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JUBAIL & YANBU Vision Comes of Age



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Lummus drives innovation in KSA
Recognising that we cannot do everything ourselves, we have to look at new technology innovations in collaboration with users and investors, says Leon de Bruyn – Page 8



Catalyst recycling: Economic imperatives
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PRO-CLIMATE GCC WELL SET TO LEAD DECARBONISATION

By **ABDULAZIZ KHATTAK**

MANAMA: A new report believes the GCC countries are strategically positioned to become leading global clean energy hubs.

With global efforts towards the energy transition increasingly being recognised, regulators and policymakers in the GCC economies have incorporated decarbonisation plans into their national vision transformation programmes.

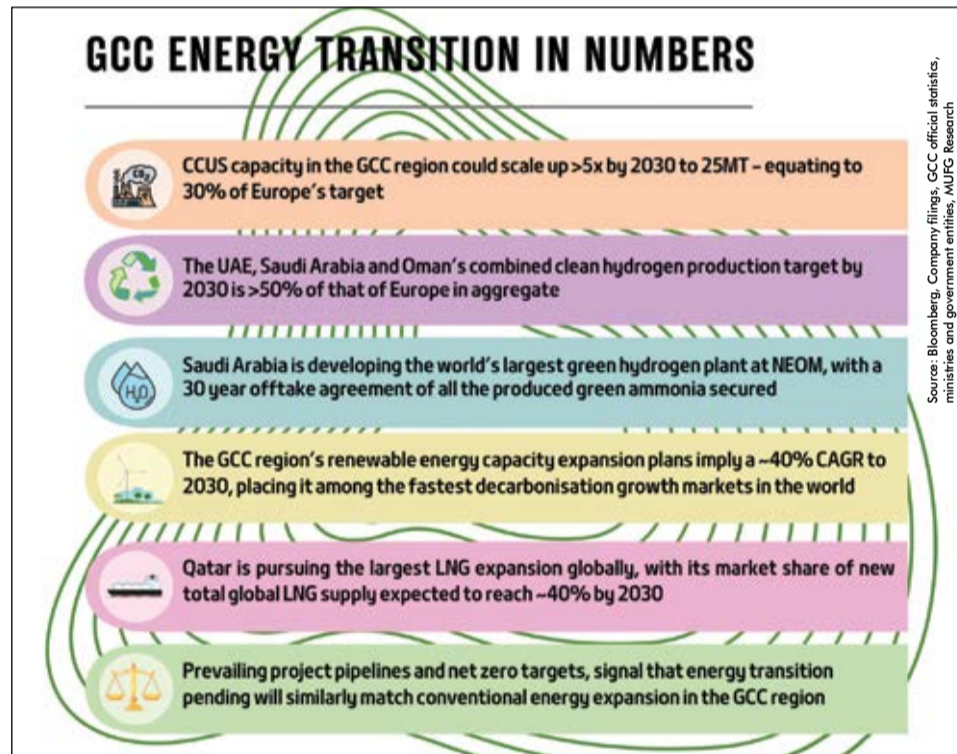
According to the Mitsubishi UFJ Financial Group's (MUFG) 'ESG Series: GCC region and the energy transition' report, extensive investments are being undertaken in the region to decarbonise high-carbon emitting sectors in hydrocarbon production, power generation and industrial production, with the velocity of execution contingent on technological advancement and availability, as well as an increase in the private sector participation.

Having said that, a recalibration of the energy trilemma post-Covid from sustainability towards energy security and affordability, is witnessing GCC transition targets take a pragmatic approach that is pro-growth and pro-climate.

This just-and-orderly transition strategy that the GCC region is navigating recognises that sustainable systems are more value creating than traditional ones, but shutting down the old conventional economy too quickly threatens to push the price of building a cleaner new economy out of reach.

This two-pronged approach of addressing the energy transition and safeguarding energy security recognises the sheer complexity of ecosystems, demanding greater alignment and collaboration on everything from capital allocation to product design, public policy as well as behavioural changes on the demand-side of the equation.

"We hold conviction that the GCC region remains well positioned to capitalise on its com-



parative advantages of low-cost positioning across the energy value chain, geographical proximity to key import markets and its constructive regulatory backdrop to become a vital global decarbonisation vanguard," the authors of the report said.

"These favourable characteristics, combined with a constructive macro backdrop for a region that remains in a league of its own, will enable these economies to strengthen their pedigree beyond conventional fossil fuel energy sources in becoming a global hub for both clean electrons (solar, wind, EVs and energy storage) and clean molecules (hydrogen, carbon capture and bioenergy), in our view."

MUFG's bottom-up project-by-project examination signals over \$630 billion of investments necessary through to 2035 to facilitate the region to achieve its ambitious decarbonisation targets.

