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JUBAIL, YANBU: STARS DRIVING DIVERSIFICATION

The industrial cities of Jubail and Yanbu, essential elements in Saudi Arabia's ambitious plans of diversification, are where national technological potential and advancement is concentrated



Jubail Industrial City ... a key pillar of Saudi Arabia's economic diversification plan

THE first quarter of 2020 ushered in news of a promising future for Saudi Arabia's two main industrial cities, Jubail and Yanbu, where requests for investment worth billions have been pouring in despite the crippling economic effects globally of the Covid-19 pandemic.

The Royal Commission for Jubail and Yanbu (RCJY) said it had attracted investments worth over SR50 billion (\$13.3 billion) during Q1, the country's national news agency SPA reported, citing Abdullah Al Saadan, the RCJY Chairman.

Applications for investments worth SR29 billion were for Jubail alone.

Out of the combined SR1 trillion volume of investments in Jubail and Yanbu, the former has the lion's share of SR755 billion. Its production capacity has exceeded 148 million tonnes of materials annually.

A small fishing village until 1975, Jubail Industrial City is today the world's largest industrial area and home to the fourth largest petrochemical company (Sabir) on the planet. It also has the world's largest Independent Water and Power Project (IWPP), which produces 800,000,000 litres of water

and 2,743.6 megawatts of electricity per day.

The Jubail Industrial City is estimated to have 116,000 workers who live in 39,000 residential units in 11 residential neighborhoods.

The government clearly acknowledges the contribution of the industrial cities, and the private sector in general, to the national economy. It was no surprise then when it announced several initiatives to support the private sector.

The Kingdom responded swiftly to limit the impact of an economic downturn set in motion by the global coronavirus pandemic. It outlined an extensive scheme of national measures targeted towards supporting the private industrial and mining sectors, reported SPA.

Mandated by a royal decree, the Ministry of Industry and Mineral Resources launched 27 measures to address matters directly affecting private industrial and mining enterprises and investors. These measures include financial restructuring, exemption or deferment of fees, discount on electricity bills, loan schemes, amongst others.

Bandar bin Ibrahim Al-Khorayef, the Min-

ister of Industry and Mineral Resources said: "The initiatives for the industrial sector would have a significant impact in reducing the burden on this vital sector in the Kingdom."

Separately, Saudi's *Okaz* Arabic language daily, quoted the Royal Commission for Jubail CEO Mustafa Al-Mahdi to have said that seven initiatives had been launched to ease the negative impact of Corona pandemic on investors in the industrial and commercial sectors in Jubail.

One such move includes the extension of land lease for one year without an increase in rent, while a decision was also made to postpone actions against investors who failed to start their projects on time.

The success of Jubail and Yanbu have become blueprints for other industrial cities across the Kingdom. Last year, the Royal Commission for Jubail and Yanbu was tasked with developing and managing mining industries in Ras Al-Khair Industrial City, a sprawling complex located on Saudi Arabia's northeastern coast. The new city has already attracted investments worth SR100 billion (\$26.67 billion), an SPA report said.

NEW KEY PROJECTS

Meanwhile, both Jubail and Yanbu continue to sign investors, planning some major projects mostly in oil and gas.

Late last year, US energy technology service provider Baker Hughes broke ground on a chemical plant in Jubail, at the PlasChem Park, adjacent to the Sadara chemical complex.

The new facility, full in alignment with the country's In-Kingdom Total Value Add (IKTVA) programme, will deliver chemical-related services for hydrocarbon production, transmission, processing, as well as petrochemical industry. It will be supplied with feedstock by Sadara as part of a 20-year agreement.

PlasChem Park, a collaborative effort between Sadara and the Royal Commission for Jubail and Yanbu (RCJY), is a 12-sq-km industrial park in Jubail Industrial City II, dedicated to chemical and conversion industries.

Two other major projects with a combined investment worth of \$1.8 billion were signed by a subsidiary of Saudi-based Advanced Petrochemical Company (APC)—Advanced Global Investment Company (AGIC)—with South Korean group SK Gas. The agreement will see the construction and operation of two petrochemical facilities at Jubail Industrial City.

The propane dehydrogenation (PDH) and polypropylene units will produce 843,000 tonnes of PDH and around 800,000 tonnes per annum of polypropylene.

AGIC already has signed an agreement with US-based Lumus Technology for the supply of Catofin Technology for the 843 KTA PDH plant, and two other agreements with Basell Poliolefine Italia for the supply of Spheripol Technology and Spherizone Technology for two PP plants with a capacity of 400

Saudi Arabia has responded swiftly to limit the impact of an economic downturn set in motion by the global coronavirus pandemic. It has outlined an extensive scheme of national measures targeted towards supporting the private industrial and mining sectors

KTA each. Project management consultant Fluor has also already been signed up for the project.

Separately, Jubail is poised to become the third global site for Japanese JXTG Nippon Oil & Energy Corporation's new ethyldiene norbornene (ENB) plant.

JXTG Group is the world's leading ENB producer with one production line in Japan and two production lines in the US.

The proposed capacity of the new ENB plant to be built as part of the Amiral petrochemical complex (a Saudi Aramco and Total joint venture) is 23,000 tonnes per year and it is expected to start commercial operation in the late 2020s.

The plant's location next to the world scale mixed feed cracker of the Amiral complex will ensure the ENB plant with reliable supply of raw materials and energy.

In another key development early this year, Air Products Qudra held a ceremonial groundbreaking to mark the start of work on a world-class, fully-integrated industrial gases hub in the Jubail Industrial City.

The significant investment involves building, owning and operating a world-scale steam methane reformer (SMR) to produce hydrogen; an air separation unit (ASU) to produce oxygen



Air Products Qudra breaks ground on gases hub in Jubail Industrial City

and nitrogen; hydrogen pressure swing adsorption (PSA) units to recover hydrogen from off-gases; and the installation of comprehensive pipeline networks to connect and transport industrial gases to the broad refinery and chemical customer base in the region.

When fully operational in 2023, the industrial gases hub will reliably serve refineries and petrochemical industries in Jubail Industrial City and the whole of the Eastern Region.

The plant will feature the latest technology to maximise energy efficiency and reduce emissions, and include optimal heat integration to reduce and lower feedstock consumption.

The SMR hydrogen production plant will be the largest ever built by Air Products.

POWER AND WATER

Industrial cities the size of Jubail and Yanbu require an enormous amount of power and water to keep industries running in addition to serving the residents living within its limits and those in nearby cities. The RCJY has been facilitating commissioning of water and power projects to meet the increasing requirements.

Last month a consortium led by ACWA Power including Gulf Investment Corporation (GIC) and Al Bawani Water & Power Company (Albawani) signed a 25-year agreement with the Saudi Water Partnership Company (SWPC) for a greenfield sea water reverse osmosis desalination project in Jubail.

