gas, Vapor and Dust explosive areas.

SGS certified personnel provide consultancy services for operation and maintenance of classified electrical equipment to ensure safe and reliable operations throughout the asset lifecycle. HAC is carried out as an integral part of risk assessment to identify places where control over ignition sources is required. This enables;

- To design/ install / maintain electrical, instrumentation & control that will not cause fire or explosion at an optimum cost.
- To reduce the cost of compliance to regulations and standards without compromising safety.
- To ensure safe operations.
- SGS offers technical audit services to evaluate present condition of classified electrical assets considering IECEX international codes and standards to ensure strict compliance

Case Study: Health assessment of high-rise building – A special case on Banking Sector

Author: Mr. Tanveer Ali

Introduction

SGS has marked its footprints in banking and commercial sector to perform Audit and integrity assessment of high-rise structures to identify any gaps in the operations, maintenance and safety of personnel. Scope of this study covers the assessment of the apparent condition of the structure including façade works and utility installations like Generators, Transformers, DBs, Cables, HV/LV panels, BMU, BMS, Lifts, Cradles and Fire safety analysis.

Challenges

Few of the problems and challenges which were identified during inspection are mentioned below:

- Penetration of underground water through basement retaining walls.
- Exposed and Corroded reinforcement in basement floors.
- Spalling of concrete at slab.
- Damaged and fractured façade work
- Elevated temperature of the installed DBs
- Elevated temperature of the neutral bus bars.
- Substandard bosun chairs shackles

Solution Offered / Working methodology

SGS has highlighted anomalies and damage mechanisms initiated in concrete and reinforcement bars by visual inspection and multiple advanced Non-Destructive Testing techniques with recommendations to address gaps and to achieve and extend design life of Civil Structure and inspection of glass and aluminum façade works. Health of Electrical installations and assets were witnessed and identified to gaps in power quality, efficiency of Transformers, lux level monitoring, vibration analysis of the equipment, efficiency of HVAC system, Audit of Building Management System (BMS), conditions of passenger and cargo lifts, assessment of shackles, assessment of Building Management Unit (BMU), NFPA, ISO and OSHA standard guidelines.

Benefit to client

Client is now well aware of the health condition of the assets, damage mechanism initiated, gaps in the operating protocols and procedures with the recommendations to address the potholes.

- In-place strength of Civil and Steel Structure
- Identification of weak areas in façade works
- Health assessment and efficiency evaluation of electrical and mechanical installation
- Identification of Gaps in Fire and Life safety protocols

Civil & Structure

Structure consists of 23 no. of stories and 5 basements with glass and aluminum façade works all around. SGS was engaged to check the damage mechanism in structural material is initiated. RCC and Steel structure was examined visually and through advanced non-destructive testing to estimate the in-place strength of concrete and steel structure including welded and bolted connection details. Identified the weak areas in basement retaining walls and corrosion in reinforcement and suggested remedies to overcome these deficiencies as per ACI and ISO guidelines.

Façade works was inspected and identified the weak areas were glass and aluminum panels were removed due to substandard installation practices followed proactively to avoid failure during the monsoon season.

Fire Safety Assessment

Intent of the assessment was to provide recommendations as per applicable NFPA standards for the building covering various safety aspects including but not limited to installed fire detection system, firefighting apparatus (pumps, fire hydrants, fire doors, emergency lighting along escape routes, Allocation of safe muster points for staff and guests, emergency exist / signage, safe storage and handling of flammable and combustible liquids, portable firefighting equipment, firewater reservoir, sprinkler system, Availability and evaluation of capacities to cater the highest combination of foam making &tank cooling requirements including foam water sprinkler system, hose & coupling / hydrant spacing / block valves / fire mains / quantity of hydrants / placement of hydrant / supply of fire water documentation, and procedures implemented.

This was initiated to ensure a safe working environment for its employees and prevent any untoward incident that may lead to a fire hazard resulting in business loss to the bank.

Integrity Assessment Of Vertical Transportation System

SGS Pakistan verified the integrity of vertical transportation systems installed with all components. Ensures the systems are being operated under safe working loads by witnessing through loads test/ proof load test exercise.

All the components of the elevators have been inspected and tested to verify the compliance of LEEA guidelines including Safety Edge & Sensors, Elevator's Wire Rope, Car Doors, Motor & Pulley Rooms, Control Panels & Electrical Equipment, Traction Unit, Car Top & Well Enclosure, Landing Doors and Lift Well Pit.