This quantum is led by four strategic areas that are at the centre of the GCC countries' energy transition plans, namely, the burgeoning role of natural gas as a transition fuel; the development of attractive renewables capacities; an expansion in carbon sequestration and clean fuel offerings through a rising focus on clean technology investments; and investments in critical infrastructure and logistics to support the transition.

Gas is not going away anytime soon: Al Kaabi

DOHA: The demand for natural gas will keep growing and more supply projects will be required globally beyond 2030, Saad Al Kaabi, Qatar's Energy Minister, said at the Qatar Economic Forum in Doha last month.

The comments from one of the world's biggest suppliers of liquefied natural gas come amid fears of a potential glut later this decade as more projects, including in Qatar, come online, a Bloomberg report said.

Qatar is pressing on with its multibillion-dollar LNG expansion, and may consider adding



Al Kaabi ... expanding economies are driving demand further capacity if more gas becomes available, Al Kaabi said.

"If we have a reasonable economic growth going forward, I think you'll see all that supply and demand will catch up and you'll need another phase of development of gas in the 2030s," he said.

"I don't think gas is going away anytime soon."

The LNG market has been tight since Russia's invasion of Ukraine knocked out piped gas supplies to Europe, forcing the continent to import more liquefied fuel. It's likely to flip into a surplus as a wave of new LNG developments brings fresh supply from about

2026, despite some projects in the US facing delays.

Qatar is boosting its LNG capacity to 126 million tons a year by 2027 from 77 million a year currently. It's targeting 142 million a year by the end of the decade. Projects by other countries, including in Africa, are also planned.

Al Kaabi said all that new supply won't be enough as expanding economies and populations drive up demand. Power from gas, for example, provides reliable backup to intermittent renewable energy, he said.

IN BRIEF

Africans call for energy justice

PARIS: AFRICAN civil society, human rights groups, environmental groups, governments, and the private sector have called for a just energy transition and climate justice, while reaffirming their commitment to addressing energy poverty and fostering industrialisation in Africa, energy transition and climate justice.

This commitment was emphasised at the recent Invest in African Energy forum held in Paris that brought together key stakeholders from across Africa and beyond to address the continent's pressing energy challenges.

Participants recognised the critical importance of addressing energy poverty, which continues to hinder socio-economic progress in many African nations.

The Paris Declaration calls for fruitful discussions and collaborations, highlighting the shared commitment of African nations, global investors, and industry leaders to drive sustainable energy development across the continent.

This includes ramping up energy investment, deploying continuous finance, and advancing energy projects, such as the TotalEnergies-led Mozambique LNG development and the East African Crude Oil Pipeline.

However, African societies deplore the continuous polarisation of the energy dialogue in Western countries and call for an end to the demonisation of African oil and gas.

They urge free market solutions and investment, rather than reliance on aid, to support Africa's industrialisation and meet shared climate obligations.

Aramco posts strong Q1 results

DHAHRAN: Aramco recorded a robust net income of \$27.3 billion in Q1 2024, compared to \$31.9 billion in Q1 2023.

The cash flow from operating activities was \$33.6 billion in Q1 2024, down from \$39.6 billion in Q1 2023. Additionally, the free cash flow for Q1 2024 was \$22.8 billion, a decrease from \$30.9 billion in Q1 2023.

For Q1 2024, Aramco declared a base dividend of \$20.3 billion and a fourth performance-linked dividend of \$10.8 billion in Q2. A total of \$124.3 billion in dividends is expected in 2024.

Furthermore, Aramco has awarded \$7.7 billion worth of contracts for the expansion of the Fadhili Gas Plant.

This expansion is expected to add 1.5 billion standard cubic feet per day (bscfd) of processing capacity.

Aramco also announced the addition of 15 trillion standard cubic feet (tscf) to proven gas reserves and two billion stock tank barrels of oil at the Jafurah unconventional field.

Meanwhile, it plans to more than double its overall venture capital funding to \$7.5 billion. This increased funding will enhance Aramco's ability to finance disruptive new technologies in various sectors, including the digital and sustainability fields.



VISION FOR INDUSTRIAL CITIES COMES OF AGE

From deserts to dynamic cities, the RCJY has reshaped Saudi Arabia into a refined petroleum and petrochemicals leader, driving economic growth and aligning with Vision 2030 aspirations

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From left, Al-Salem, Bandar Alkhorayef, Minister of Industry and Mineral Resources, and Saud bin Nayef, Governor of Eastern Province at the launch of the new brand identity for RCJY in March 2024

By **ABDULAZIZ KHATTAK**

WITH the establishment of the Royal Commission for Jubail and Yanbu on Ramadan 16, 1395 Hijri (corresponding September 22, 1975), Saudi Arabia embarked on a path to reshape itself as a supplier of refined petroleum products and petrochemicals while moving beyond its long-held role as a simple exporter of crude oil.