The Jubail 3A Independent Water Plant (IWP) will be built at a cost of \$650 million and have a capacity of 600,000 cu m of potable water per day.

According to the agreement, the consortium will design, construct, commission, operate and maintain the desalination plant as well as associated potable water storage and electrical special facilities.

A contract was awarded to Abengoa, alongside Chinese engineering and construction firm Sepco3, to construct the Jubail 3A plant.

Abengoa's scope of work, worth more than \$200 million, includes engineering, supply, and construction of the desalination plant.

Khaled Al Qureshi, CEO of SWPC, said the Jubail 3A would

feature storage facilities as well as in-house solar power to reduce burden on the energy grid. It will also be crucial in meeting growing water demand, supplying Riyadh, Qassim and the Eastern Provinces with much needed potable water, he said.

Meanwhile in Yanbu, SWPC signed a 25-year agreement for the Yanbu 4 Independent Water Producer (IWP) project with the consortium comprising France's Engie and Saudi Arabia's Mowah Company after it submitted the lowest price of SR1.7446 per cu m.

The desalination plant will be located near the town of Ar Rayyis in the Yanbu region.

The consortium's scope of works involves development, design, financing, construction, commissioning, operation and maintenance of the 450,000 cu m per day Yanbu-4 IWP.

South Korea based Doosan Heavy Industries will be the EPC contractor for Yanbu-4 IWP.

For power generation, Saudi Arabia is moving on wind project. The Renewable Energy Project Development Office (Repdo) plans to issue a prequalification request for its second planned wind independent power project (IPP) in Yanbu in the second half of this year. It will have a capacity of 850 MW.

Also, Saudi Basic Industries Corporation (Sabic) may launch its own request for proposals this year for a 300-MW solar project in Yanbu.

A feasibility study into the project has already been launched. Its results will show whether Sabic will pursue the project to power its affiliates in the region.

MARITIME FACILITIES

The industrial cities of Jubail and Yanbu are boosted by their proximity to major seaports. The King Fahad Industrial Port in Yanbu is distinguished by its strategic location on the Red Sea coast and its geographical proximity to national factories within Yanbu Industrial City, to serve the industrial complexes in the region, Madinah and its governorates in the future, and to meet all needs of the region.

The General Authority for Ports (Mawani) is keen to enhance the Kingdom's ports, by forging strategic partnerships with major international shipping lines. It aims to develop the capabilities of Saudi ports and increase their competitiveness so as to develop national exports and imports, investment flows and the development of non-oil state revenues, in line with the goals of Vision 2030.

In March 2020, Mawani announced the launch of a new shipping line, CMA CGM, connecting the Kingdom with East African countries from its Western coast. CMA CGM, the world's leading company in shipping and support services become the first container shipping line to reach King Fahd Industrial Port in Yanbu.

RCJY Chairman Abdullah Al-Saadon said the shipping line linking Yanbu Industrial City with Jeddah Islamic Port and East African ports will further help investors to reach customers at a competitive cost, which will increase volumes of import and exports in the future.

Yanbu Industrial City is home to over 200 major exporters. Approximately 80% of the industrial output of the West Coast of Saudi Arabia originates in Yanbu, including petrochemicals, industrial products, ceramics, plastics, edible oils, sugar and building materials.

In May, King Fahd Industrial Port in Yanbu received TORM Maren, the largest petrochemical ship the station has received since its establishment, with a load of 109,000 tonnes of gasoline.



Al Saadan ... leading investment in Jubail and Yanbu



ACWA Power and SWPC sign a deal for the Jubail 3A IWP project

S.A. TALKE initiates ASP – Act Safety Program

At S.A. TALKE, safety is a core value and a shared responsibility. We take pride in our best-in-class safety standards and continuously strive to improve our processes to create a safer work environment for everyone, says the company

S.A. TALKE kicked off its unique safety initiative: Act Safety Program (ASP) – For a Safer Work Environment in Q4 2018. The goal of the program is to further enhance the company's safety culture and promote awareness through a series of focused and interactive quarterly safety campaigns, which highlights different aspects of workplace safety.

The central focus of ASP is empowerment of all employees at all levels to take actions against unsafe acts and the team came up with a fitting slogan: 'No S.A. TALKE employee will tolerate an unsafe act'.

A defining feature of this program is the 'Act Now' card, which authorizes any employee to stop an unsafe act on the spot, educate the responsible party and report immediately using the card so everyone can learn from the

experience.

In addition to this uniqueness, ASP also incorporates a rewards program, which is based on key observations analyzed on quarterly basis. A safety committee selects the top Act Now cards which complies with the company's safety standards and reward those employees with a cash prize and an appreciation certificate.

Communicating the safety objectives clearly is a very important part of success in every organization. At S.A. TALKE, daily toolbox talks are the preferred platform for delivering information to large audiences. Every month, the company focuses on different areas of improvements, sets a clear agenda for communication and development changes in a consistent and standardized manner across all project sites.



Collaborative teamwork has allowed S.A. TALKE to reduce incident rates

According to the recent statistics, ASP has supported S.A. TALKE to significantly reduce the already low incident rate. With the collaborative teamwork from all employees, clients and stakeholders, the company recorded a rapid decline in both internal and external incident rate in 2019: a reduction of 51.11 per cent and 67.57 per cent respectively.

S.A. TALKE's innovative approach to safety has created a positive work environment where everyone proudly participates in shaping the direction of the team, supporting each other to become better, creating a unique safety culture and celebrating success on the way.

For more information, visit the following website: www.sa-talke.com.