Electrical Assessment

SGS team of electrical experts performed detailed assessment of entire electrical distribution network with mainly focused on the following areas including inspection of MV / LV Panels, Residual Circuit Breakers, Distribution Boards, Earthing system to verify their compliance and gaps against International Standard. The assessment identified a number of potential fire and electrocution hazards which were addressed in corrective action plan along with criticality assessment.

Pulse Eddy current testing (PECT) of insulated piping / pressure vessels for corrosion under insulation examination

Pulsed Eddy Current (PEC) has been successfully deployed over the last decades for a variety of corrosion-related applications, especially for the inspection of Corrosion Under Insulation (CUI) inspections, Corrosion Under Fireproofing (CUF), Flow-Accelerated Corrosion (FAC) and offshore assets corrosion. This technology has proven to be an efficient screening tool, allowing for the detection of corrosion without having to remove coating or insulating material over typical pipes, tanks, and vessels.

What is PEC?

Pulsed eddy current (PEC) is an advanced electromagnetic inspection technology used in detecting flaws and corrosion in ferrous materials typically hidden under layers of coating, fireproofing, or insulation.

How it Works?

A magnetic field is created by an electrical current in the coil of a probe. When the probe is placed on the insulation, fireproofing, or coating, the field penetrates through all the layers (including sheeting, if present) and stabilizes in the component thickness, and then the electrical current in the transmission coil is turned off, causing a sudden drop in the magnetic field. As a result of electromagnetic induction, eddy currents appear in the component wall. The eddy currents diffuse inward and decrease in strength. The decrease in eddy currents is monitored by the PEC probe and used to determine the wall thickness. The thicker the wall, the longer it takes for the eddy currents to decay to zero.

PEC is therefore the analysis of transient eddy currents in a conductive component following a sharp electromagnetic transition. Pulsed eddy current can be used:

On outer surfaces with or without insulation or aluminum, stainless and galvanized steel weather jacket, blistering scabs, or fireproofing

Near pipe elbows, supports, valves, and other metallic structures such as nozzles, and flanges

Through concrete, polymer coatings, metallic mesh, and rebars

Application of PECT

There are many applications where this technology can be shown to be applicable some of which are given below

- Original intention: CUI (vessels and piping)
- Corrosion under fire proofing of supporting legs of storage spheres
- Inspection of column skirts
- Flow accelerated corrosion (power plants)
- Splash zone of offshore structures and risers

Other Applications

- Sheet piling (port structures, jetties) more info
- Subsea pipelines
- Remaining ligament under corrosion
- Repair wraps
- Well casings
- Ship hulls
- High-temperature wall thickness monitoring

Advantages of PEC Technology

- Reduced Inspection Time
- Grid mapping mode 2 to 10 time faster (usually <1 s)
- Reliable and repeatable Results
- Less affected by liftoff variations, weather jacket overlap, straps
- Better detection of small defects (dynamic scanning mode)
- Unaffected by structures above probes
- Wider application Spectrum
- Galvanized steel weather jackets
- Can be used on corrosion by products (scabs/blisters)
- Can be used through concrete, polymer coatings, chicken wire
- Elbows
- Inspection near nozzles, flange, pipe supports
- C-scan imaging
- Embedded inspection workflow

Corrosion Monitoring: Assuring Safe and Reliable Facility Operations

Corrosion is a major problem in the petrochemical industry, as it is one of the most serious aging mechanisms that impacts equipment in petroleum refineries and chemical processing plants. Uncontrolled corrosion leads to equipment failure, loss of containment, and to potential harm to personnel and the environment. In many facilities key equipment such as piping, valves, vessels, vessel internals, condensers, boilers, and heat exchangers may have been in service for decades and have the potential to be compromised even by relatively slow corrosion mechanisms. That is why a comprehensive and effective Corrosion Monitoring program is essential for the safe, reliable, and cost-effective operation of petrochemical facilities.

Uncontrolled corrosion can cause leaks and component failures, which reduce the performance and reliability of important equipment. In extreme cases, corrosion can lead to unexpected failures that are often costly, in terms of lost production, the expense of repairs, lost or contaminated products, environmental damage and potential harm to humans.

