

InSIGHTS

On Corrosion Prevention & Asset Integrity



THE OFFICIAL NEWS LETTER OF BSS TECHNOLOGIES

VOLUME 07 | ISSUE 2021-2022

INSIDE

Electrochlorination System
Transformer Rectifier
Solar Power System
Surveys in one single pass - XLI
Valve Test & Repair Equipment
Metering Skid
Internal Corrosion Monitoring

SUPPORTING THE WATER NEED

BSS TECHNOLOGIES
INCREASED THEIR INVESTMENT IN
HYPOCHLORINATION SOLUTIONS
TO MEET GROWING GLOBAL DEMAND
FOR CLEAN WATER



www.bsstechnologies.com

24 Years

**SERVING
THE REGION
SINCE 1998**



A message from our Chairman

I could not be more proud of our employees' efforts during these unprecedented times. COVID-19 is a global pandemic that impacts all of us. We are working around the clock to ensure we protect our employees while still serving our clients who rely on our products and services we operate.

We are very excited about what 2022 has in store for all of us. This will be a year of growth and new opportunities for everyone at BSS Technologies. We appreciate your continued commitment to the company and our growth. We are confident we can make this mutually rewarding.

Our reputation is our most treasured asset and the foundation on which we have built our company. Everyone at BSS Technologies knows that the only way to protect and improve our reputation is to exceed the client's expectations, meet our commitments, innovate in our business and deliver excellence (as our mantra says "Delivering Quality is our Passion"). At this juncture of the new era, the Group is making use of its most cherished assets— its 24 years' worth of experience, its brand, its trustworthiness and its spirit to expand and evolve the business from a specialized cathodic protection company to an organization specialized in electrochemistry providing solutions in the field of Corrosion Control, Antifouling, Electrochlorination and other allied fields.

We recognize the importance of the project initiatives entrusted on us by our clients and we need to ensure we take special care to meet and exceed their business objectives. In order to achieve this we are always investing in our existing people, product development, improving our culture and work environment through activities, initiatives and creating a culture of healthy knowledge sharing through our Dubai Training Centre. We as an organization takes pride to share knowledge any number of times to the client employees, young Emirati engineers and students for national benefit. Also, at the same time attract the best talent in the marketplace as the new opportunities pour in the company.

BSS Technologies is committed to delivering excellence and aspiring to be a world class solution provider in electrochemistry. We hope you enjoy reading this updated and improved Insight newsletter and we look forward to your feedback so that we can continuously improve this along the way.

Best wishes to you and your families for a glorious 2022 from all of us at Sait Group management and corporate teams.

Warm Regards,
Faris Sari A.E. Al Mazrouei
Chairman BSS Technologies



Composite Repair Solutions

For over 30years, 3X ENGINEERING (3X) is one of the worlds leading companies specialized in pipeline maintenance using composite technology. Mainly operating in Oil & Gas industry, 3X expertise also extends to Power and Construction sectors. Developer, manufacturer, seller and installer of our products we offer to our clients a complete integrated service. From our head offices in Monaco, we operate worldwide, in any environments (onshore, offshore and subsea), thanks to our large qualified distribution network of over 60 partners.

PIPE REPAIR AND PROTECTION

REINFORCEKIT® 4D



REINFORCEKIT® 1D



OIL & GAS
ONSHORE / OFFSHORE

OIL & GAS
SUBSEA



OIL & GAS
ONSHORE / OFFSHORE

OIL & GAS
SUBSEA



ONLINE LEAK REPAIR
PIPE AND SUPPORT
PROTECTION

TANK AND PRESSURE VESSEL REPAIR



TANKIT®



OIL & GAS
ONSHORE / OFFSHORE



STRUCTURAL



STRUCTURE REPAIR
AND PROTECTION

FLANGE REPAIR (SF6)

REFLANGEKIT®



POWER

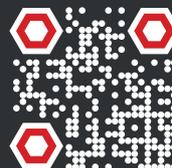
3X is member of the most active and recognized associations operating in Oil & Gas industry:



3X ENGINEERING

INNOVATIVE REPAIR SOLUTIONS FOR YOUR INSTALLATIONS

www.3xeng.com



3X products are approved by key certification bodies



Transformer Rectifier & Remote Monitoring

The key to any impressed current cathodic protection system is a reliable power unit that can provide an uninterrupted DC power supply for anode energisation. BSS Tech offers a fully comprehensive range of transformer rectifiers. Our cathodic protection engineers are available to advise the most efficient & economical transformer rectifier units for specific application. We have wide range of CP power supply types including oil cooled, air cooled, thyristor controlled and variac controlled units. Units suitable for hazardous area application with ATEX certification is also available. TR units are manufactured in compliance to latest IEC standards IEC60076 and IEC60146. Special application like concrete rebar protection needs small rating power supply units with high reliability.

Range of TR units

10V, 10A	20V, 15A
20V, 20A	25V, 15A
25V, 25A	25V, 50A
50V, 50A	50V, 75A
75V, 75A	100V, 100A
40V, 2500A	60V, 5500A

*Rating can be customized as per client requirements



- Air Cooled
- Oil Immersed
- Explosion Proof
- Pulse Rectifier
- Special Purpose
- IGBT Rectifier
- Custom Design
- **ATEX certified**

REMOTE MONITORING & CONTROL

CP Remote monitoring System is designed to effectively monitor CP Parameters, evaluate performance by conducting the tests remotely and analyse the data. Units featured here have the capability to achieve performance test and evaluation of data through RS485/FOC/Ethernet radio communication.

CATS-EYE consists of in-house RTU and software. RTU has customized hardware to provide rectifier control, memory for data logging, different modes of communication and embedded software.

Software is installed in remote PC in control room. software communicates with RTU on RS-485/FOC/Ethernet or wireless radio network. software provides all the controls required for monitoring and control of impressed current cathodic protection system.

COMMUNICATION INTERFACE

Communication Protocol	Standard Modbus RTU
Wired	RS485/FOC/Ethernet
Wireless Radio	2.4Ghz
Optical Interfacing	Yes
TCP/IP	Yes
Ethernet	Yes

CATS-EYE SOFTWARE FEATURES

- Auto Reference Mode
- CVCC Mode
- Interruption Cycle
- Alarms
- Reference Potential Monitoring & Control
- Data Recording
- Analytical Data Interpretation
- Graphical Report Generator
- Real Time Monitoring

FEATURES:



Advanced Silicon Technology for Pure Rectification.



Remote Monitoring And Control System



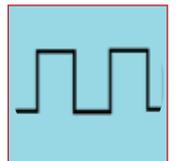
Advanced Surge Protection



Low Maintenance



Over Voltage Protection & over Current Protection for both input side & output side.



Individual ON/OFF mechanism.