The company believes that communicating safety objectives is important



SPSP launches world-class training for engineers

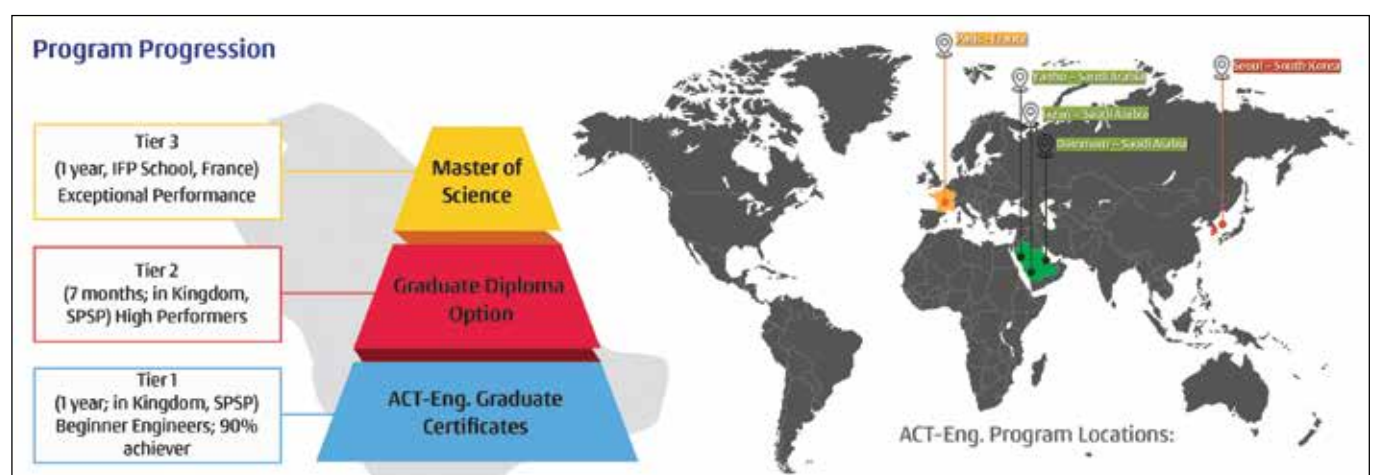
SAUDI Petroleum Services Polytechnic (SPSP) has in cooperation with IFP Training, a French institution with expertise in engineering, developed the Accelerated Competency Transformation for Engineers (ACT-Eng) program that imparts fundamental skills to engineers working in the oil, gas and downstream industry.

The certified technical and behavioral based training program was launched in January 2019. SPSP and IFP Training have provided several programs to several companies operating in the Kingdom.

ACT-Eng is a three tiers certified downstream training and development program targeting engineers from all engineering disciplines with one-year minimum experience.

In the first tier, the program has 12 modules covered in 12 months. The training delivery consists of one week in class every month followed by two to three days of on the job training (OJT) on the company's premises during the engineer's normal duties.

The one-week classroom component consists of a quiz, class presentation of a mini-project, and an exam in addition to the



The ACT-Eng program progression

Engineers Development Solutions (Based on Saudi Aramco and Joint Ventures Experiences)



OJT presentation. A final exam is conducted for each module at the end of the program. High achievers (with over 90 per cent score) in Tier 1 can progress to graduate diploma and then to MSc afterward.

The MSc program in Tier 3 is conducted at the IFP School in France and consists of a year of studies.

Furthermore, the ACT-Eng offers several benefits to engineers not to mention that it is a proven integrated and cohesive program and an international certification with gradual progression. It also teaches the students soft skills development, team working/networking, knowledge sharing between disciplines, strong and structure assessment, and structured coaching and mentoring. Engineers development solutions are based on Saudi Aramco and joint venture experiences.

To learn more about the ACT-Eng program, contact SPSP through email at info@spsp.edu.sa or through WhatsApp at +966554600720.

Onwards to a Brighter Future.

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www.ahqsons.com

Abdel Hadi Abdullah Al Qahtani & Sons Group of Companies

P. O. Box 20, Dammam 31411, Kingdom of Saudi Arabia

T: +966 13 826 1477 | +966 13 826 1635 | +966 13 826 1831

F: +966 13-826-9894 | E: info@ahqsons.com

AYTB, AIE sign new strategic asset integrity services partnership

The agreement brings digital transformation, technology and services for plant performance optimisation to Saudi Arabia and helps advance the Kingdom's Vision 2030

AL YUSR Industrial Contracting Company (AYTB) is pleased to announce the signing of a cooperation agreement with Asset Integrity Engineering (AIE), a market-leading software and asset integrity consultancy. The agreement was signed by AYTb CEO George Gourlay and Neil Flemming, Managing Director of AIE.

This new partnership will serve the oil and gas sector both onshore and offshore, as well as chemical, petrochemical and power generation industries in the Kingdom of Saudi Arabia. The collaboration will provide the latest maintenance, asset integrity, sustainability, training, software, and data analytics services which improve asset reliability and safety whilst optimising plant performance.

The UAE-headquartered company, AIE, shares AYTb's vision of delivering innovative and value-added technical solutions to a wide range of industries, as well as following the highest ethical standards in conducting its business.

AYTB and AIE complement each other perfectly. With over 150 million man-hours of maintenance work providing solid evidence of AYTb's experience, coupled with AIE's vast experience in plant integrity management to assets currently producing over two million barrels of oil per day, the partnership is ideally placed to leverage significant learning on asset performance and optimise planned maintenance through sophisticated digital solutions and services.



nance through sophisticated digital solutions and services.

Gourlay comments: "The modus operandi for plant maintenance is constantly demanding change and innovation, and to maintain profitability, plant managers are looking at ways to extend maintenance cycles whilst at the same time ensure safety is not compromised. Planning and undertaking maintenance needs to become smarter and less labour intensive. Through the AYTb-AIE partnership we aim to do exactly this - deploy smart technologies and practical

expertise that will enable plants to manage their maintenance needs efficiently and maximise their performance."

Meanwhile, Flemming comments: "Extending our integrity and reliability offering into the Mena region's largest oil, gas and petrochemicals sector was a natural progression for us. We are excited to join forces with AYTb and bring our innovative services and software to support the next stage of industry development and digital transformation in the Kingdom. We aim to build advanced capabilities in-country aligned

with the Saudi 2030 vision."

The two companies will establish a newly formed independent joint venture to offer a complete service offering within the Kingdom.

AYTB is a reputed Saudi, multi-disciplinary industrial contracting company providing a range of services and solutions to oil and gas, petrochemical, power generation and other major industrial sectors of Saudi Arabia. Boasting over 40 years of experience in construction, manufacturing, brownfield operation and maintenance and industrial services, AYTb has more than 2,000 dedicated employees in the maintenance division willing to serve the newly formed line of service while seeking their stakeholders' aspiration and clients' satisfaction by delivering quality, safe, reliable, innovative and efficient services to our clients.

AIE on the other hand is a leading provider of asset integrity, software, data analytics, sustainability and training services which improve operational reliability, safety, and asset protection whilst at the same time help maximise plant performance. The company is at the forefront of the digital and energy transition taking place in the industry.

AIE operates across a range of different industry sectors and geographic regions. It has an established track record in Integrity management services and holds long-term contracts with leading local and international energy providers across the MENA and SEA regions.

ARGAS targets global expansion with new deal

Taqqa and CGG's agreement allows ARGAS to expand its offering in integrated marine and land seismic solutions to the oil and gas industry customers all over the world, giving it the ability to access potential multi-billion dollar markets

SAUDI Arabia-founded Arabian Geophysical and Surveying Company (ARGAS), the largest seismic acquisition company in Mena, is to expand its business internationally, further building on a strong track record which has made it a leading regional success story in the oil and gas field services industry.