Corrosion is the chemical or electrochemical reaction between a material, usually a metal, and its environment that produces a deterioration of the material and its properties. Corrosion occurs because of exposure of the material to harsh conditions and maybe external or internal. External corrosion is caused by reaction with the ambient environment such acids, salts, oxygen, and other chemicals, and is generally accelerated by higher temperatures. Internal corrosion is generally caused by reaction with contaminants in the fluids being transported, stored, or processed. Corrosion can be widespread and relatively uniform or may be localized, in the form of pitting and cracking. Considerable efforts are expended to reduce the extent of corrosion through techniques such as inhibitors, coatings, metallurgy selection, and cathodic protection. However, these methods generally slow, but fail to completely prevent corrosion.

SGS Pakistan has the experience, knowledge, and equipment to provide an effective Corrosion Monitoring program, which is essential for the safe and reliable operation of petrochemical facilities. Such a program provides comprehensive monitoring of all critical components in the facility, identifying the location, rate, and underlying causes of corrosion. Furthermore, the program identifies any non-conforming alloy components, as these are generally susceptible to accelerated corrosion and are relatively frequent causes of catastrophic failure.

Corrosion Monitoring by SGS can provide significant benefits when integrated into the petrochemical facility's preventative maintenance and process safety management programs. Risk-based Inspection methodologies help to ensure that critical and high-risk equipment receive relatively intensive monitoring, while the low-risk, non- priority areas receive less. Based on the results of the Corrosion Monitoring program, owners can make informed decisions, not only regarding the remaining life of the affected equipment and remedial actions, but also life extension strategies, prospective material selection, and cost-effective remediation methods.

An effective corrosion monitoring program includes a wide range of activities: identification of all critical components; identification of component alloy composition; measurement of the location and extent of corrosion; prediction of remaining life; identification of failure mechanisms; determination of fitness for service; inspection scheduling; development of remediation recommendations; and development of corrosion prevention strategies.

A determination of the extent of corrosion is conducted using a wide range of quantitative measurement techniques. Non-Destructive Testing (NDT) methods are the most effective and broadly applied testing methods. The NDT methods employed include Ultrasonic Testing, Radiographic Testing, Guided Wave Testing, Electromagnetic Testing, Positive Materials Identification, and a wide range of other testing methodologies. Selection and effective application of the appropriate testing methodologies requires knowledgeable and widely experienced personnel.

SGS Industrial Services has the experience, knowledge, and equipment to provide the full range of corrosion monitoring services, from development and implementation of comprehensive process safety management programs to gap-filling services to meet limited and short-term client needs. For each of our clients, we develop a Corrosion Management Strategy (CMS) that meets their needs and ensures the integrity and safety of their assets. This contributes to successful Process Safety Management (PSM) and Health, Safety and Environmental (HSE) Management programs.

Digitalization & Innovation (D&I) – SGS Nubia for the Hospitality Industry

Digitalization and innovation are at the core of SGS activities and that is the reason we are focused on creating solutions that are transforming businesses. SGS D&I team is dedicated to work on all dynamic industries to provide solutions and hospitality is one of those, the travel and hospitality industry undoubtedly has one of the most rapidly changing environments in terms of risk management. Having a central repository of data that enables informed decisions to be made quickly adds value and is strategic for such a competitive industry.

To streamline all the processes involved in risk management programs, SGS has developed its own IT solution for the travel and hospitality industry: SGS Nubia.

SGS Nubia is an exclusive and unique web-based platform specifically developed by and for the travel and hospitality industry, with an understanding of the industry's challenges and peculiarities. In the past years, SGS Nubia has become, according to our customers, the most comprehensive and efficient risk management tool available for this industry. Its strength is the industry-specific functionalities available, which allow both SGS and the customer to monitor risks as they happen and then track all aspects of that risk, from initial identification and planning through closure, with findings identified.

SGS has been working with the hospitality industry for many years and we are continually listening to our customers and learning about industry challenges, so we can upgrade and equip SGS Nubia with functionalities that provide additional added value.