This year on Ramadan 16, 1445 (corresponding March 26, 2024), the RCJY marked 50 years of its existence and many laurels to boast about.

It celebrated the anniversary with a new brand identity that represents a new chapter of innovation and development, and reflects Commission's commitment to Vision 2030.

"Indeed, one can feel the stages that have passed in 50 years and how these cities were built from scratch. I mean, they were deserts, and how they have become today with hundreds of thousands of residents and inhabitants. The challenge was great in their beginnings, so one truly feels it," Engineer Khaled Al-Salem, President of the Royal Commission for Jubail and Yanbu (RCJY), said in an interview to the Rotana Khaleejia TV channel.

Today, the four cities under RCJY's management—Jubail, Yanbu, Ras Al Khair and Jizan—contribute to more than 40 per cent of the national non-oil exports.

Combined, the cities have a total annual production capacity of 500 million tonnes, of which around 181 million tonnes is exported and the rest is consumed locally.

They also supply 6 to 7 per cent of the world's basic petrochemical supplies.

The Commission alone has in the past 50 years invested SR225 billion (\$60 bil-

lion), of which SR90 billion is operational investments for running the cities and rest is capital.

Meanwhile, the total investments, both public and private, in these cities is over SR1.4 trillion.

Al-Salem said every riyal invested by the government through the commission was matched by SAR 8.9 from the private sector, with the RCJY aiming to increase this figure to SAR 9 by 2024.

THE NEED FOR NEW CITIES

The idea to build the cities of Jubail and Yanbu, flanking the Kingdom's eastern and western coasts, respectively, came about in the 1970s.

Oil revenues during that time were significant but so were the oil shocks. And the Kingdom felt it should exploit all the associated gas that was being flared off and use it to build value-added products.

"It was a window of opportunity in the petrochemical market, which doesn't always come," as described by Prince Abdullah bin Faisal bin Turki, former chairman and CEO of the RCJY.

A study was commissioned in this regard during the reign of the late King Faisal. Proposals flowed from companies including Bechtel, which would later lead the construction of the new industrial city.

And in 1975, the foundation stone for the Commission was laid by the late King Khalid, who also issued a royal decree stipulating its financial and administrative independence, crucial for the Commission's success.

Jubail was considered the ideal location because of its proximity to the sea and the oil fields in the eastern region.

With Aramco collecting gas, SABIC was established to use that gas to produce petrochemicals.

The alliance between the Royal Commission, Aramco, and SABIC was thus called the 'golden triangle'.

On the Kingdom's western side, the need for an industrial city arose, after the Lebanon war disrupted oil flow through the Trans-Arabian Pipeline; and thus, the idea that there must always be another outlet for export led to the development of Yanbu.

This choice of option, of two complexes – one on the Red Sea coast and one on the Arabian Gulf coast – proved fruitful in the Gulf War when most the petroleum was exported through Yanbu.

The RCJY had a strong backing from successive rulers after King Faisal, and during the rule of the late King Fahad, construction began and infrastructure was laid, and industries began to be established.

STANDING THE TEST OF TIMES

During the Gulf War, there were challenges to the Jubail Industrial City.

Firstly, it was manpower. During the Gulf War, when foreigner workers were fleeing the region, the Saudis managed to operate the industries 24/7.

"The non-stop work really helped the economy. You could export products and oil during a war, without interruptions," Al-Salem said.

Another challenge was the oil spill during the war. A contamination of the seawater on Jubail's shores would have jeopardised the operations of the factories, which drew water for cooling in large quantities.

Fortunately, the Abu Ali Island north of the province, acted like a natural barrier against the spill.

BILLION-DOLLAR FACTORIES

All four cities have 541 industries be-

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A SABIC manufacturing site in Jubail

tween them, with Jubail housing a significantly larger number.

To the skeptic, this might seem a small figure, but as Al-Salem puts it, these are huge factories, each worth billions and “equal to maybe a hundred factories”.

For instance, Satorp is worth \$13 billion and Sadara is worth \$20 billion.

In the case of Sabic, the chemical manufacturing giant owns other factories, including Petrokemya, Ar-Razi and Eastern Petrochemical Company (SHARQ) in Jubail, and Yansab in Yanbu, and others.

Some of these industries have been built through global partnerships, such as the Sabic-ExxonMobil partnership in YANPET in Yanbu and Chemia in Jubail, with Mitsubishi in Sharq, Total-Aramco in Satorp, etc.

Meanwhile, Yanbu is home to major refineries like YASREF and SAMREF, joint ventures with Sinopec and ExxonMobil, respectively.