Reduced Ripple for better CP healthiness



Isolated Input using high efficient step down transformers. (Double wound Isolation)

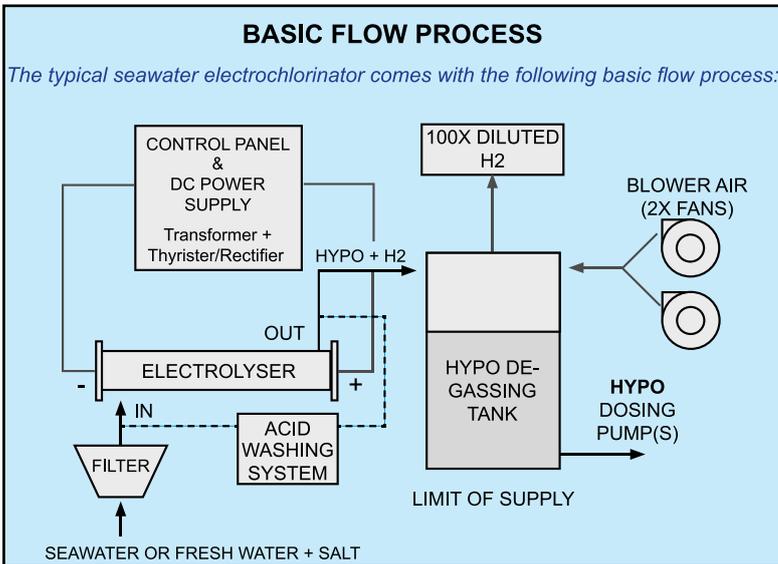
Electrochlorination System

Chlor Generators is a specialist designer and manufacturer of all types of Electrochlorination Systems and Electrolyzers. We also specialize in the replacement and refurbishment of Electrolyzers. All our Electrolyzers are designed and built in-house and comply with international standards. We are also an open source of electrochlorination technology know-how for our clients.

WHAT IS ELECTROCHLORINATION?

Electrochlorination is an electrolysis process where either natural seawater or an artificial brine solution (fresh water + salt) is converted into sodium hypochlorite solution. Salt is composed of sodium and chloride. When in solution and DC (direct current) is passed through titanium electrodes, the chlorides will disassociate to form chlorine. The process is basically as follows:

- Electrolysis occur in an undivided cell when a DC current is passed through a saline water solution
- At the anode: Oxidation of chloride ions to produce chlorine (Cl₂)
- At the cathode: Reduction of water to produce sodium hydroxide (NaOH) and hydrogen (H₂)
- Liberated chlorine reacts with the sodium hydroxide to produce sodium hypochlorite (NaOCl) instantaneously
- The overall reaction, sustained by electrical energy, is as follows:



ADVANTAGES OF ELECTROCHLORINATION:

Electrochlorination is the only 100% safe chlorine technology as Cl₂, in the form of a low concentrated hypo solution, is generated:

- on-site (at the point of application)
- on demand (only when required and always “fresh”)
- no bulk storage (because it is generated on demand)
- only basic/safe inputs are used (seawater + electricity, or, fresh water + salt + electricity)

When using an electrochlorinator, there is no need for any commercial chlorine products. It is a safe, economical and independent chlorine alternative to hazardous, high concentrated commercial chlorine products e.g. gaseous chlorine, commercial hypo and dry chlorine (granular calcium hypochlorite) It is also safe for the environment:

- no heavy metal pollution (e.g. copper or lead), and,
- chlorine decomposes back into common salt (sodium chloride) again



Fresh Water Generation



Marine Growth Prevention



Power Plant



LNG Terminal



Desalination Plant



Aqua Park



Chlor Generators

Innovating electrochlorination technologies

Chlor Generators Middle East

www.chlorgenerators.com



SAIT Group's Electrochemistry major BSS Technologies unveils factory expansion as part of their \$10m investment in Hypochlorination Solution to meet the growing global demand for clean water.

BSS Technologies, the UAE-based manufacturer Cathodic Protection and Corrosion Control solution products, has unveiled its newly expanded facility in Jebel Ali Free Zone (Jafza) as part of a \$10 million investment. The expanded plant will enable a self-sustained industrial ecosystem that will see its Hypo Chlorination Solutions to meet the growing demand for clean water, which shall cater the MENA region, the company said in a statement.

The BSS Technologies plant in Jafza South further complements the industrial strategy of the UAE to create additional in-country value creation and an expanded portfolio of Made in UAE products that can be exported to several other parts of the world. Vaseem Jaffer Sait, CEO of BSS Technologies, said: "The expansion of our facility is another milestone moment in our journey. We have always been committed to transforming our business model and be an agile organization that meets evolving market needs. Through this facility we can serve the power plants, desalination plants and any sea water handling and portable water production and distribution facilities with inhouse hypochlorite generation solutions and bridge in the supply chain gap through locally made products. BSS Technologies' expansion of its facility, despite the challenges of the pandemic, underlines the reputation of the UAE in enabling innovative businesses to thrive and will contribute significant value to the UAE economy by facilitating more exports and by supporting the domestic SME value chain."

The expansion of the UAE's manufacturing ecosystem is a priority for the UAE leadership to enhance national resources, especially in light of its recovery from the global coronavirus pandemic.

YOUR TRUSTED PARTNER IN RISK ASSESSMENT & MITIGATION SERVICES



Grounding Solution

Grounding Audit-Riser health detection, Inter and Intra grid integrity, Earth Loop impedance and much more.

Grounding system design for challenging environment, AIS & GIS upto 765kV, solar & wind farm, metro rail projects, critical and special applications by using world -renowned CDEGS software.



Power Quality Studies and Solution

Root cause analysis & solutions for: capacitor failure, VFD card failure, Resonance, power factor & more.

360-degree approach:
Harmonics, Voltage sags & swells, Flicker, waveform analysis.



EMI Studies & Solution

Control corrosion, avoid process interruptions & reduce equipment failures. Address issues of unexplained tripping, Sensor/DCS malfunction by achieving EMC. AC & DC interference in pipelines Metro rail- EMI studies and measurement.



Lightning Protection

Comprehensive Lightning Protection Solutions covering risk assessment through advanced software, design, supply, installation, testing & commissioning.

India's only brand with a complete range of Type tested LPS components as per IEC 62561(62305). Sequentially type tested Ageing, (10/350µs) 100kA Lightning impulse, Mechanical test.

HV & EHV SERVICES

- › Insulation Coordination Studies
- › Transient Stability Studies
- › Dynamic Stability of Renewable Energy Projects
- › Seismic & integrated analysis of Gas insulated substations
- › Neutral Ground Reactor Sizing

POWER SYSTEM STUDIES

- › Load flow & Short circuit studies
- › Arc Flash & Harmonic Studies
- › Protection & Relay Coordination
- › Motor starting studies
- › Power factor compensation studies

OUR OTHER SERVICES

- › Electrical & Fire Safety Audit
- › Root Cause Analysis
- › Cable Testing
- › HVAC Audit
- › Electrical Thermography & more



Sameeksha- World's First Automated Safety Audit Tool-Developed & Patented by JEF.

US file number: 17471030
EU file number: EP19929862.1

System and method for detecting a faulty connection in an Earth Grid.

 **Patent File No**
202041047863

System for detecting an electrical grounding Inter Grid Integrity.

 **Patent File No**
202141002489



JEF Shield- Automated Lightning Risk Assessment & Design Tool

E-Build- Advanced tool for remote guidance & Installation validation

THINK ELECTRICAL ENGINEERING, THINK JEF

At JEF, Innovation is a way of life

Patent applications in US, UK, EU, GCC and ASEAN



JEF TECHNO SOLUTIONS PVT. LTD.
www.jeftechno.com



Sait Group expands its facilities in Jubail Industrial area, Kingdom of Saudi Arabia

SAIT Group has expanded its facilities in Saudi Arabia by adding an anode manufacturing unit to Al Shaikh International Group for Cathodic Protection System Company (Al Shaikh CP), a joint venture in Jubail, Saudi Arabia. The facility shall strengthen the existing factory with full fledged anode casting and manufacturing unit.

This facility shall focus on producing Anodes, Transformer Rectifier, Junction boxes under its certified brand "BSS Tech". Al Shaikh CP has operated in the Gulf region since 2008 and its supply was supported by BSS Technologies through its Dubai production unit and shall continue to support the operation as before. The additional production unit will improve delivery times and flexibility for Saudi Arabian customers, and also increase capacity in the Gulf region.



industry's share of the total market is large and the construction activity in oil & gas sector is on a high level. Local presence also with production operations means flexible, on-time and cost-efficient deliveries for our customers", states Gen. Abdullah bin Yahya bin Ali Al-Zahrani, Director, Al Shaikh CP - Saudi Arabia.