- Automated planning tool – preparation of a yearly audit program can be hard work when it must be applied to multiple business partners all around the globe. The required audit cycle may need to change, depending on the different supplier characteristics and performance track record. Nubia automatically creates an audit schedule based on our customer's risk matrix
- Risk management flexibility - different types of risk management criteria can be applied by SGS Nubia to provide a more flexible and accurate risk evaluation based on the customer profile
- End-to-end management communications – alerts and notifications can be sent directly by the system, avoiding email exchanges. These can include report submissions, requests and reminders, as well as evidence and can be uploaded and verified directly in SGS Nubia by those who are authorized
- Intelligent dashboards are provided by the platform, and they can be customized to fit our customers' individual needs

We are proud of SGS Nubia, and we continue to evolve and develop our tool to always be breaking edge technology, and constantly adapting to the changing needs of the industry.

04

Events and participations

SGS sponsored & participated in 8th Int'l Summit on Environment, Health & Safety.

The 8th International EHS Summit held at Marriot hotel Karachi for business professionals to learn the newest about Environment, Health, Safety & Security for their sustainable business. It brought together 50+ CEO's and C-Suite from leading multinationals where SGS Pakistan sponsored this event and M.D Mr. Abdul Razzak Lakhani has presented on "ESG -Environment, Social and Governance Framework". In addition, SGS Pakistan was nominated & awarded in the award category of "Innovation & Sustainable Solutions".

SGS Sponsored and participated in Asset Integrity management summit, Oman

SGS participated in Asset Integrity Management Summit, held at Muscat, Oman in August 2022. The event showcased some of the best Asset Management innovative projects, products, business ideas and technologies, presented by the most advanced and innovative organizations in countries like Pakistan, UAE, Saudi Arabia, Oman, Bahrain and Kuwait. SGS Pakistan's subject matter expert also presented on "How to minimize plant downtime adopting NII (Non-intrusive inspection) approach" and revealed some of the challenges of Asset Integrity Management and in what way plant shutdown time can be reduced by adopting NII techniques and methodologies.

SGS Participated in 3rd International Corrosion Conference –CorPak 2022

The 3rd International Corrosion Conference –CorPak 2022 held at Karachi, SGS Pakistan team and subject matter expert participated in the one-day conference where local and foreign corrosion professionals attended the event which gave opportunity to participants to exchange views, ideas, discussions of specific problems being faced by the industry and solutions and new technologies being provided by SGS Pakistan.

SGS Pakistan Exhibited In "Pakistan Chemical Expo "Surfing the New Waves"

SGS Pakistan has participated in first chemical expo 'Pak Chem Expo 2022' held at Lahore Expo Centre. The President of Pakistan was invited as chief guest, where International and national industries participated in this two-day expo while well-known chemical scientists from all over the world also shared their experiences. SGS Pakistan services were hailed by the visitors from the different organizations and stakeholders where current solutions and technologies were discussed

SGS attended 16th OSHW Conference & Awards 2022

The 16th OSHW Conference & Awards 2022 organized by Federation of Pakistan Chambers of Commerce & Industry held at Karachi where high-profile government official and key stakeholders participated in the event and The President of Pakistan grace the occasion as the Chief Guest.

Technical discussions around occupational safety, health, wellbeing measures, strengthening of the legislative framework in Pakistan, and the opportunities for technology and innovation in safety and health management took place along with the award distribution ceremony to recognize the efforts and the contributions of the companies in promoting a health, safety, and well-being culture which will motivate them to continue with their efforts and inspire others to follow.

05

Major webinars and workshops

SGS organised session on "Applicable HSE Requirements for Industrial Warehouses"

SGS conducted webinar on Applicable HSE Requirements for Industrial Warehouses" – During the session our subject matter expert gave insight about the mandatory HSE requirements, relevant Codes and Standards for warehouse to which helps to reduce the increasing injury and fatality cases in major industries.

Webinar on "Importance of Process Safety Framework & Process Hazard Analysis (PHA) Techniques"

SGS conducted webinar on "Importance of Process Safety Framework & Process Hazard Analysis (PHA) Techniques". The prime objective of the session was to give in-depth awareness on the Importance of PHA techniques and Importance of Process Safety Framework and its various models and pertinency.

Webinar on "Significance of Knowing the Health of Civil & Steel Structures through Integrity Assessment Process as per the Guidelines of ISO 13822"

SGS conducted webinar on "Significance of Knowing the Health of Civil & Steel Structures through Integrity Assessment Process as per the Guidelines of ISO 13822" The key objective was to educate clients regarding structural behaviour in seismic lateral forces, heath conditions of material, impact of environment, effect of extensions and overall, to aware them for the protection of their assets.