Saudi-based Industrialisation and Energy Services Company (Taqqa) and Paris-based CGG – shareholders of Arabian Geophysical and Surveying Company (ARGAS) – have signed a new agreement that will allow the company to expand its offering in integrated marine and land seismic solutions to the oil and gas industry customers all over the world, giving ARGAS the ability to access potential multi-billion dollar markets.

The agreement waives all territorial, technical, commercial exclusivities and any other restrictions previously in place, as well

as all other contractual restrictions on CGG or any of its current or previous affiliates.

Khalid Nouh, CEO of Taqqa and Chairman of ARGAS Board, says: "The world around us is changing so fast that restrictions and exclusivities are obsolete by the time they are executed. We value our long partnership with CGG and together we understand the current market challenges. Our new agreement reflects a need for ARGAS to be more agile and to be able to react swiftly to market movements with the aim of better addressing customers' needs".

Sophie Zurquiyah, CEO of CGG, adds: "I am delighted with the extension of the operational scope for ARGAS, following CGG's exit from the acquisition business. We value our partnership with Taqqa and believe this agreement will be beneficial for all."

Reflecting ARGAS's new global ambitions, shareholders also agreed to use this corporate milestone to launch a new ARGAS logo, which reflects the company's dynamism and agility.

Taqqa is a leading provider of oilfield solutions in the Mena region, delivering quality products and equipment across the entire upstream value chain. Taqqa is a Saudi joint stock company owned collectively by Saudi publicly listed joint stock companies and several private and industrial investors representing a cross section of the Saudi industrial community.

On the other hand, CGG is a global geoscience technology leader. Employing around 4,600 people worldwide, CGG provides a comprehensive range of data, products, services and equipment that supports the discovery and responsible management of the Earth's natural resources.



ARGAS will build on its strong track record in the oil and gas industry in its global expansion plans

RedGuard Specialist Services modular solutions offer vital protection

REDGUARD Specialist Services, specialised in the design, engineering and manufacturing of blast- and ballistic-resistant modular buildings, and its partners SENDAN International Company are addressing the needs of customers in the downstream segments, security, and defence industries in Saudi Arabia from the Jubail Industrial City.



Ridley ... focus on protection

"With our product ranges supporting operations in oil and gas, energy, industry, and security, we also contribute to the National Industrial Development and Logistics Vision Realisation Program, part of the Saudi Vision 2030," says Ian

Rogers, Specialist Services Group CEO.

The blast-resistance industry in the downstream sector and oil and gas industry continues to progress in Saudi Arabia, but there are still gaps in the industry regarding regulation, certification, and blast testing requirements and guidelines.

According to Chris Ridley, Group Sales and Marketing Director at Specialist Services Group: "During the last couple of years, our clients in the Saudi market started to recognise the importance of protecting personnel and equipment in hazardous areas, primarily in the downstream segment of the oil and gas industry."

He says: "In hazardous areas, where there is a risk of accidental explosions, our customers require modular building solutions of the highest quality to rely upon for protecting their people, equipment and critical operations. Thus, we have been providing them our blast-resistant modules over the past three years.

"During this time, the demand for our products has increased until this year, when the Covid-19 crisis hit hard the world economy, and the oil and gas industry in particular. However, due to social distancing, quarantine, and testing requirements, with our modular solutions we are supporting clients in Saudi Arabia and other markets with their temporary offices, laboratories and other facilities requirements."

Now in its fourth year of operations, RedGuard Specialist Services was created as a joint venture between two of the industry's leading names, RedGuard from the US and Specialist Services from the UAE.

Based in Dubai, RedGuard Specialist Services specialises in the design, engineering, and manufacturing of highly certified blast-resistant and ballistic-resistant modular buildings. Within this

partnership, RedGuard has extensive experience in providing field-tested, customised modules for blast and ballistic applications, as well having the world's largest fleet of blast-resistant buildings for rental in North America.

On the other hand, with its 38 years of experience in the oil and gas industry, Specialist Services, headquartered in Dubai with rental hubs in Saudi Arabia, Europe, Asia, and the US, has the largest fleet of Zone 1 offshore modular buildings and modular accommodation solutions, supported by extensive in-house design and engineering capabilities and manufacturing facilities.

The RedGuard Specialist Services product range includes LeaseFleet (blast-resistant modular buildings for rental), SafetySuite (blast-resistant modular buildings with bespoke designs), and CoverSix Shelters (blast- and ballistic-resistant modular buildings for the security and defence industry). These solutions are complemented by dedicated service teams based in the Dubai, Jubail, Aberdeen, Singapore, and Houston facilities.

Providing CoverSix products to the US military and defence clients for several years now, RedGuard, together with RedGuard Specialist Services, have taken this product range globally.

In line with this new strategy, earlier this year, they have launched a CoverSix Shelters dedicated website (www.cover-six.com), to provide detailed information about these hardened structures for protection and security. The product line features modular buildings equipped with customised threat mitigation, such as blast resistance, ballistic resistance, and resistance to forced entry. CoverSix also includes modular training range facilities, custom-outfitted ISO containers for use as mobile office locations and portable storage units.

With continuous commitment and investment into innovation,



12 x 40 ft units in Jubail for lease

the company evolves their blast-resistant modules to ensure they protect people and assets. All modular buildings are engineered to industry-leading safety specifications, adhere to API RP 752 and 753 guidelines, and apply a proven, successfully blast-tested design.

The company also holds national and international certification, which verify that these products meet the highest quality and safety standards. Even their custom made units, which are designed in line with client specific requirements, can be certified by any of the major third

party surveyors, such as DNV GL, Lloyd's, USCG, ABS, BV, Genesis Oil and Gas, or others.

RedGuard Specialist Services has strategically positioned distribution centres in the UAE, Saudi Arabia, Singapore, the UK, The Netherlands, and the US, to address the needs of customers worldwide. Its blast-resistant modules are specifically designed to maximise safety, apply a proven, successfully blast-tested design, and are fully compliant with international industry standards.

شركة الرشيد درسر للصمامات والأجهزة المحدودة Dresser Al Rushaid Valve & Instrument Co. Ltd



NB, UV and VR certified 'safety relief valve' Manufacturer and repair centre in KSA



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ASME CERTIFIED

• Control Equipment
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Transmitters and Regulators
in Saudi Arabia



Consolidated
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Masoneilan
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Control Valves

P.O. Box 10145, Tareeg 124, Jubail Industrial City 31961, Kingdom of Saudi Arabia

Tel: +966 13 3410278, Fax: +966 13 3417624

Branch: P.O. Box 70, Tareeg 3, Yanbu Industrial City. Tel: +966 14 3573777, Fax: +966 14 3571234

Email: sales@darvico.net - www.darvico.com



A CoverSix shooting range

Tasnee aims to become key global titanium dioxide supplier

In line with the Vision 2030 goal of increasing private sector contribution to 65 per cent of the national GDP, Tasnee is maximising local content contribution in its own production lines through an internal support program

SAUDI Arabia's National Industrialisation Company (Tasnee) has bolstered its position in the global downstream sector through a number of strategic deals and investments.