The facility was inaugurated by Gen. Abdullah bin Yahya bin Ali Al-Zahrani, Director, Al Shaikh CP and Vaseem Jaffer Sait, Managing Director, BSS Technologies.

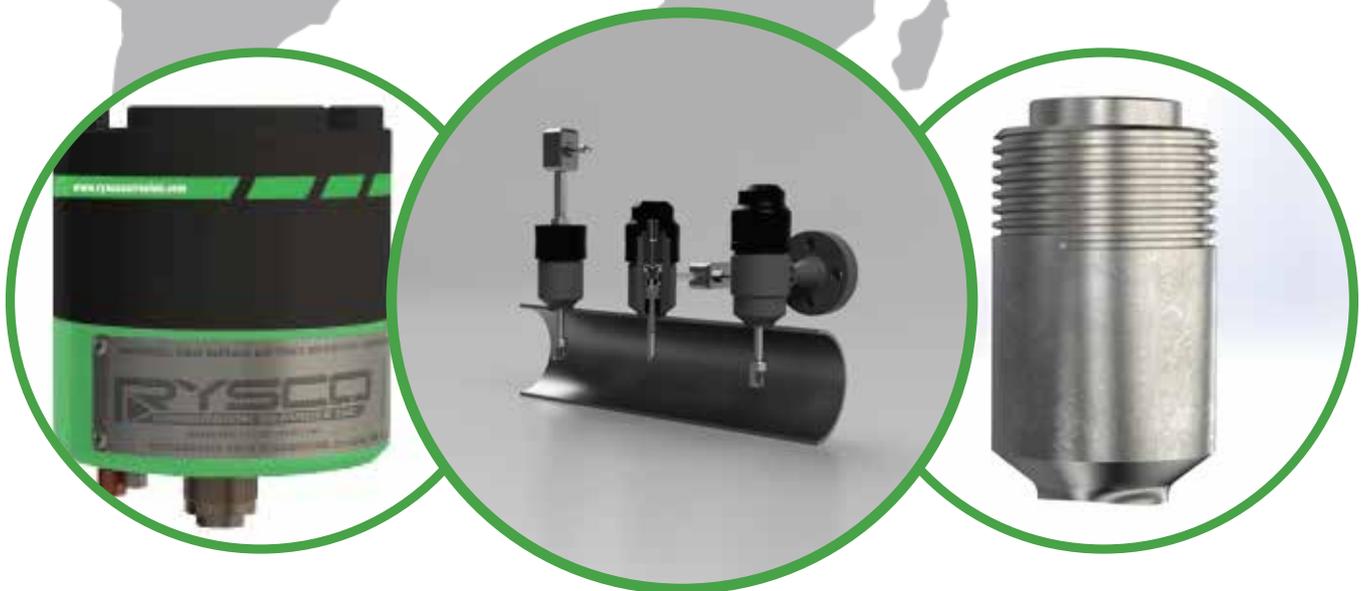
"The Saudi Arabian market is important for SAIT Group, as in global scale the Cathodic Protection



Internal Monitoring

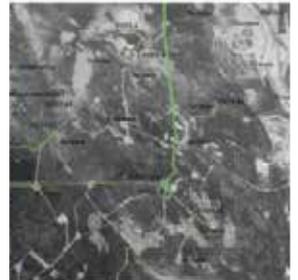
RYSCO CORROSION SERVICES

www.ryscocorrosion.com



Ensure the **Integrity** of your infrastructure

Best in class Internal/External Corrosion Services and Equipment





BSS Technologies through its two dedicated renewable energy arms contributed developments in professionally designed photovoltaic solar power systems. A comprehensive range of solar modules, charge controllers, telecommunication power supplies and custom made solutions.

MAJOR ACTIVITIES INCLUDE

- ◆ Solar power supply for Cathodic Protection Systems.
- ◆ Powering up of remote telemetry units (RTU) for pipelines and well heads.
- ◆ Powering up Instrument loads at well heads and unmanned locations.
- ◆ Powering up monitoring and control systems SCADA.
- ◆ Independent facilities. (site offices, labs, temporary structures etc)
- ◆ Customized controllers for solar application.
- ◆ Detailed engineering design and feed for new solar establishments.
- ◆ Operation and maintenance services for solar power plants/systems.
- ◆ Revamp and upgradation of existing solar facilities.
- ◆ Energy audits and energy saving feasibility study.



VALVE TEST & REPAIR EQUIPMENT

Today, the service division of the oil and gas sector is going through hard times. The pandemic has made its own adjustments to the planned shutdowns for the repair of oil and gas enterprises. However, many experts claim that the light at the end of the tunnel is already visible. The coming year promises to be eventful, as maintenance works cannot be postponed indefinitely.

In current market environment, oil and gas enterprises are forced to reduce operating costs and carry out maintenance with the lowest logistics costs, but with a high degree of responsibility, quality and safety of personnel. Understanding the difficult situation in the market, here in Revalve we have developed a unique solution in the field of mobile workshops, which will allow its operators to carry out repair and calibration work with various types of valves, such as control, shut-off and safety valves up to DN 12 inches, with hydraulic and pneumatic pressure up to 10000psi. Newest mobile workshop model: MM-TR-20 based on 20 feet high cube sea freight container has been designed to be universal solution that can cover diversified works scope, on the most cost efficient basis.

Following the latest standards for the personnel safety during high pressure testing, we have developed a remote control system for the high-pressure test process, completely isolated from the test pressure. The operator's section is isolated from the test area by an armoured wall; the test process is controlled by a pressure isolated

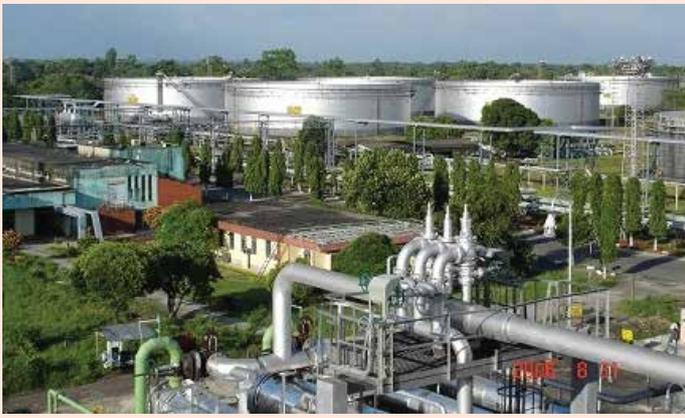


remote control panel and monitored through a video surveillance system. Test process is semi-automated and test results are recorded by computer registration system. All above features deliver ultimate safety of the test process and accurate test results. Despite the market fluctuations, REVALVE and our partner in the UAE, BSST, are ready to support our valuable clients in the UAE and the Gulf countries with stock available solutions.



 **REVALVE**





BSS Tech CP India

successful business operations in India

The company was established in 2015 with a focus on providing state-of-the-art product & services. Today, it has come a long way and is a synonym to a trusted BSS Tech certified brand in Cathodic Protection & Corrosion Control. Prashant Naik, General Manager Operations at BSS Tech India, says, "On behalf of the entire BSS Tech team, we would like to sincerely thank everyone who helped us to reach this milestone. The last few years have been filled with challenges, hard work, dedication, innovation and a lot of success. We are very thankful to all our client, suppliers who have been closely aligned with us.