Webinar on "JOURNEY TO NET ZERO- Importance of GHG Emissions Accounting, Reporting & Verification"

SGS conducted webinar on "JOURNEY TO NET ZERO - Importance of GHG Emissions Accounting, Reporting & Verification" where in-depth knowledge of the concept of net zero and Importance of GHG Emissions Accounting, Reporting & Verification, and applicable standards were given and how SGS can help its clients towards reducing their Carbon Footprint.

Webinar on "How to minimize plant downtime adopting NII (Non-intrusive inspection) approach"

SGS conducted webinar on "How to minimize plant downtime adopting NII (Non-intrusive inspection) approach" where our subject matter expert shared his extensive knowledge about non-intrusive inspection approach, its methodologies, techniques, and wow to minimize plant downtime by adopting NII which helps to smoothen their operations and reduce risk.

06

Highlights from Our Other Services:

SGS first accredited Fumigator in Pakistan by the Grain & Feed Trade Association (GAFTA)

SGS proudly announced that SGS Pakistan is the first accredited Fumigator in Pakistan by the Grain & Feed Trade Association (GAFTA). As per the new contract requirement of GAFTA - rule 132 for fumigation, which makes mandatory for fumigators to be approved by GAFTA. Hence, we are delighted to share that SGS Pakistan has successfully obtain the status of accredited fumigator by the Grain & Feed Trade Association (GAFTA).

SGS Pakistan is now listed as one of the fumigation companies by meeting the new requirements of this body.

SGS fumigation services prevent the spread of pests and minimize the risk of damage to goods. SGS carries out quality checks in the supply chain to ensure that our customers' agricultural products, at every stage, meet all quality and safety requirements.

For more information and to download the new guide to good fumigation practices, visit www.gafta.com/fumigators.

Bringing automation in food testing through GDS Bolt

SGS Pakistan Agrifood Lab recently added an advanced equipment GDS Bolt into its laboratory facility to cater a huge volume of food and agriculture products efficiently. The Bolt is a single compact automated machine that serves as all-in-one tool for processing an ELISA (pipette, washer, incubator, shaker, reader). Almost 96 samples can be handled by the instrument in the meantime of around 02 hours in a fully automated way and allows lab to handle a huge volume of testing samples in reliable way. By applying Bolt, the human handling associated errors can be reduced, and most reliable results can be produced with minimum TAT to fulfil the customer demands for urgent reports. Bolt is used for testing different parameters such as mycotoxins, allergens, and vitamins in different commodities.

SGS now offering GMO Testing for Organic Cotton

SGS Pakistan lab in now accredited to detect the presence of Genetically Modified organism in cotton following IWA 32: 2019 method by using state of the art real time PCR technology. The screening protocol is the DNA based method to cover almost all known GM cotton events.

International Workshop Agreement (IWA) 32 on a GMO screening protocol for cotton and textiles is a guidance to laboratories worldwide to assess, in a standardized way, cotton and cotton-derived materials for the potential presence of GMOs or GMO-derived ingredients. IWA 32 describes an effective way to isolate DNA from cotton materials and to confirm that the DNA isolate does contain cotton DNA by targeting cotton indigenous gene and provide most sensitive and reliable GM screening protocol for cotton and textiles from production stage of cotton seeds up to greige yarn and greige fabric.

SGS organized Seminar on "Innovative Approaches Towards Risk Associated with Food Supply Chain"

SGS Pakistan health & nutrition services has successfully organized session on innovative approaches towards risk associated with food supply chain at SGS Pakistan head office. The main idea behind organizing this session was to gather all food & pharmaceutical companies and the major stakeholders at a single platform to create awareness about SGS facilities from farm to fork, development and challenges faced by food industry including risks associated in the supply chain. The session also shed further light on current and future aspects of molecular biology. Our team also discussed in detail the importance of integrated disinfection services for food industry to make food safe.

SGS Pakistan also invited industry experts from Shan foods Private Limited who talked in detail about challenges related to Aflatoxin and from Hilal foods Private Limited who talked about hygienic design in food industry.

comprehensive framework to address sustainability in a holistic way and accompany an organization in its sustainability journey.