After closing the Cristal/Tronox acquisition deal last year, the company shifted focus to its core downstream business and petrochemical assets in addition to refinancing its debts.

Tasnee has a diversified and integrated downstream sector with a varied products portfolio ranging from plastic sheets, packaging films, geomembranes and automotive batteries, to water, agriculture, handling, and pipes solutions. It is one of the first to develop plastic pallets to replace wood, in addition to being the largest pipe-making facility in the world, with diameters going to 3 m.

In August last year, Tasnee got listed on the MSCI Index of Emerging Markets as one of 30 Saudi-listed companies, allowing it increase its institutional investor base and limiting share fluctuations.

The company has also forayed into the titanium manufacturing business, and has started making parts for heat exchangers and the aerospace industry. Mutlaq Al-Morished, Tasnee CEO, tells Abdulaziz Khattak of OGN.

In September 2019, Tasnee made it to global ranks after it successfully commissioned its titanium sponge plant in Yanbu industrial city. The plant has an annual production capacity of 15,600 tons, which is about 10 per cent of world production. Titanium sponge is mainly used in aviation industry, space industries, sports and medical industries, and 3D Titanium printing powders.

The project, costing SR6 billion (\$1.6 billion), is a joint venture between Tasnee-owned Advanced Metal Industries Cluster (AMIC) and Japan's Toho Titanium Company.

Al-Morished says the titanium sponge project and ilmenite smelter in Jazan are major downstream projects in Tasnee's titanium value chain.

The ilmenite smelter project, equally owned by Tasnee and Cristal (79 per cent owned by Tasnee), can produce 500,000 tons of high grade Titanium feedstock and 235,000 tons of pig iron. It is the largest of its kind and uses the latest technology in the field.

The smelter is currently undergoing repairs after technical issues surfaced in 2018 in the first furnace. The plant is expected to restart during H2 2020.

The smelter's second furnace will be commissioned after completion of the commercial production of the first furnace, he adds.

Separately, Tasnee is producing innovative solutions for the agricultural sector. In December 2019, National Nipras Technology Company (NNTC), an affiliate of Tasnee based in Jubail Industrial City, produced the soil enhancer, 'Dibal' using German Geohumus technology.

"The technology is a world first and was transferred for the first time to the Middle East and to Saudi Arabia. The product helps reduce water consumption by increasing the moisture content in soil," says Al-Morished.

NNTC has an annual production capacity of 5,000 tons of Dibal.

TASNEE AND VISION 2030

In line with Saudi Arabia Vision 2030's goal of increasing the private sector's contribution to 65 per cent of the national GDP, Tasnee is keen to maximise the local content contribution in its own production lines through an internal support program (for local content).



Al-Morished ... extending support to local suppliers

"This has been part of our management KPIs for years and we are making sure that we are progressing in this regard. When it comes to replacing imported content with local alternatives, Tasnee is a leader. As a result, Tasnee was awarded with King Khalid Award for Responsible Competitiveness in the Core Area of Local Suppliers," says Al-Morished.

Furthermore, Tasnee has displayed a variety of investment opportunities for more than 300 local suppliers and investors through the 'Tasheel' programme, which was held in December 2019 at the Chamber of Commerce and Industry in Dammam. Tasnee gave a comprehensive presentation on the investment opportunities available and mechanism for suppliers' registration and responded to their inquiries.

On another front, Tasnee is actively employing and training Saudis. According to Al-Morished, at its titanium sponge plant in Yanbu, all trained Saudi staff have been demonstrating extremely high competency levels. Moreover, he adds, all production supervisory roles were given to trained Saudi engineers, replacing Toho Titanium's seconded employees from Japan.

In 2019, a total of 3,217 employees were trained through 1,166 classroom training programmes. Additionally, world-class e-learning trainings have been launched where 5,126 online courses have been completed by employees.

Also during 2019, Tasnee inducted 48 fresh Saudi talent from universities and colleges into its various sites across the Kingdom, through several programmes, including the Tamheer program.

In another comment with regard to Vision 2030, which Al-Morished says focuses on economic diversification and reducing reliance on oil, Saudi's local downstream sector still has its problems.

These problems, he adds, include the small local market, which makes it difficult to consume products locally; and the increase in

production costs compared to other global competitors.

COVID-19 IMPACT

To mitigate against the impact of the global viral pandemic, Tasnee has put in place a proactive Business Continuity and Resilience Management (BCRM) to ensure there are no major disruptions to the company's operations, services and products.

"Our leadership teams have worked closely for a common roadmap and understanding of the situation and priorities, to reduce the inevitable impact of the disease on our operations.

"We have taken some immediate actions, including ensuring the supply of feedstock and chemicals, full sustainability and material availability, keeping plants operating as per schedule, rescheduling turnarounds and maintenance projects, updating our key risks register, and introducing cost rationalisation and cash flow management action plan with definite measures," says Al-Morished.

He adds: "During the pandemic, both our supply chain and sales teams have been working remotely with Tasnee customers and supply chain partners to ensure that our customers around the world get their supplies with least disruption, and in full coordination with government authorities, shipping lines, transporters and banks. We support our customers to meet their contractual terms and keep them updated about potential delays."

Al-Morished says their main concern, however, while facing this pandemic is the safety and well-being of their workforce and community. "Consequently, we are contributing to minimising the spread of the virus by complying with the Ministry of Health's instructions, raising awareness of our people, issuing temporary HR policies, disinfecting work locations, postponing external participations, and enabling remote-work tools and technologies."

Meanwhile, commenting on the deteriorating global economic scenario, Al-Morished says it is difficult to evaluate the current situation and what the future impact will be on oil and gas prices and consequently on the petrochemical sector.

"Historically, all potential crises create a kind of combination between threats and opportunities. However, the current unusual context and the combination of the fall in oil prices and the Covid-19 pandemic has resulted in a different situation," he opines.

He further explains: "Any extended collapse in oil prices will affect stock markets and debt repayments, and maximise threats to unpredictable extents. And no one will be able to benefit from such a situation, not even public consumers of fuel because they might be unable to use it during curfews and shutdowns."

And with regard to the global petrochemical sector, Al-Morished says: "Because of the dual crisis, we are facing a decreased demand for petrochemicals in 2020. I fear a global recession, which might be similar to the depression of the 1920s."

He says for Saudi petrochemicals, China is a major market and any improvement in the Chinese economy will be positively reflected on the demand for petrochemicals. On the other hand, any change in naphtha prices will affect the competition in petrochemicals production and pricing.