BSS Tech CP India feels proud

to complete successful commission of Cathodic Protection Systems for entire Bongaigaon Refinery project of IOCL in the North East region of India which was inaugurated by our PM, Mr. Narendra Modi. BSS Tech was the only contractor who had teamed with EPC contractors like LNT, Technip Energies & Fabtech Projects for various applications like U/G Plant Pipelines, Mounded LPG Bullets, U/G Vessels etc. BSS Team has fulfilled its commitment & delivered with satisfaction, in spite of challenging conditions during COVID-19 pandemic.



IOCL's new INDMAX fluid catalytic cracking(FCC) unit at its 2.35 million-tpy Bongaigaon



BSS Tech TRU Unit at Bongaigaon

The birth of BSS Tech was marked in early 1998 in Abu Dhabi, UAE. As a global company, BSS Technologies prides itself on decades of designing and manufacturing of excellent products both locally and internationally. BSS Technologies has won many recognitions for its products like Anodes, Transformer Rectifiers, RMCS, etc. BSS Tech is all set to deliver top-notch products globally and has also become one of the trusted brands for the Cathodic Protection and Corrosion Control. We have been consistently providing world-class products and solutions to a large number of EPC partners and PSUs in India and other countries around the world. BSS Tech has a strong network in the major cities across globe



BSS Tech Junction Boxes Unit at Bongaigaon



All-In-One Integrated CP & Coating Surveys (I0-In-One)

SPECTRUM XLI (eXternal Line Inspection)

Spectrum XLI is a proprietary system for above-ground pipeline inspection, and can be simultaneously used for GPS/GIS, depth of cover, depth of water, gas leak detection, cathodic protection survey (CP CIPS/CIS), direct current voltage gradient (DCVG), alternating current voltage gradient (ACVG), alternating current-current attenuation (ACCA), AC pipe to soil potential and soil resistivity measurements.

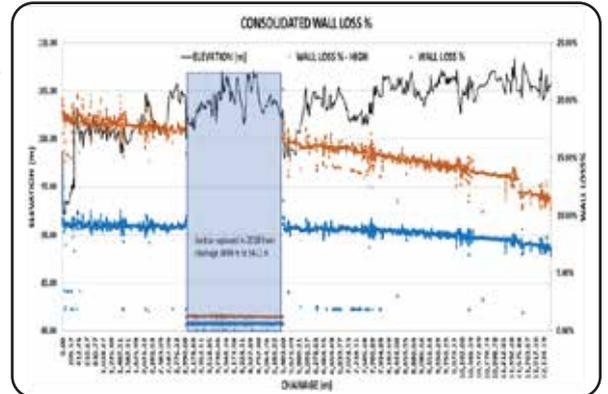


Measurements collected with XLI are recorded into secured encrypted raw logs that can be audited by a third party. Post analysis of inspection results are completed in XLI Falcon software, and done by NACE certified CP and corrosion specialists, ensuring that high quality and reliable pipeline integrity recommendations are made for each project. Spectrum XLI is an industry-leading system for ECDA, ICDA, SCCDA, GIS Mapping, CP and CIS.

Internal Corrosion Direct Assessment (ICDA)

As per NACE SP0110-2018, SP0206-2016, SP0208-2008, SP0116-2016

Internal Corrosion Direct Assessment (ICDA) is the most effective techniques to identify, control and mitigate internal corrosion of pipelines. Allied Engineers is at the forefront of conducting ICDA with 250+ and 1,800+ km pipelines assessed by utilizing NACE cited Internal Corrosion Predictive Models (ICPM).



ICPM is able to accurately identify locations with the greatest likelihood of internal corrosion taking into consideration various influencing factors such as liquid/solid holdup locations, flow velocities, temperature/pressure changes among a few.

Applicable To - Scrapable and non-scrapable pipelines

Products Applicable - Dry gas, wet gas, crude oil, condensate, water, multiphase and all types of refined products.



40+ PIPELINES
320+ REPAIRS

DIRECT EXAMINATION
DEX
1,509 SITES

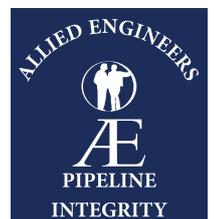
ECDA
442 PIPELINES
3,712 KM

ICDA
268 PIPELINES
1,862 KM

ILI
51 PIPELINES
6,556 KM

SCCDA
199 PIPELINES
9,028 KM

XLI
252 PIPELINES
3,015 KM



www.alliedengineer.com

Galvallopod

The Galvallopod is an aluminum anode system arranged in stable, self-contained "PODS" which are ideal for replacing depleted anodes on mature offshore assets. The pods are lowered to the sea floor and connected electrically to the protected asset via the Retroclamp system. Galvallopod was designed to replace the bracelet anodes/dual clamp-on anode by installing twice as many anodes in half the time on the seafloor which reduce installation time for anode retrofit projects, cutting costs significantly. It can be installed in less than a quarter of the time it would take to install an equivalent amount of cathodic protection anodes using traditional methods.

Galvallopod's speed of installation is the key to its success, as installation costs dominate budgeting for most anode retrofit projects. The ease of installation makes the Galvallopod system incredibly cost-effective in comparison to underwater welding or other methods of attachment.

Key factors:

- Cost Effective
- Easy and Safe in Installation
- Modular design

Metering System

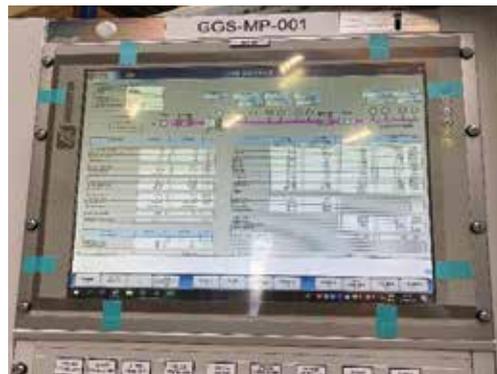
GGG Oil and Gas Systems, founded in 2006 as a specialist for integrated metering systems for natural and industrial gasses, is a Belgian based company with an world wide installed base. Over the time, GGS has accomplished a vast installed base in the UAE and amongst those, the biggest custody transfer metering system currently in operation in the area.

Besides metering GGS has the expertise as well to design and implement pressure reduction systems, filtrations systems and flow control systems. The ultrasonic meter is the heart of every metering systems, for this, GGS invested in the future by joining forces with TRANSUS INSTRUMENTS and operates since 2021 under the TRANSUS INSTRUMENTS group of companies.



Business scope:

- ◆ Custody transfer metering installation for natural gas, condensate and LNG
- ◆ Custody or non-custody metering installations for BOG (vapour return gas) to f.e. DFDE or GCU boilers.
- ◆ Custody metering installations for LNG loading.
- ◆ Metering and analysis for bunkering
- ◆ Pressure reductions installations
- ◆ Flow control installations
- ◆ Filtering installations
- ◆ Gas analysis packages, (C6+, C9+, HC and H2O dwp, H2S analyzer and Total Sulphur, Mercury analyzer, Oxygen, density and specific gravity,.. Gas manual or (semi) automatic sampler.
- ◆ LNG analysis packages, manual or (semi) automatic samplers for LNG
- ◆ Total control cabinets with computer packages and communications with decentralized Control Systems (DCS, IAS,...).
- ◆ Total mass balancing systems providing an overview of all LNG and gas transport.



Why GGS?