SGS organized Cybersecurity Technical conference- Role of Standardization, Governance & Certification in Data Security & Privacy

SGS Pakistan Knowledge Solutions successfully Organized a Technical Conference on the Role of Standardization, Governance & Certification in Data Security & Privacy, Cloud security, Business Continuity & Resilience. The Conference provided a platform to enhance the awareness on International Standards like - ISO 27001 family Including Data protection/ Privacy, Cloud Security & ISO 20000 IT Service Management & ISO 22301 family on Business continuity

Ms. Umme Tanzeelah – Chief Advisor to Chief Minister for Information Technology was the Chief Guest for this event. Her presence in the Session marked a bright prospect to the services being offered by SGS Pakistan in the Information Technology Industry. More than 80 companies participated in this intriguing knowledge-based Session which is the Buzz in current Economic and Business World. A penal discussion was also organized which include existing certified companies by SGS to Share their successful Journey on the certified standards and how it has been Beneficial for their Organization.

07

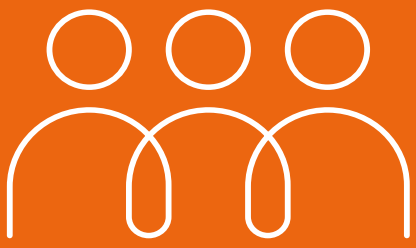
Health & wellness

Managing mental health to realise your true potential

While **1 in 5 people** will experience a mental illness during their lifetime, everyone faces challenges in life that can impact their mental health. Mental health issues have a significant impact on employee well-being and are a major cause of long-term absence from work. There is still stigma attached to mental illnesses and hence there is need to tackle current attitudes by creating awareness to ensure we are all comfortable accessing psychosocial support or calling helplines whenever they require as well as providing tools to thrive, which are practical, that everyone can use to improve their mental health and increase resilience regardless of the situations they are dealing with.

Below are some of the self-care tips you can explore to improve your mental health

1. Make sleep part of your self-care routine-Getting enough Sleep can have a huge effect on how you feel both emotionally and physically.
2. Exercise daily- Daily exercise can help you both physically and mentally, boosting your mood and reducing stress and anxiety, not to mention helping you shed extra weight.
3. Eat Right Eating the right foods can help prevent short-term memory loss and inflammation, both of which can have long-term effects on the brain and, in turn, the rest of the body. Some of the most amazing self-care foods include fatty fish, blueberries, nuts, green leafy veggies, and brassicas, like broccoli.
4. Say no to others and say yes to your self-care-Many of us feel obligated to say yes when someone asks for our time or energy. However, if you're already stressed or overworked, saying yes can lead to burnout, anxiety, and irritability. It may take a little practice, but once you learn how to politely say no, you'll start to feel more empowered, and you'll have more time for self-care.
5. Have a family dinner-Having a set mealtime where you either sit with your family, significant other, or just alone to eat and enjoy your meal can be a really nice way to connect with your loved ones or yourself
6. Punctuate your day with meditation- With one minute of awareness of your thoughts, feelings, and sensations; one minute of focused attention on breathing; and one minute of awareness of the body as a whole.
7. Stop Over-Thinking-You don't need to have the answers to all of life's riddles especially during the time of crisis. Life is an unfolding, a discovering, an adventure. Sometimes over-thinking it all can get you into trouble. You miss out on the journey you're on when you're always stuck in your head.
8. Don't Live on social media-While it's fun to be social. But reading through people's statuses too often can lead to so many negative feelings, including depression. It's like watching an advertising campaign for everyone's life where it's all shiny and glittering and well-crafted to present the best, making you feel as though you're the only one struggling in life.



BECAUSE WE CARE

SGS celebrated safety month 2022 with theme "See something, say something"

SGS globally launched a safety campaign in September 2022 with the theme "See something, say something"

In line with SGS new safety Vision, this 2022 Safety Month was a natural follow-up on how caring can be "lived and acted" every day. During the whole month of September, SGS team acquainted with OSCAR and felt comfortable dealing with unsafe acts.