It is also home to the National Titanium Dioxide Company (Cristal) owned by Tasnee, produces titanium dioxide, a material used in paints, for example.

The growth of the processing industries in the Kingdom is a clear signal of the shift in focus towards value added products in the downstream.



Al-Salem ... diversification focus

“In the past, basic industries were predominant, but in 2023 alone, processing industries increased by 11 per cent, and small industries increased by 77 per cent,” said Al-Salem.

EXPANSION OF THE RCJY

In 2003, during the rule of the late King Abdullah, both Jubail and Yanbu saw expansion,

and Jubail II and Yanbu II were constructed.

And during King Salman’s time, he inaugurated projects, like Sadara and Satorp in Jubail II which were valued at \$20 billion and \$10 billion, respectively.

The success of the Commission meant that it was asked to extend its expertise to other regions.

And thus Ras Al-Khair, a mining city, and Jazan also came under the RCJY umbrella.

Ras Al-Khair, home to mining giant Ma’aden and the King Salman International Complex for Maritime Industries and Services, was included in 2009.

Initially, Ma’aden started developing Ras Al-Khair at the state’s directive, building phosphate, fertilizer and aluminum factories. Then the RCJY took over and completed the infrastructure development.

The fourth and recent region put the RCJY management is Jazan.

The commission envisions it to be like Jubail and Yanbu. Today, it’s home to Aramco’s 400,000 barrels per day (bpd) refinery and 11 factories, with more diverse industries underway, including steel, titanium and sugar factories.

There is heavy Chinese investment in the region, especially in mining, to import raw

materials from Africa and produce final products in Jizan.

The opening of the local port has had a great impact, attracting Chinese industries to invest in Jazan, and adding new trade routes.

Currently, the RCJY also manages the ports in these four cities. These include the King Fahd Industrial Port in Jubail, King Fahd Industrial Port in Yanbu, Ras Al-Khair Port, and Jazan City Port Basic and Transformative Industries.

FUTURE STRATEGY

The RCJY has identified 12 investment sectors in line with National Industrial Strategy.

In its 50th year anniversary celebrations this year, the Commission launched its 2040 strategy, to double investment to SR2.8 trillion.

Al-Salem said investments worth SR300 billion were currently under study from around the world.

He mentioned China aggressively making investments, including investment SR38 billion in aluminum in Yanbu; SR27 billion in Jubail in plastics; and a partnership between Aramco and Baosteel in Ras Al Khair.

The RCJY is also gearing up for the Ministry of Energy’s ambitious plan to convert 400,000 barrels of crude oil into petrochemicals

Al-Salem said they were working with the Ministry of Energy on the plan.

He said there were already huge projects in Jubail and Yanbu for converting petroleum into petrochemicals.

“And having complete supply chains meant having a significant competitive edge, enabling the Kingdom to be a global supplier,” he added.

PLANNING AND INFRASTRUCTURE

The cities of Jubail and Yanbu were carefully planned by two American companies, and are considered modern cities by global standards.

Bechtel was in charge of Jubail, and Parsons looked after Yanbu. These companies adopted the best engineering standards available in the US at that time.

These cities came with something new. For instance, Jubail is raised a metre and a half.

“The amount of filling done in Jubail is enough to cover a 9-meter-wide road across

Continued on page 4



The Jubail Industrial City was meticulously planned

Yanbu is home to major refineries like Samref



Vision for industrial cities comes of age

Continued from page 3
the world's," said Al-Salem.

He said proper planning was done to build the cities. Geological studies were undertaken, and details including the weather and wind movement was considered, so that residential areas didn't have to face air coming from industries.

As for the industries, the basic industries had to be closest to the sea because they take large quantities of cooling water from the sea and also export large quantities through the ports.

Residential neighbourhoods were also meant to be close to the sea so that residents could enjoy the waters.

All the city's services and utilities are installed in designated service corridors on the sidewalks, avoiding the need to dig up streets in the future.

There are channels underneath that allow to deal with issues, such as connections.

"It's easy; you don't need to dig, you just pull. When we, for example, converted from copper to fibre telephone lines, we pulled out the copper wires and laid the fibre without digging," Al-Salem said.

A distinguishing feature of the Jubail city is its rainwater drainage networks, designed to handle the highest rainfall and flood rates.

Unlike other parts of the country, the industrial area of Jubail is least impacted by water accumulation during rains due to its robust infrastructure.

The cities utilise the gravity drainage system that carries the rainwater directly to the sea.

Al-Salem said the RCJY is also working with the Saudi Arabia Railways (SAR) to study the feasibility of a passenger train from Jubail to Dammam.