- Experts in gas metering market
- Flexible and easy to reach support
- Long term experience in metering applications
- Highly valuable and competent knowledge centre in Belgium (local partner in UAE for ICV and local manufacturing)
- In house manufacturing -> high quality installations
- In house service and validation team
- Experience in gas metering, gas analysis, auto sampling and data control
- Experience in LNG sampling/analysis and in-line metering



www.ggsoilandgassystems.com



Using Pipeline Simulation to support the transition to hydrogen and choosing the best simulation package for your operations

There's little doubt that transportation of hydrogen blends is going to have a significant impact on the pipeline industry. For years, operators have looked at meeting future energy demand using natural gas from traditional sources, domestic production, imported gas and liquefied natural gas (LNG), however the landscape has now changed. While climate change is not new news and world-wide agreements are already in place on the phaseout of fossil fuels in the quest for carbon neutral energy, is the pipeline industry fully prepared for this transition?

Some of the challenges facing pipeline operators are:

- ◆ A 25% hydrogen blend will reduce the energy density of natural gas by approximately 15%, ie transportation capacity will need to increase by 15% to meet the existing energy demand. Will the existing pipeline infrastructure cope?
- ◆ Pipeline controllers have years of experience transporting natural gas which their operational decisions are based on. The question "can we meet demand with compressor X out of service for 4 hours?" can no longer be answered with the same certainty.
- ◆ With multiple supplies of varying gas quality and now the addition of hydrogen, how does an operator keep track of the blended gas quality to ensure customer delivery is 'on-spec'?



Pipeline Simulation

Choosing the best simulation package

There are a few simulation packages available and most of them, given the same inputs, will produce the same results. Often operators evaluate simulation software by comparing results to the ninth decimal place and using this as the basis for a decision even if it took ten minutes to get those results on package A and two weeks on package B. Usability, reliability, cost, training, IT requirements and customer support are often overlooked. However, accuracy is important and to facilitate accurate modeling of H₂ and H₂ blends there are a few key things to consider.

Equations of state

Hydrogen/natural gas blends need to be accurately modeled from 0% to 100% hydrogen. Older equations of state found in many of the available simulation packages such as BWRS are based on the critical properties for the individual components and do not include interaction coefficients for hydrogen. Modern cubic equations like GERG 2004 are explicitly fit to the behaviour of mixtures, including hydrogen blends and is a better choice.

Pipe equations

A pipe equation determines the friction factor of a pipe or how much pressure-drop there will be due to friction for a given flowrate. Older pipe equations such as Panhandle were specifically developed for natural gas and restricted to a specific range of pipe diameters. The Colebrook-White pipe equation is known to be accurate for hydrogen blends. The fluid doesn't have much impact on the friction factor as long as there's either single-phase liquid or single-phase vapor flow.

Why do you need it?

Organisations make decisions on specific requirements rather than looking at overall business needs. This can lead to multiple tools being used in different business units, reducing efficiency and increasing costs. Simulation tools can be used offline for planning and capacity analysis or detailed transient studies. Offline simulation models can form the basis for detailed training and qualification systems for pipeline controllers.

Online simulation can provide a real-time decision support tool to provide control rooms with the information to make correct and informed operational decisions allowing a pipeline to be run safely and efficiently without jeopardizing security of supply. Many online simulation systems also provide lookahead modeling, a valuable tool that can provide confidence in short-term operational decisions, survival-time analysis and 'what-if' modeling for contingency planning in an unplanned event such as very high demand or a capacity restriction.

If your business need is for one specific function, then the decision is a relatively simple one. If, however different functions are required across the organization then a package that meets all your requirements should certainly be considered and it's important to ensure that the same configurations are used across all functions to avoid duplication of effort.

ATMOS
INTERNATIONAL
www.atmosi.com

The Ghaf Tree: The National Tree of the UAE

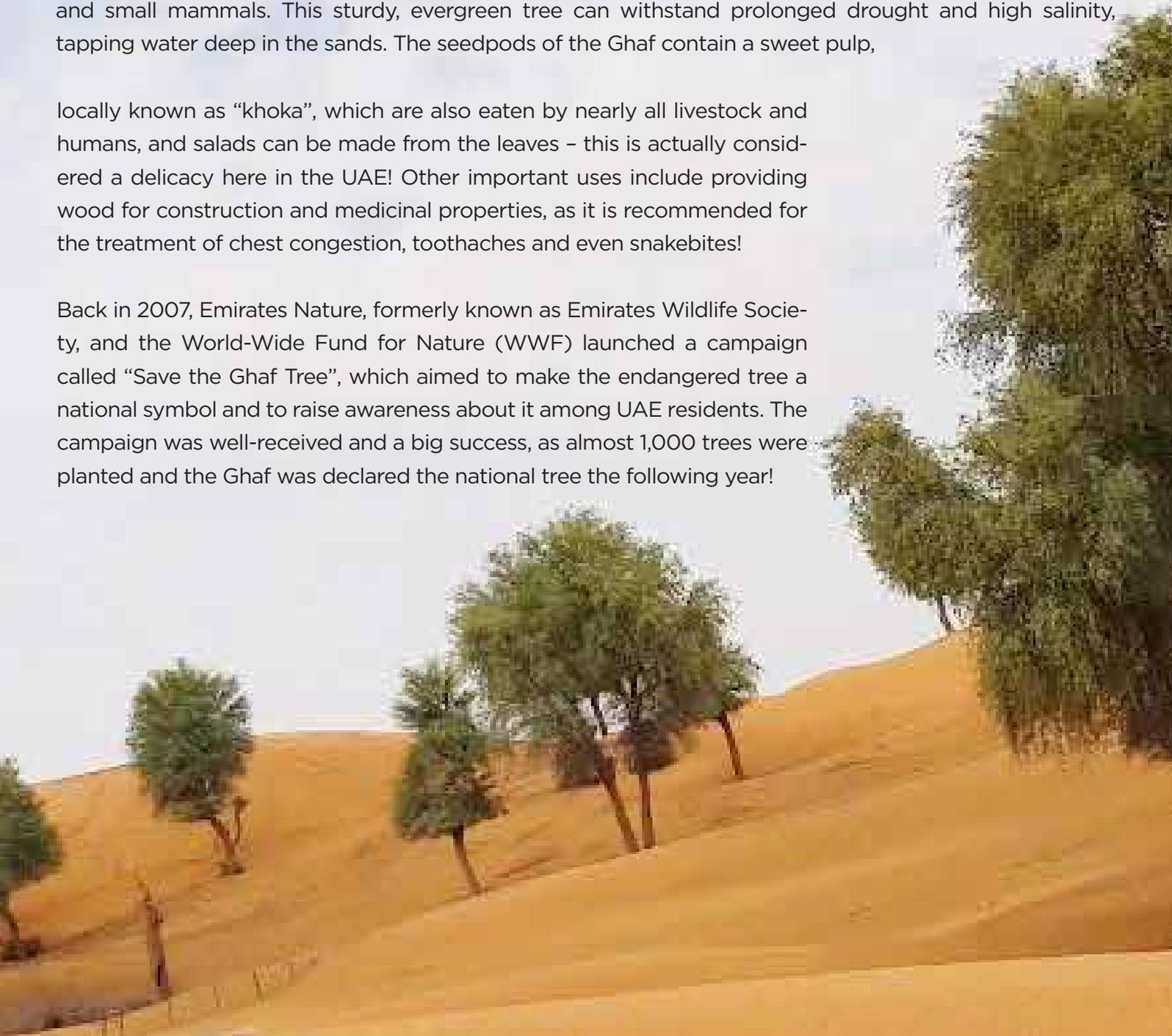
The Ghaf plant, (*Prosopis cineraria*) known as Ghaf, Harb, Awd, Hadheeb, Shibhan, فاع is a keystone species having multiple beneficial uses from combating climate change, desertification and improving soil fertility in the desert and arid environments. It is also an essential food source, as well as a source of fuel, shelter and medicine for both humans and animal species. Many birds build nests on the Ghaf - Desert eagle owl, Brown-necked raven, Yellow-throated sparrow and Long-legged buzzard are examples.