Nonetheless, Al-Morished concludes the coronavirus situation needs a longer time for recovery. "The earlier the world recovers from the pandemic, the faster global economies will be back to work, and we might barely catch the 2020 train."



Tasnee's ethylene cracker in Jubail

ALAR boosts Saudi Arabia's hydrogen production capacity

AIR Liquide Arabia (ALAR) had recognised Saudi Arabia's potential as a catalyst for hydrogen production early on and began discussions with the Jubail-Yanbu Royal Commission and the Ministry of Energy back in 2008.

The company's vision for both industrial cities was underpinned by a need to increase the Kingdom's competitiveness and drive efficiencies, while developing a class-leading network of infrastructure that would appeal to future investors.

"Jubail and Yanbu industrial cities are amongst the largest refining and petrochemical sites in the world. We chose to set up operations as we, along with the Jubail-Yanbu Royal Commission, saw an opportunity to further develop the existing infrastructure to facilitate better integration between industries in both sites. The underlying goal was and still is to ensure efficient use of natural hydrocarbon resources while reducing CO2 emissions," Olivier Randet, Vice President of Middle East and India at Air Liquide, tells Abdulaziz Khattak of *OGN*.

Upon receiving approval from the authorities, we entered a development phase, before constructing what today includes a hydrogen production site and 16-km-long pipeline network in Yanbu and a 21-km hydrogen transportation pipeline in Jubail. Operations in Yanbu and Jubail officially commenced in 2015 and 2017 respectively, he says.

ALAR today is Saudi Arabia's leading hydrogen partner, with the infrastructure, capabilities and experience to deliver on its promises on in-

novative gas solutions and efficiencies and help Saudi Arabia to sustain its energy leadership.

With an unrivalled hydrogen pipeline infrastructure and network, ALAR is directly contributing to the Kingdom's Vision 2030 goal of increasing domestic production. It is providing a consistent and reliable source of hydrogen to customers, enabling them to develop downstream sectors and supporting local supply chains.

Randet says ALAR also actively contributes to develop local talent, by hiring young and experienced Saudis and providing them the platform to build up and hone unparalleled engineering skills and expertise. The company's IKTVA score of 63 per cent and Saudisation rate of 65 per cent with an annual increase of 5 per cent is a testament to its efforts.

He adds: "Our business is local, not only in terms of Saudisation or hydrogen production, but also in the value that ALAR adds to the Kingdom, especially where optimising resources is concerned. In Jubail for example, we convert fuel grade off gases, which would otherwise go to waste, to premium products that are used by refining and chemical sectors. Beyond this, we are also working on several R&D projects with key Saudi stakeholders."

ALAR & Covid-19

"Like our customers and partners, we are fighting this pandemic daily, with the health of our employees and continuity of our business being of the utmost importance. The fact that we are very much a



ALAR hydrogen production site in Yanbu

local company, means we are self-sufficient from an operational standpoint," says Randet.

"Our customers know they can rely on us to be completely mobilised. We also leverage digital tools to ensure that employees can work remotely when possible, and that leadership can provide expertise and stay connected."

Additionally, ALAR benefits from the global presence of the Air Liquide group, and draws

from experience gained by its colleagues in China. This has allowed the company to implement several precautionary measures ahead of time that are now common practice.

Ultimately however, our ability to persevere is the result of the safety-first mindset, and dedication of our teams here in Saudi Arabia. We remain ever vigilant and will continue to be flexible and adapt for as long as needed," concludes Randet.



Together, Towards a Bright Future for Saudi Youth



SAUDI PETROLEUM SERVICES POLYTECHNIC

Partnering with petroleum, energy and industrial companies to graduate, develop and prepare quality Saudi technical workforce

SPSP was established to meet the needs of the petroleum services industry and to support the process of Saudization in Saudi Arabia. It was founded in 2008 by the Ministry of Energy, Industry and Mineral Resources, the Technical and Vocational Training Corporation, Saudi Arabian Chevron, Saudi Aramco and Aramco Gulf Operations Company. SPSP is a fully independent, not-for-profit entity, which is governed by a Board of Trustees representing the major stakeholders in SPSP.

PROGRAMS & COURSES

By maintaining collaboration with our industry partners, SPSP develops its programs and courses to meet the specific needs of the petroleum services industry. The programs have been designed to ensure that all graduates exit with certified and accredited core vocational skills and an understanding of the petroleum services industry.

SPSP technical specialties include: Mechanical, Electrical, Operations, Welding, Pipefitting, Instrumentation, HVAC, Drilling, Rigging, Scaffolding or Crane Operation & Heavy Equipment. SPSP also offers courses in the fields of drilling, heavy equipment and health & safety customized to the needs and requirements of Oil & Gas companies across the spectrum in both Upstream and Downstream.

A new program has recently been launched targeting young engineers with less than 5 years of experience from all engineering disciplines. The program (ACT Eng.) is a first phase certified downstream training and development program, established in collaboration with the French Institute of Petroleum (IFP).



Prince Moteb Bin Abdulaziz St., P.O. Box 2012, Dammam 31451, Kingdom of Saudi Arabia
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Powering sustainable energy generation and storage

Sabir is leveraging its polymer expertise and commitment to innovation to ensure a sustainable future for Saudi Arabia and beyond, Pieter Smeets, Senior Manager, Industrial Sustainability, Sabir, tells Abdulaziz Khattak of *OGN*

RENEWABLE power has finally come of age: The core technology is proven and large-scale installations are starting to be built around the globe. This is the combined result of falling costs and rising energy outputs – the two key parameters governing its adoption.

Since 2000, the cost of photovoltaic (PV) generation technology has fallen by more than three quarters, according to the International Renewable Energy Agency (IRENA). This is adding momentum to photovoltaic adoption. There is continuous improvement in the efficiency and cost reduction of solar cells. More innovative solutions are required to drive down the costs for other components including top sheets, support structures and frames.

Sabir is leveraging its knowledge of polymer science to create a solution to these problems.

For instance, it collaborated with a Japanese plastics supplier on a High-density polyethylene (HDPE) grade that delivers structural strength, weather resistance and longevity to support floating solar panels. Through this collaboration, Sabir has consistently helped expand the solar assets of a major industrial nation. On lakes and ponds across Japan, we are helping an economy with limited land availability produce more energy from solar.

But Sabir is doing more than providing materials. In 2019, it installed solar panels on the rooftop of its compounding site in Vadodara, India. Sabir's 'Home of Innovation' in Riyadh has been powered by solar panels since 2015, and it is planning to install solar PV at its headquarters in Riyadh.