Currently, only a freight line exists. But Al-Salem said the city will get a passenger station in two years time.

To address the issue of housing, Al-Salem said the Commission has started building homes in partnership with real estate developers.

The first project for 1,900 villas in Jubail has been awarded to two developers. This will be followed by two more phased projects of 5,000 houses each.

In Yanbu, he said 1,100 houses were ready. The waiting time for Commission employees

for housing will be reduced to four years, starting 2027.

CONCLUSION

The RCJY has been instrumental in transforming Saudi Arabia's industrial landscape over the past decades.

From its inception in 1975, the Commission has driven the nation's shift from a crude oil exporter to a leading supplier of refined petroleum products, contributing significantly to the country's economic diversification and industrial growth.

Today, the four cities under its management – Jubail, Yanbu, Ras Al Khair, and Jazan – are pivotal to Saudi Arabia's non-oil exports and global petrochemical supply.

As RCJY celebrates its achievements and unveils its 2040 strategy, it remains committed to fostering innovation, attracting global investments, and advancing the Kingdom's ambitious Vision 2030 goals.

The Commission's enduring legacy of meticulous planning, robust infrastructure, and strategic partnerships underscores its pivotal role in shaping Saudi Arabia's industrial future.

A Marafiq utility station in Jubal



The Sadara Chemical Company in Jubail II is worth \$20 billion



The company has done over 300 projects in the Kingdom, but the most iconic project that gives it fame must be the longstanding Jubail Industrial City project, which it still continues to work on

Bechtel — the company that raised a whole new city

BECHTEL, one of the world's largest engineering, construction, and project management companies, has been a partner in Saudi Arabia development journey since the early 1940s.

In the eight decades of calling the country home, the company has done over 300 projects in the Kingdom, including everything from oil and gas facilities, airports, urban and industrial developments, rail, power projects, and even telecoms.

Some of the many ambitious projects include building the first oil refineries in Ras Tanura in 1943, the Trans-Arabian Pipeline in 1947, the first railroad from Riyadh to Dammam in 1951, and in recent times, Ma'aden, NEOM, Trojena, the Riyadh Metro Project, and most recently, New Murabba.

But the most iconic project that must give it fame is the longstanding, Jubail Industrial City project.

It is considered one of the largest civil engineering undertakings in modern times, one that saw a city develop from nothing.

Bechtel has managed the Jubail project since the start. In 2004, the company was asked to manage Jubail II, an 8,300-hectare expansion of the city's industrial and residential areas.

"There was a realisation in the early 1970s that there was huge value with associated gas that was being flared off and there was a really kind of prescient decision to embark on this program, and it was steady year after year such that today there's an entire city of over a hundred thousand people," Jacob Mumm, Managing Director for Bechtel Saudi Arabia,

said in an interview with The 966 Podcast.

After having worked on Jubail 1 and Jubail 2, Mumm says there's a future for Jubail 3 as well.

"Recently, the Royal Commission for Jubail and Yanbu has asked us to help manage the industrial zone of Ras Al Khair, which is to the north of Jubail.

"It is an awesome undertaking and you have to go out and see it."

Jubail today is considered the world's largest industrial city, and is associated with petrochemicals and the downstream industries.

But there's also a town there for people to live in. "So, everything from hospitals to schools, universities, corniche and then, of course, all of the utilities, roads, and all of the planning and engineering to support all of these industrial tenants," Mumm said.

For Bechtel, Jubail is different than many of its other projects in the Kingdom because they work in very close coordination with Royal Commission for Jubail and Yanbu, the autonomous organisation that oversees the industrial cities of Jubail, Yanbu, Ras Al-Khair and the Jazan.

"We're fully integrated. So, when you go into the offices, it's not obvious who works for Bechtel and who works for the Royal commission," Mumm said.

Last year, Bechtel celebrated its 125th year anniversary as a company.

In the Kingdom, the company worked on some of the early airports, including the international airports in Riyadh, Dammam and Jeddah; and modern oil and gas infrastruc-



A residential neighbourhood developed in the initial days of Jubail Industrial City

ture, like Shaybah and Khursaniyah; the Ras al Khair aluminum smelter — the world's largest aluminum smelter and Saudi Arabia's first; Riyadh Metro; and even parts of Neom.

Bechtel employees 4,000 people in the Kingdom, including a large number of Saudi men and women.

With special focus on young Saudis, and especially women, the company last year signed a partnership with Saudi Women Engineers Society (SWES) to support it with professional development, skill enhancement, and career advancement opportunities for Saudi national women engineers.

Bringing life to the industrial cities

DESPITE having a comprehensive environment, high-quality infrastructure, and exemplary quality of life, facilities, and services, the cities under the Royal Commission for Jubail and Yanbu (RCJY) rely solely on daytime life.