It was heavily used by the Bedouins as its seeds and leaves were once used instead of rice, its extended pods provide food for animals which in turn supply milk, butter, cheese, and meat.

The Ghaf woodlands also support large populations of insects, which in turn provide food for reptiles, birds and small mammals. This sturdy, evergreen tree can withstand prolonged drought and high salinity, tapping water deep in the sands. The seedpods of the Ghaf contain a sweet pulp,

locally known as “khoka”, which are also eaten by nearly all livestock and humans, and salads can be made from the leaves - this is actually considered a delicacy here in the UAE! Other important uses include providing wood for construction and medicinal properties, as it is recommended for the treatment of chest congestion, toothaches and even snakebites!

Back in 2007, Emirates Nature, formerly known as Emirates Wildlife Society, and the World-Wide Fund for Nature (WWF) launched a campaign called “Save the Ghaf Tree”, which aimed to make the endangered tree a national symbol and to raise awareness about it among UAE residents. The campaign was well-received and a big success, as almost 1,000 trees were planted and the Ghaf was declared the national tree the following year!



Digitized PinBrazing & Smart Cable Protection

Connect CP Cables fast and safe!

Safetrack® patented digitized PinBrazing system is an extremely efficient, low temperature arc brazing method used for attaching electrical connectors to steel structures within Cathodic Protection systems such as pipelines, vessels, reinforcement bars, wind power, grounding, etc, without the need for welding. No need for different carbon moulds for different wires. Safetrack® application methods always use materials of the highest quality to ensure the best electrical conductivity, corrosion resistance and strength



ECONECT© PinBrazing Unit - Lightweight, automated equipment



- High capacity
60 connections per charge
- Battery powered
Nano Li-Ion, long life
- Automated Gun
Self adjusting (patent)
- Digitized
Same perfect result everytime (patent)
- Lightweight
Only 9,8kg (21,6 lb)



Advantages

- No special training needed
- No waste of consumables
- Automated Gun
- Low temperature
- Low noise
- Fast & safe

Protectus Panzar™

Divisible subsea cable protection



SAVE OUR PLANET!

- Made from 100% recycled plastic
- Massive savings in oil
- Huge savings in CO2
- 80% lower environmental impact



Protectus Panzar™ is developed in close cooperation with experienced installers and is suitable for use in a wide area of conditions. Our own weights can be mounted in several ways and the construction makes it possible to fasten Panzar™ in rocks/mountains. Tool-less installations both in subsea applications as well as above water. The cables are 100% protected at all times



www.safetrack.se

An industry leader in Engineering, Construction and Project Management

A multi-discipline engineering and contracting company serving the in Oil & Gas, petrochemical, water & power industries with their expertise in Turnkey / EPC projects in sectors including Pipeline, Civil, Mechanical, Electrical and Instrumentation works

With an extensive network of regional business contacts and relationships, coupled with a synergy of knowledge and expertise from a multi-cultural staff with the highest standards of professionalism and integrity, SSEC is well situated to play a leading role in the field of industrial project in UAE. SSEC has been certified with ISO 9001, 14001 AND OHSAS 18001 certifications to prove their Quality and HSE commitments to the industry.

- **Engineering, Procurement and Construction (EPC)**
- **Engineering Automation & Information Management Solution**
- **Construction (Civil, Mechanical, Electrical & Instrumentation)**
- **Conceptual Studies**
- **Piping and Pipeline Construction**
- **Feed and Detailed Engineering**
- **Turnkey Projects**
- **Shutdown Projects**
- **Maintenance, Upgrade & Retrofits**
- **GIS and Specialized Engineering**
- **2D and 3D Draughting**
- **Cathodic Protection**
- **Pipeline Coating and Composite application**

WE DELIVER QUALITY SERVICES

**WITH NO COMPROMISE IN
HEALTH, SAFETY & ENVIRONMENT**

P.O. Box: 130659 Tel.: +971 (02) 5533 233 info@ssec-uae.com
Abu Dhabi, U.A.E. Fax: +971 (02) 4460 800 www.ssec-uae.com

PCMS Pipeline Construction Management System

PCMS is an affordable, easy-to-use solution that integrates planning, GIS, construction, documentation and asset management into one program with a built-in interface to enter and retrieve information. Location and Status of each Pipe and Fitting gives the answers to when and where.

The system is designed to help you remember every single line item, right down to the last nail. Using a proven dynamic query generation method that's much faster than a traditional spreadsheet, PCMS draws from an extensive database of field data. Its flexible reports provide you with a number of ways to analyze construction progress linked with work procedures and material certificates

WEB & GIS Based Solutions;

- **PCMS - Pipeline Construction Management Solution**
- **PAMS - Pipeline Asset Management System**
- **SmartGasNet - City Gas Networks**



SmartGasNet

- **Route Planning and BOQ Generation**
- **Construction Management**
- **Asset Inspection & Maintenance**
- **Outage Management**

We at JPAC, a Software Solutions company have developed applications for Oil & Gas, Water and Utility Networks. Being associated with the industry since two decades, 75 projects and 700 months of project experience covering more than 26000KM of pipelines combined, has helped our applications evolve intrinsically to a very exhaustive and robust system. JPAC's solution PCMS (Pipeline Construction Management System) is a mandatory part of all major Pipeline Construction Projects across the globe.

Our well alloyed team of professionals comprising of specialists from Technology, Services, Operations and Projects have made the solution using cutting edge technology, robust architecture and simple design. This has helped our customers harness the infinite potential of Information Technology and Business Analytics to optimize their business growth and enhance Quality.



www.jpactech.com

- **Hydrocarbon Pipeline Infrastructure**
- **City Gas Networks**
- **Water Transmission & Distribution**

SALIENT FEATURES

- Hosted Application
- Pipe Tracking using BarCode
- Field Entry From Handhelds
- Handheld App with BarCode
- Instant Report Generation
- Report Approval System
- Generation of PipeBook
- Generation of Progress
- View Color Coded Activities
- Assets with Attributes
- Cut Pipe Nomenclature
- Linked Quality Reports
- Linked NDT Films
- Inbuilt Report QC
- Mechanical Completion
- Completions Management



What We Do To Enjoy Life !



Happiness and sadness are two aspects of life. Sometimes you experience extreme happiness and sometimes unbearable sadness. This is life. To keep yourself mentally and physically healthy you have to forget the sadness as soon as possible. You have to enjoy your life. You can't purchase enjoyment from any market. There are thousands of rich people in the world who have no enjoyment in their life. This proves that enjoyment don't see rich or poor. You have to make your mind to enjoy the life. It is all your mind which decides your mood. We remain busy whole life to earn money. We have to keep sometime for self-relaxation and self-enjoyment. It is really very important part of our life. There are millions of things in this world to enjoy, so just explore them and enjoy your life.

Learn new things: This is the top most thing that you can do to enjoy your life. Learning new things always makes you happy. You can learn new language, recipes or anything of your choice. There are thousands of things to learn in each field. For example, if you have interest in marketing you can learn about digital marketing, search engine optimization and also learn about social media marketing. There is no end for learning. A human being learns throughout the life. Learning new things refresh your mind and it also creates so much curiosity to learn unique things. You will definitely enjoy while you are learning something new.