Sabir also recently launched a study with Marafiq and the Saudi Royal Commission for Jubail and Yanbu to explore a \$300-million project in a 300-megawatt (MW) solar array in Yanbu, on the western coast of Saudi Arabia. When completed, the company will take off the electricity generated by the plant, delivering power to Sabir's locally-based industrial affiliates.

Furthermore, Sabir is exploring ways to bring renewable power to other affiliates in the Kingdom and around the world, as part of its first renewable energy strategy, approved in 2018. The company's ambition is to have 4 gigawatts (GW) of energy from wind or solar sources installed and available for Sabir by 2025 and up to 12 GW by 2030.

ENHANCING ENERGY STORAGE

Earlier this year, Saudi Arabia announced that as part of the new energy mix, it would increase its renewable capacity. Enhancing energy storage is intrinsic to the success of the renewable energy sector. In line with this, Sabir is exploring research and development into battery storage, and recently signed a joint-venture between Nusaned Investment and SCHMID Group. The JV will produce



Smeets ... exploring ways to support renewable energy

energy storage systems for use alongside utility-scale renewables projects, telecom towers, mining sites, remote cities and off-grid locations – directly contribute to the Kingdom's renewable ambitions.

All this activity is part of Sabir's 2025 Strategy, which sets out a range of growth and innovation objectives, and will support Saudi Arabia's drive to install 60 GW of renewable power capacity by 2030. This clear-sighted approach has benefits beyond the Kingdom. The technical expertise that will make it all possible has international applications, helping position Saudi Arabia as a global leader in clean energy.

EMBEDDING SUSTAINABILITY

Sabir's involvement with solar panel design, evaluating various wind technologies, and our investment in novel storage technologies, will help mitigate the impact of climate change. However, it doesn't end there: Sabir is embedding detailed sustainability criteria at the heart of all our project developments. The company believes that a continued drive towards resource efficiency will help decrease operational costs, which, combined with its governance and integrity, will maximise long-term value for stakeholders while safeguarding the environment.

Also, by sharing material expertise to advance the shift to clean energy, along with the approach to ongoing innovation, Sabir con-

tinues to improve customers' efficiency as well as its own. To this end, the company has formed collaborations with key global partners to put its sustainable solutions into practice.

WORLD-CLASS INNOVATION

Sabir believes it can use its market-leading position, bold thinking and world-class innovation to cement its credentials as a pioneer in renewable energy. However, the company's sustainability vision is based on a wider understanding of economic, social and environmental factors. Sabir, therefore, uses the United Nations' Sustainable Development Goals (SDG) as guidance for improving the impact of its operations. Also it is measuring its operational sustainability performance by following the reporting standard of the WRI - Greenhouse Gas Protocol, which is being audited by a third party.

Sabir has successfully woven sustainability throughout its governance and corporate culture – it sits at the heart of its product and process innovation – to support the development of effective solutions to some of the world's greatest challenges. Going forward, Sabir will continue to invest in breakthrough technologies in order to achieve sustainability targets and meet emerging energy-efficiency regulations, such as the Saudi Arabian Energy Efficiency Program (SEEP).

The company continues to secure significant rewards from its efforts to apply innovation to sustainability. It foresees even greater benefits in the coming years as its investments in sustainable materials, processes and operations grow its business and accelerate our path toward a sustainable future – for the company, its customers and the world.

Sabir is helping turn environmental aspirations into a working, long-term reality.

CREATING A COOLER SOLAR COLLABORATION

Floating solar farms on reservoirs or lakes deliver sizeable sustainable benefits. They can generate more energy because they can operate at lower temperatures than ground systems and because water surface temperatures keep their technology cool.

A Japanese plastics supplier has been collaborating with Sabir on an HDPE grade that delivers structural strength, weather resistance and longevity to support floating solar panels. Through this collaboration, Sabir has consistently helped expand the solar assets of a major industrial nation.

On lakes and ponds across Japan, it is helping an economy with limited land availability produce more energy from solar.

A new HDPE application with unique multimodal molecular technology has also been approved companies specializing in the floating PV systems for more panels for the Chinese market.



Sabir's Home of Innovation Centre in Riyadh

Darvico to install region's first boiler facility for valve testing

DRESSER Al-Rushaid Valve and Instrument Co Ltd (Darvico) is planning a first-of-its-kind valve testing facility for steam application in the Middle East that will add additional capabilities for testing all types of valves to meet the upcoming turnarounds and plant shutdowns.

Based within its existing Jubail facility, the new expansion covering 20,000 Sq ft will be operational by end of 2020 and will see the installation of a boiler plant for testing valves on steam application.

The development, which will increase Darvico's capacity, comes in the wake of growth in demand for its products and services, according to Darvico general manager D R Pai.

through localized production within Saudi Arabia.

Pai says the combination of expertise from Masoneilan and Consolidated global valve plants with Darvico's local presence allows customers the full range of products and services.

"The entire team including the aftermarket is geared to provide 24/7 service to customers at their doorsteps. Darvico has already won appreciation from major petrochemical plants for the outstanding execution and support rendered during the successful turnaround," says Pai.

Meanwhile, Darvico has opened a new facility in the city of Yanbu as well that will serve the entire Western Region of Saudi Arabia.

"To meet customer needs in the Western Region, Darvico has opened a new state-of-the-art facility in Yanbu city," says Darvico Executive Director Meshary Al Oqaily.

The facility has been built in the Royal Commission Area and developed as a manufacturing and services centre to meet current customers' needs and future demands, he concludes.



Darvico ... on the expansion path

"Darvico is taking the lead to install, for the first time in the Middle East, a boiler facility for testing valves on steam application. The facility will address all ASME SEC VIII and ASME SEC I Consolidated safety and safety relief valves (SRVs) for steam application to be tested in live steam in Darvico," he says.

The expansion will have a local machining centre for manufacturing trim components to support local customers in addition to enhancing the inventory level of spare parts, which will now be manufactured locally.

"All these initiatives are aligned with Saudi Arabia's Vision 2030 for localization," Pai says, adding, "Darvico's localization plan will continue and will be executed over more plants in Saudi Arabia."

Darvico is a leading local manufacturer, which has been supplying pressure safety valves, control valves, level transmitters and instruments to oil and gas, petrochemical, power and water companies in Saudi Arabia since 1983.

It was established as a joint venture partnership in 1985 by Al Rushaid group & Dresser International LLC, which today is part of Baker Hughes, to provide highly engineered, Masoneilan Control Valves and Consolidated Safety Relief Valve solutions

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Faro 3D scanner accomplishes detailed urban tunnel monitoring

AS China vigorously develops intercity high-speed railways and urban rail transit, a key concern is safe production and operation management.

Government departments and safety monitoring organisations are sparing no effort to enhance sustainable development capabilities.