The Commission is working to make the city more livable.

From a boring city in the 90s, the Jubail Industrial City today has changed, argues an official.

"There has been a transformation, but frankly speaking, more is needed, to satisfy the people," Engineer Khaled Al-Salem, President of the Royal Commission for Jubail and Yanbu (RCJY), said.

Jubail has a daytime population, also known as commuter-adjusted population, slightly higher than the resident population.

"We have 254,000 residents at night and we reach 380,000 during the day. This means around 125,000 people come and go. These come in the day to work in the factories and since they come and they do purchases, they're considered residents," Engineer Khaled Al-Salem, President of the Royal Commission for Jubail and Yanbu (RCJY), said.

The city is increasing its shopping centres. From two malls today, Jubail is expected to get a third by the end of this year, in addition to a five-star hotel and entertainment, Al-Salem said.

Yanbu, much smaller than Jubail, has only one mall. The Commission is working with Al Othaim Investment to get another mall, in ad-



The nearest airport to Jubail is the King Fahd International Airport in Dammam

dition to a five-star hotel and tourist resorts on the Red Sea coast that are under design.

RCJY is also working to promote tourism in its cities.

It has partnered with the Public Investment Fund (PIF) to operate cruises in Jazan.

"It's the first step we took in Jazan. While we get the factories, we asked what are we going to do in the city? So, we thought of making it a

tourist attraction," said Al-Salem.

The priority now, he said, is not just an industrial city, but also a tourist city.

"And that's why we call it 'industry and life'."

Al-Salem said commercial investments worth SR4 billion had been signed in 2023. That's an increase of 23 per cent in just one year.

Unlike Yanbu, Jubail has no civilian airport. The only one there serves the military. But that

might change soon.

Al-Salem said: "We have signed an agreement with Prince Khalid bin Salman, the Minister of Defence, and the General Authority of Civil Aviation, and we're now working with operators to operate the airport by the year-end."

The airport will initially start with private airlines and then gradually transition to commercial airlines.

L&T Valves boosts KSA presence with new manufacturing facility

It aligns with the Saudi Vision 2030 and the iktva programme, actively supporting local value-chain creation and fostering skill development programmes

L&T Valves, a leading global flow-control solutions provider, has set up a new manufacturing facility - L&T Valves Arabia Manufacturing - in Saudi Arabia.

Anil V Parab, Whole-time Director and Senior Executive Vice-President – Heavy Engineering and L&T Valves, inaugurated the facility in the presence of Ahmed Al Zahrani, Director – Industrial Development and Strategic Supply, Aramco.

The event was attended by senior personnel from Aramco, key end-users, EPC companies, L&T and associates.

Strategically located at Al Jubail, off the Dammam-Abu Hadriyah Highway, the new manufacturing facility boasts systems and processes certified to meet the stringent requirements of ISO 9001 (Quality Management Systems), ISO 14001 (Environmental

Management Systems) and ISO 45001 (Occupational Health and Safety Management Systems).

Additionally, the entity is authorised to use the API 600, 594, and 6D monograms of the American Petroleum Institute (API), signifying its commitment to the highest standards of valve manufacturing.

L&T Valves is one of the largest suppliers of on-off valves to Saudi Arabia, and opening of the new facility marks a significant milestone and the beginning of a new era for world-class 'Made-in-KSA' flow-control solutions catering to the energy and allied sectors.

It aligns with the Saudi Vision 2030 and the In-Kingdom Total Value Add (iktva) programme, actively supporting local value-chain creation and fostering skill development programmes.

Commenting on the occasion, Parab, said: “The new facility will significantly enhance our local production capabilities in line with the Saudi Vision 2030. It will further strengthen the collaboration between L&T and Saudi Arabia.”

The facility will catapult the manufacturing capability of the region, providing a unique opportunity to progressively address the growing requirements in the Middle East and Africa.

Larsen & Toubro is a \$27-billion Indian multinational enterprise engaged in EPC projects, hi-tech manufacturing, and services, operating across multiple geographies.

A strong, customer-focused approach and the constant quest for top-class quality have enabled L&T to attain and sustain leadership in its major lines of business for eight decades.



L&T Valves Arabia Manufacturing, Al Jubail



Zahrani (left) with Parab (centre) and S Kalyanaraman, Chief Executive, L&T Valves



High Pressure Gas Test Facility

Olayan Descon sets sight on future growth in KSA & GCC

O LAYAN Descon Company, an integrated engineering and industrial services Saudi company, has set in place short- and long-term growth plans as it increases its footprint in the evolving Saudi energy sector.

The pioneer in maintenance shutdowns and the manufacturing of heavy equipment has been serving the oil and gas and petrochemicals industries for the past more than 40 years.