Explore new cities or countries : Exploring new places are always a great idea to enjoy your life. Every cities and countries have its own history, culture and tradition. Exploring new places always gives you a different perspective to understand the life. You will definitely get inspired by the history of many popular countries. A new city or country has many things to explore. A new place, interaction with new people and culture is perfect source of enjoyment. You also see that many people plan at least a long trip in a year. This is because they want to spend some time in exploring new things in this world. Every city and country have unique features. Thus, if you really want to enjoy your life then start exploring new places.



Relax yourself : For the real enjoyment of your life you need some time to relax your mind and body. In this hectic life we do not give time to our body to relax. We always remain busy in our work which makes our life so boring. You have to give some time to relax your body and mind. Do nothing just sit on a comfortable seat and listen your favourite music. This self-relaxing therapy is the perfect joy of the life. You will definitely feel peace and joy in your life. You can also spend this relaxing time with your parents, friends or loved ones. The only thing you have to remember is that you should not pressurize your mind or body in this relaxing time.





Avoid negativity : Come out of the world which spreads negativity, especially the news channel. They show news less and negativity more. To enjoy the life, you have to cut your relationship with negativity. It can be your friends or your bad habits. Try to break relationships with such friends who generally speaks hopeless things and have no vision in his life. You also have to break up with bad habits like smoking, drinking or gambling etc. These all habits are the evil of your life. The combination of bad friends and bad habits makes your life disgusting. Always remember that a good enemy is better than bad friend. So, if you want to enjoy your life, break up with bad friends and bad habits.

Celebrate little things : For the real enjoyment of life, you have to find happiness in little things. You have to enjoy the little event of your life. You just have to find the reason to laugh and enjoy your life. Always try to celebrate your success no matter it is big or small. To enjoy the life, celebrate the special events of your life with your family, friends and relatives. Celebrate your birthday, promotion, wedding anniversary for the enjoyment of your life. These events will give you lots of joy and most valuable memories. Always try to celebrate the everyday of your life. Life is full of colours and happiness. So, enjoy your time and make your life awesome.



Forget the bad past : Everyone have some bad past some sad memories in life which makes us weak. To live a happy life, we have to forgot all the bad experiences of our life. We have to be focus on your present and think about your future. You can't change the past but you can change your present and future. So, forget about your sad memories. Always try to focus on your present. A bad experience gives you a lesson to act better in future. So, just learn the lesson and forgot about your past. Note one thing that you can enjoy your life with the baggage of past. So, just forget whatever happened in your life and enjoy your present.

Love Yourself : You will love the world when you feel good about yourself. Self-care is the foremost priority of a person. If he is not loving self then he can never live a happy life. The best formulae to live a happy life is love yourself. If you love yourself then you always create a good perspective about others. If you think that you are useless, worthless and abuse yourself then it will make your life miserable. Loving yourself builds your confidence and you will able to nourish yourself. You have to remember one thing always that you have different qualities which makes you unique and you are capable as others. Try to talk to yourself. It will help you to create self-confidence. If you really want to enjoy in your life then you have to love yourself.



The nature gives us only one chance to live a life. Life is so important. You cannot waste your life. Try to understand the importance of life. If you are not understanding the importance of life then meet those people who have less time in their life and suffering from lethal diseases. Thank your God and parents who gave you a great life. This world has many things to enjoy. So, just find out joy and happiness in all things. Do not spoil your valuable life. It is priceless. You can do many things to do to enjoy your life.

Monolithic Insulation Joints

Monolithic Isolation joints shall be boltless and completely factory assembled in accordance with the appropriate requirements of ASME, ASTM, API, DIN, DEP, SHELL, NACE and BS codes. Insulation material is a thermosetting fiberglass epoxy material. NEMA G10/11. Sealing of Viton - AED "O" rings and specially designed all types of seal O rings to suit the different media & applications. Interior and exterior coating by epoxy with minimum 300 microns. - Dielectric Resistance @ 5 KV - Isolation Resistance >25 Megha ohms. All types of Insulation joints will be Designed According to ANSI/ASME B31.3/4/8 & ASME VIII Div.1 and we are having the design simulation for each IJ's including FEA analysis. An isolation joint is used to electrically "split up" long pipelines into distinctive system. Or to isolate and ensure that CP or stray electricity currents do not cause increased corrosion. For onshore projects, an isolation joint is used to limit the spread and hence cost of cathodic protection current to those pipes that need to be effectively and economically protected by the main CP system.

APPLICATION: Suitable for flow media such as natural gas, crude oil, kerosene, gasoline, propane, butane, coal gas, ethylene, nitrogen and drinking water - Media such as sour gas and oxygen require special material

- INSTALLATION ABOVEGROUND / UNDERGROUND
- HYDROSTATIC TEST 1.5 Times the Design Pressure
- DIELECTRIC TEST 1.5 to 5 KV @ 1 minute AC 50 Hz
- ELECTRIC INSULATION TEST > 25 MΩ @ 1000 Volt DC
- Bevel Ends MPT /UT According to ASME Section VIII
- NDT: RT, UT, MPT & DPT.
- CERTIFICATION EN 10204 - 3.1 (EN 10204 - 3.2 if request)



**IGP
GROUP**
www.igp-group.com

Electric Heat Tracers

We take pleasure in introducing ourselves as a leading company in providing Electrical Heating & Heat Tracing Systems. Our products/systems are extensively used in various Fuel Oil installations/process industries and are operating satisfactorily with impeccable record in more than 500 Public and Private Sector units.

The Quality Management Systems of the Company conform to the requirements of ISO-9001 – 2008 standard and certified by M/s Bureau Veritas Certification & had ISO 14001 & 45001 Certifications as well. Thermopads range of products have various certifications like UL, CSA, VDE, CE, EAC, BASSEFA, SIRA, ATEX, IEC Ex. Our qualified Engineering team well supported with full fledged computerized designing network ensures to provide best cost effective systems suitable for the project/process requirements and qualified project team guarantee timely execution and trouble free performance of the heat tracing systems.

Thermopads Pvt. Ltd. is a complete turnkey solutions companies specializing in the field of turnkey installation comprising of Design, Engineering, Production/Procurement/Fabrication, Supply, Installation/Erection, Testing & Commissioning of Heat Tracing systems for various industries viz. Power Plants, Refineries, petrochemical plants, Metallurgical Industries, Oil Terminals, Cement, Sugar plants etc. exporting the products globally to almost 45 Countries.

With in-house design and engineering facilities and a team of dedicated technical professionals Thermopads ensures world class services to its clients. Our project team ensures complete project planning and implementation to meet the toughest project schedules. The spirit of continual partnership with customers to offer state-of-the-art technological solutions is backed by our four decades of experience.

World Class Heating Solutions to suit all your requirements

Industrial Heaters

- Heating Cables
- Heat Tracers-Cut to Length
- Heat Tracers-Factory Terminated
- HTT - Power Limiting / Regulating
- Self Regulating Tracers
- Heated Hoses
- Hopper Heaters
- Heating Jackets
- Insulation Pads
- Drum Heaters
- Heating Mantles
- Thermo Heating Blanket / Blade Repair Mat
- Mould Plug Heating Cable HE1



Electric Heat Tracers



Thermopads
www.thermopads.com

Established in the region for more than 24 years, we have more than 600 people in 12 countries across the MENA and APAC region, working to add value to our clients through fulfilling their business needs.