To help the sector, Guangzhou South High-Speed Railway Surveying Technology, also called South High-Speed Railway, is deploying precision surveying technology and equipment for high-speed railways, subways, tunnels, dams, slopes, etc. It also

provides special precision measurement solutions for mines, ports and pipelines.

To further its objectives, the company has established the South Special Precision Surveying Institute, which undertakes related independent research and development of software and hardware.

When doing tunnel excavation using drilling and blasting methods, over or under excavation becomes inevitable. The regulation about quality and safety of railway construction projects implemented on January 1, 2018 states the importance of initial liner and lining thickness. If not dealt with in time, these problems will

not only increase the construction cost of the project, but will also have a serious impact on the construction quality and operational safety of the tunnel.

Water seepage, lining cracking, concrete peeling and falling off will also occur in the completed tunnel due to geological conditions, material performance degradation, and train vibration, resulting in safety hazards. Therefore, safety detection has become an indispensable procedure for tunnel construction.

Due to the special nature of tunnel construction, continuous operation is required during excavation, making it difficult to have a long stoppage for surveying. This makes real-time survey a problem.

With firm roots in the railway industry, the South High-Speed Railway began the exploration of track detection years back.

"We started research and development of track detection equipment in 2008. After 10 years of technology accumulating and depositing, we established a formal Monitoring Division in 2018," says Li Zhongli, the Manager.

The company offers a three-dimensional solution that can cope with the harsh working environment in tunnels. It has also developed a track-moving tunnel detection system based on the Faro three-dimensional laser scanner for metro and high-speed railway tunnel inspection during the operation and maintenance period.

In 2018, the South High-Speed Railway successively purchased two Faro Focus 3D laser scanners, FocusS 350 and FocusM 70, and launched a mobile tunnel detection system based on the Faro FocusS 350. This system detects in a dynamic and uncontrolled manner with reduced dependence on the design data. It can efficiently obtain point cloud data of the tunnel and provide great data support for tunnel detection, greatly improved the work efficiency.

CHALLENGES IN TUNNEL DETECTION


Zhongli says it is very complicated and difficult to detect over or under excavation. Surveying personnel can only enter the site during the construction interval. Taking into account the safety factors and construction work in progress, the time during which the personnel is allowed to stay is very short.

Also, at the stage of excavation and initial lining, the four walls of the tunnel are extremely unstable, and there is also risk of rock falling off from the tunnel's vault. Moreover, a dim construction site, poor ventilation and dusty air, uneven road and dark trenches adds to the environment's harshness.

Before 3D laser scanning technology was used, surveyors usually relied on their own experience combined with a total station device to detect over- or under-excavation.



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A Faro scanner mounted on a surveying trolley

They would often observe sags and crests inside the tunnel with the naked eye and use the total station to make cross-section surveying at the obvious bulge. However, both manual estimation and surveying with total station has limitations.

Manual observation cannot give accurate and real data, and misjudgment often occurs. On the other hand, although the total station device can give accurate data, the number of points selected in the process is limited and the interval of sections is large. Therefore, the surveying results might not conform to actual site conditions.

The South High-Speed Railway uses the Faro 3D laser scanner mainly for tunnel detection during tunnel construction, operation and maintenance. During construction, the amount of concrete can be calculated by over- or under-excavation analysis and point cloud data comparison to provide guidance for safe construction. At the period of operation and maintenance, it can provide real and reliable data support for safe traffic by detecting tunnel deformation and convergence diameter.

For detection of over- or under-excavation, usually the ground track has not been laid yet by then. The 3D laser scanner is set in the tunnel and scans the segment, which needs to detect over- or under-excavation. At the same



The Faro scanner can finish scanning the inner wall of the tunnel in minutes

time, the total station is used to collect spherical prism mirror coordinates for late conversion for absolute coordinates.

After the data acquisition is completed, the point cloud data and the tunnel design model with absolute coordinates are both imported into the tunnel three-dimensional monitoring software, and the tunnel over/under excavation analysis and concrete amount calculation can be performed to provide effective safety guidance for tunnel construction.

The Faro scanner scans very fast, recording up to 976,000 points per second, and can finish the scanning of the inner wall of the tunnel in minutes. This not only improves the productivity of the surveyor on site, but more importantly, it can restore the inner walls of the tunnel to the most extent, thus avoiding omission of information and saving time, labour and financial costs.

With a maximum scanning distance of up to 100 m in the tunnel, the FocusM 70 is fully capable of meeting the scanning needs at the

excavation phase. "After entering the site, it takes only 3-5 minutes to complete the scan," says Zhongli.

For tunnel detection at the period of operation and maintenance, the South High-Speed Railway uses the mobile tunnel detection system based on Faro three-dimensional laser scanning technology.

The mobile laser scanning technology acquires data faster than the traditional station scanning technology, and does not require data splicing. It is more suitable for tunnels with a short stoppage time at the period of operation and maintenance.

With 180 m of measurement verification, it has a mobile acquisition speed of 1.4 kmph, and only needs 2-3 people for the field operation. At the same time, its relative accuracy of point cloud data can be up to 3 mm.

With the point cloud data being analysed and processed by software, the surveying results of the cross-section analysis, convergence diameter, clearance section and orthophoto of the

tunnel structure can be obtained.

Currently, the South High-Speed Railway is cooperating with Shenzhen Construction Engineering Quality Inspection Center to carry out operation and maintenance detection for Baoan Airport section (non-operational) of Guangzhou-Dongguan-Shenzhen Intercity Railway using the mobile trolley surveying technology developed by combining the Faro scanner.

The Shenzhen Construction Engineering Quality Inspection Center provides technical support to the Construction Administrative Department, which enforces concerned laws, supervises and manages the quality of construction projects, and coordinates with the municipal quality supervision organisations.

On the site, an engineer of the Geotechnical Department of the Shenzhen Construction Engineering Quality Inspection Center said: "The scanning trolley has greatly improved the efficiency of track detection."

Speaking of subsequent technical improvements, the engineer said he hopes to further consider the influence of the slope on the fixed uniform speed and improve the accuracy of the mobile scanning, so as to obtain more optimized scanning results.

FARO is one of the world's most trusted source for 3D measurement and imaging solutions. The company develops and markets computer-aided measurement and imaging devices and software for several vertical markets, including 3D Manufacturing, Construction BIM, Public Safety Forensics, Personnel, 3D Design, and Photonics.

Faro's global headquarters is located in Lake Mary, Florida. Its European regional headquarters is in Stuttgart, Germany, and the Asia-Pacific regional headquarters in Singapore. Faro has other offices in the US, Canada, Mexico, Brazil, Germany, the UK, France, Spain, Italy, Poland, Turkey, the Netherlands, Switzerland, India, China, Malaysia, Thailand, South Korea, Japan, and Australia.



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