The Saudi energy market is set to undergo significant changes in the coming years, driven by the ambitious Vision 2030 plan.

A key component of this vision is the oil and gas sector, where companies like Olayan Descon, part of the Olayan Group, are playing a crucial role.

With plans to expand manufacturing facilities and produce new products, the company is well-positioned to capitalise on the evolving market landscape.

“I think the fact that Saudi Arabia is evolving is well-known now. And being part of the oil and gas industry, Olayan Descon is expanding as well. We are establishing new manufacturing facilities, and producing new products as part of this growth,” Engineer Saeed Alshehri, General Manager of Olayan Descon Company, tells *OGN*.

The company is not only expanding its manufacturing capabilities but also forging partnerships with cutting-edge technologies to enhance its business.

This forward-looking approach promises a lucrative future, with ample opportunities for both local and international companies to participate in the sector's growth.



Alshehri ... commitment to growth

And as it grows, sustainability remains at the heart of Olayan Descon's operations, aligning with Saudi Arabia's broader green goals.

Over the past few years, Olayan Descon has integrated sustainability into its core values, establishing yearly KPIs to ensure sustainable growth. This includes becoming green fabricators in manufacturing processes.

Moreover, the company supports its suppliers in adopting sustainable practices, ensuring they meet green manufacturing standards.

“This commitment to sustainability is part of Olayan Descon's environmental, social, and governance (ESG) standards, aligning with the



The headquarters of Olayan Descon

goals set by both the Olayan Group and the Saudi government,” says Alshehri.

Olayan Descon has devised an ambitious strategy for expanding its business in Saudi Arabia and the wider GCC region.

With over 40 years of experience in the industry, the company is well-equipped to seize emerging opportunities.

It has laid out both short-term and long-term

strategies, aiming to achieve significant milestones between 2026 and 2028.

In the immediate future, Olayan Descon is focusing on actionable strategies to tap into the vast potential of the Saudi market.

By leveraging its extensive experience and innovative approach, the company is poised to make substantial contributions to the region's energy sector while fostering sustainable growth.

Lummus drives innovation and collaboration in KSA

Recognising that we cannot do everything ourselves, we have to look at new technology innovations in collaboration with users and investors, Leon de Bruyn tells **OGN**

LUMMUS Technology, with a century-long legacy of innovation, is a leading developer of process technologies for the energy industry.

The company has been driving its objectives of fostering collaboration and advancing technological innovations in Saudi Arabia, aligning with the country's vision for localisation and energy transition.

In an exclusive interview with *OGN* energy magazine, Leon de Bruyn, President and CEO, Lummus Technology, spoke about Saudi Arabia's evolving energy market and Lummus' expansion in the Kingdom, its commitment to sustainability and its drive for advancing technologies for efficient resource use and circular economy solutions, crucial for the region's green goals.

Below are excerpts from the interview

What are Lummus Technology's scope of operations?

Lummus Technology has been around for more than a hundred years. It was started by Walter E Lummus with a vision of innovation. And today, we are the largest portfolio holder of process technologies for the downstream industry, including refining, petrochemicals, and polymers.

How is Lummus contributing to Saudi Arabia's evolving energy market?

Saudi Arabia, by its history and location, is a centre of energy. With vast natural resources and an important geographic location, which connects the East and West, and a strong international positioning, the country has an opportunity to build a powerful knowledge base in the energy space.

I expect Saudi Arabia to keep growing and take a leading role in the future of energy. And I'm proud that Lummus has the opportunity to participate in a changing Saudi Arabia.

We established an office in Dammam and we've been growing that office. In fact, Lummus' fastest growing office is here in Saudi Arabia.

We also moved our chief technology officer (CTO) Ujjal Mukherjee and his team to the region to help build up the knowledge base in



de Bruyn ... collaborating for innovation

Saudi Arabia, and to leave our mark.

We believe Lummus has a responsibility to help advancing the know-how.

Lummus aims to exchange knowledge and to forge collaboration across the industry.

And with our portfolio, we have a lot of collaboration already. But we also recognise that we cannot do everything ourselves; we have to look at new technology innovations in collaboration with users and investors.

With sustainability being a key focus, how does your company help the region further its green goals?

When we talk about energy, sustainability is integral to it. And it manifests itself in two different dimensions.

Firstly, we should always strive to use our natural resources as efficiently and as beneficially as possible. That leads to more sustainable use of our natural resources.

Second, you want to retain the carbon molecules in the hydrocarbon cycle thus creating a circular economy through circular solutions.

And we have multiple technologies in our portfolio, and continue to develop new technol-



Lummus offers catalysts for refining, petrochemical and polymer processes

ogies, to enhance the circularity of the hydrocarbons to allow us to use our natural resources as wisely as possible.