O	OBSERVATION	Introduce yourself Be factual without being judgemental	When I see that you are not wearing your helmet.. When I see this cable laying on the floor..
S	SAFETY FEELING	Express your concern about the unsafe situation	I feel like you can hurt yourself.. I feel that others may be at risk..
C	CONSEQUENCE	Ask what could happen Express the need to make the situation safer to avoid negative consequences	What could happen to you/to them if...? I would be less concerned if you would..
A	AGREE	Question the risk perception Explore alternatives	According to you, what are the other alternatives to do this safer.. I would like to be assured that nothing can go wrong..
R	REPORT	Report the situation to prevent risks	Lets report the unsafe situation situation together..

What does "See something, Say something" mean?

SGS deeply cares about its people and is relentlessly acting to show it. Nevertheless, protecting employees is not a "one team mission", it is a whole group's responsibility to take care of one another.

With our new vision: "Protecting People and the Environment by Promoting a Culture of Caring throughout SGS", we want employees of our company to feel that we care about them. We also want them to care for themselves and eventually care for their colleagues.

Because we are ALL responsible when it comes to the collective welfare.

However, intervening when witnessing an unsafe act is not as easy as it seems. Not because people don't care, but mostly because they want to avoid conflict, or simply not sure how to intervene and not create a scene.

That's why, during Safety Month 2022, we emphasized how intervention and feedback have many virtues, how they can help prevent accidents and build trust between colleagues.

Every year, the Safety Month brings the whole company together to reflect, review and discuss how we can look after each other and make SGS a safer place.

> To be able to focus, a person needs to become "blind & deaf", which means "oblivious" to everything around. It is a property of the brain, without which, it would be impossible for the person to operate. It's the normal functioning of the brain. So, if we see something that the other person can't see, let's dare to say something and accept that others do the same to us!"
>
> **ISABELLE SIMONETTEO**
> **PhD Neurosciences**

Spot the safety issues - Select the nine safety issues to test your knowledge

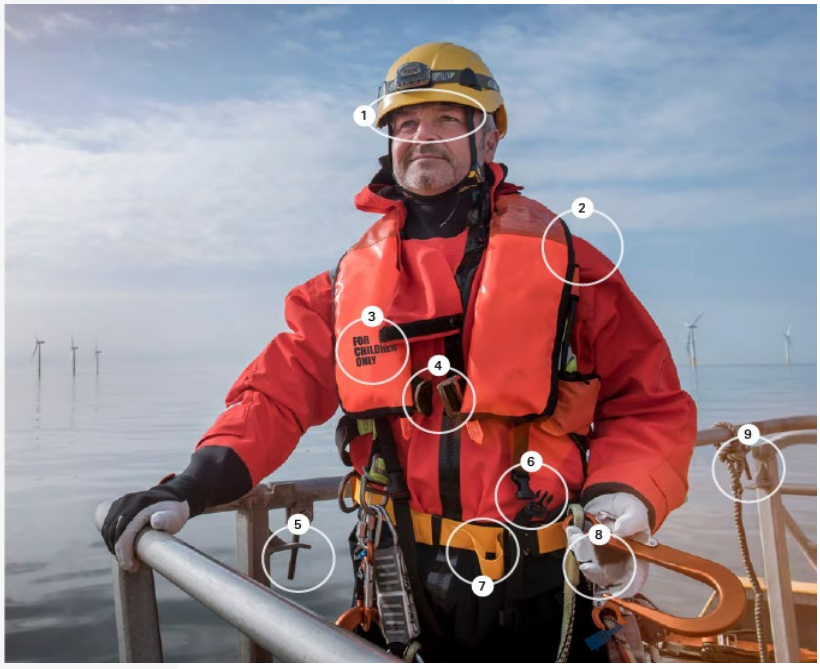
You'll see in image one (top), an SGS employee at sea in full safety protective equipment. For those of you with an astute eye, you'll notice in the second image (bottom) a number of changes which have created safety concerns.

Select the nine safety issues to test your knowledge. Good luck!

Spot the safety issues!

Answers

1. Missing safety goggles
2. Missing hi-vis from the right shoulder
3. Incorrect text from the life jacket
4. Flotation device open
5. Missing screw from the handrail
6. Open buckle
7. Waist strap fully tucked in
8. Safety hook without closing clip
9. Open handrail



Reader's Feedback

We welcome your feedback and suggestions about our newsletter at pkindiv.mkt@sgs.com

SGS Pakistan encourages your contribution to our newsletter by sending in your Technical Articles at pkindiv.mkt@sgs.com

WWW.SGS.COM

WHEN YOU NEED TO BE SURE

SGS