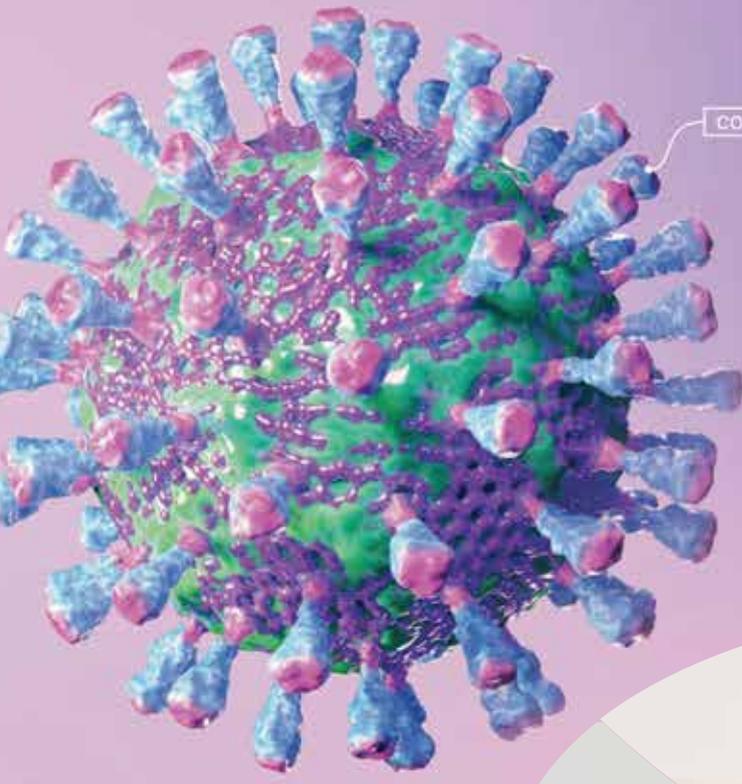
Health, Safety and Environment Culture

We are committed to the prevention of injury and ill health at our offices for our employees, clients, contractors and visitors, where we undertake several occupational health and safety measures in order to guarantee the continual improvement of our occupational health and safety management system and development of a positive health and safety culture by engaging our stakeholders effectively. Moreover, we seek to take appropriate measures to continually improve our environmental performance by adopting and integrating recognized best practices into our business activities.

In context of the above, we aim at:

- Providing a safe working environment that exercise control over occupational health and safety hazards
- Reducing our consumption of resources and improving the efficiency of resource utilization
- Incorporating a reduce, reuse, recycle culture within our offices and lines of services
- Considering environmental and social impacts of procurement of our goods and services
- Considering our environmental issues and energy performance in the acquisition, design, refurbishment, location, management and use of our buildings
- Considering the reduction of the environmental impact of our business travel
- Providing employees with proper trainings that are identified through our training procedures
- Monitoring, reviewing, and continually improving our health, safety, and environment objectives and programs





COVID-19

BSS Technologies has adopted an infection control strategies based on a thorough hazard assessment, using appropriate combinations of engineering and administrative controls, safe work practices, and personal protective equipment (PPE) to prevent worker exposures. Some COVID HSE standards that apply to preventing occupational exposure training to SARS-CoV-2 are being given to workers on elements of infection prevention, including PPE.



Ebola



Creating a culture of healthy knowledge sharing which BSS Technologies takes pride on.



BSS Technologies' is increasingly serving not just internal clients (employees) but also learners outside the organization, such as external partners, customers and the most important young engineers. "Training and enablement is the key to nation building and revenue health," says Nadeem J Sait, CEO and co-founder of BSS Technologies, "and that's a change that's really happened with the subscription economy." While companies used to focus on customer acquisition through a perpetual license model, customers now have choices and can renew their business or find a different company every year or even every month. It's no longer enough, Nadeem says, "to sign a customer and then wait for the support tickets to roll in. That's not going to be sustainable going forward." Nadeem believes that customer training professionals "are going to be the heroes of our organization."

Nadeem says his company is "a knowledge sharing platform that provides all of the tools and resources" to make their customers and external partners successful. Having a successful customer onboarding program will start relationships off on the right foot. Knowledge sharing—the exchange of information across an organization, clients and young aspirant engineers—has never been technically easier thanks to software, digital communication tools and the internet. Yet, the more information there is the less workers are generally inclined to share it with one another. That means business leaders

share it with one another. They must strive to streamline, even incentivize, the collaborative exchange of expertise. Ultimately, knowledge sharing promotes the healthy, sustainable growth of modern businesses, regardless of industry.

BSS Technologies' Training Centre offers learning opportunities and is equipped with a fully operational training center, which offers a variety of learning opportunities and is dedicated to the nation which will provide training & skill development to the local Emiratis. The trainings program is playing a valuable role in facilitating hands-on-training to the young engineers and engineering students.

The facility has a wide range of state-of-art equipment, from the huge furnaces, metal casting stations, to the fabrication yard, the Transformer Rectifier manufacturing unit and sophisticated machineries and tools used in the manufacturing process. The training center can accommodate 25 students per session. The training includes classroom session and the technical workshop where they get hands-on-training in all CP product lines. Interactive learning methods feature prominently at the training, learning games and product touch & feel designed to engage trainee and enable them to explore real-life scenarios.

After successful completion of the training the engineers are given certificates for the successful participation on this program.



Sait Group employee Anand Kumar's daughter Mahalekshmi Anand Breaks World Record

Mahalekshmi Anand, a KG-2 student from India, shocked the world by having TEN record titles to her credit. Mahalekshmi's father, Anand Kumar, is an Engineer at Sait Specialized Engineering & Contracting (SSEC), Abu Dhabi. He was thrilled by Mahalekshmi's big wins and is a proud father to see this historic moment. We as a SAIT Group is equally proud to witness the moment as family. The only daughter of Engineer Anand Kumar and Neena Anand, Mahalekshmi's interest in learning and memorizing was identified by her parents when she was just one-and-a-half years old. Currently she holds the world records in three different categories:

1. India book of records , British World Record, Kalam world records, International book of records for identifying photos of 44 scientists and recite inventions in 1 Minute.

2. India book of records, British World Record, champions world record, International book of records for Performing 81 Bharatanatyam mudras in 52 seconds.

3. International book of records, British World Record for Reciting 28 states and capitals of India in alphabetical order in 17 seconds.

The little genius received her first record title at the age of five, as the youngest to identify the most number of scientists and their inventions in a minute. Under this category, she bagged one national record (India Book of Records) and three world records (International Book of Records, British World Records, and Kalams World Records for Extraordinary Grasping Power Genius Kid). "From a very young age, she was keen on learning. We realised her potential when she began to memorise and recite whatever we taught her or showed her from a book. Her thirst for knowledge was deep by the age of three. "She began to learn names of the scientists and their inventions alphabetically," said Engr. Anand Kumar.





Corrosion protection has never been so easy.

Reliable and permanent protection of pipe sections and weld seams are one of the main challenges in pipeline construction. A wide range of often time-consuming processes that differ for each application have previously been used worldwide. Until now.

SEALID® All-in-1 is a patented innovation for universal application and the first to protect against corrosion as well as mechanical loads in a single step, without the need for any primers or other devices.



بن ساري للتقنية المتخصصة
متخصصون في أعمال التحكم في الصدأ والتآكل والوقاية الكاثودية

B.S.S. Technologies

Specialized in Corrosion Control & Cathodic Protection

A SAIT GROUP COMPANY

www.bsstechnologies.com

InSIGHTS Magazine volume 07
Totally in-house publication

Sajid Haroon

Editorial Chief, BSS Technologies

Email: bsstech@bsstechnologies.com

Printed at: Pen Printing Press, Ajman
Tel: +971 6 743 9250 | Fax: +971 6 743 9260 | Email: penprinting@gmail.com

Content source : In-house, principles, general public media