And last but not least, there are opportunities to move into new products that have a more sustainable use and lower carbon intensity, and use feedstocks that also aid in the direction.

Lummus is a leader of combining feedstock diversification of process technologies, as well as going into new products and materials for consumption.

How does Lummus plan to address carbon reduction?

From the original feedstock to the materials made for consumption, and the side products that then get circularly reinvented into that chain, we are seeing more and more of the whole energy value chain becoming integral to the transition.

And that integral aspect is not just for the natural resources, but I also see more biogenic materials making their way into the value chain.

This combination of natural resources, fossil fuels and biogenic materials is going to be important.

And we at Lummus are heavily involved in this process. For example, through our polyhydroxyalkanoates plastics, which is a biologically produced plastic that is also biodegradable, we are solving some of the single-use plastics dilemmas so that we can have single use from biogenic material.

Additionally, more durable plastics from the fossil fuel can act as a carbon sink.

Placing CO₂ in products is going to be a viable way to reduce carbon.

And while there's a lot of focus on taking CO₂ out from the atmosphere or emissions, I also think creating a carbon sink in durable materials is going to be a viable destination for CO₂.

What are the biggest opportunities and challenges for Lummus in Saudi Arabia?

The opportunities in Saudi Arabia are abundant. This is due to the wealth of natural resources here, the internationalisation of the whole economy and the recent change in mindset. All these combined nurtures an openness that will attract a lot of talents.

And at the end of the day, our industry is helped by the best talents.

Coming up with new technological innovations require talents, implementing those requires talents, executing them favourably requires talents. And thus, our industry is all about having the right brain power.

Saudi Arabia offers that opportunity to bring all the brainpower together.

That also is the main challenge because there are not enough engineers in the world; there aren't enough chemical engineers or technologists to support our ambitions in the energy transition, and the transformation of our energy from yesterday to tomorrow.

So, the challenge is to attract the right brain power and keep them excited about our future.

How has business been for your company over the past year?

We have been very busy in the past few years, and we're busier than ever.

When we became an independent company four years ago, we didn't expect the changes in our industry. But we were nevertheless ready for it.

And with a passion of our employees, we were able to very quickly take opportunities and convert them concrete, new technologies, help our customers implement them, and make significant strides towards the energy transition.

Fortunately, with a lot of automation on the engineering, customer and data side, we've been able to expand very rapidly.

Lummus technologies can help energy companies enhance efficiencies and reduce emissions



Topsoe champions sustainable energy solutions in Kingdom

In the coming decade, the company envisions Saudi Arabia emerging as a global leader in sustainable energy, and Topsoe playing a pivotal role in shaping this transformative journey, Jesper Poulsen, tells **OGN**

Topsoe's global headquarters in Kongens Lyngby, Denmark



TOPSOE, a leading global technology licensor and expert in catalysis and process technology, is actively engaging Saudi companies, including giants, such as Saudi Aramco and SABIC, for understanding and supporting their decarbonisation strategies.

The company realises the potential of the Saudi market and the immense opportunities in store as the Kingdom sets out on an energy transition path.

"Frankly, it is one of the most exciting markets. Right now, it is very heavily based on fossil resources. But what we are going to see in the future is a transition into how these resources can be utilised in an efficient and environment-friendly way," Jesper Poulsen, Licensing Manager at Topsoe, tells **OGN** energy magazine in an exclusive interview.

"We will also see how the abundant Sun and solar energy can be exploited to greenify the grid and bring sustainability into it," he adds.

Topsoe stands out for its proven track record and innovative offerings. Setting itself apart from competitors, Topsoe boasts historical references and operational excellence, aligning seamlessly with the ambitious goals of Saudi policymakers and local companies.

"It is different when you are proposing something that you might be able to do, and something that you actually have done in the past," says Poulsen.

With a focus on decarbonisation at scale, Topsoe presents ready products capable of transforming the region's energy economy.

From ammonia production to Power-to-X technologies, Topsoe's solutions hold the key to transitioning Saudi Arabia into a lower carbon future.

"Firstly, we have our traditional business, which is mainly based around transforming



Poulsen ... technology leader

resources into energy for instance, natural gas into ammonia and natural gas into methanol in a way where we capture and sequester carbon to avoid the emissions," says Poulsen.

And then we have a portfolio within the Power-to-X business sphere. So that would be utilising electrolyzers.

Through its Power-to-X business, Topsoe offers a range of technologies that convert electricity, particularly from renewable sources, into other forms of energy or products, for instance, greenhydrogen, green ammonia and green methanol.

The company's proprietary electrolysis technology is called solid-oxide electrolysis cell (SOEC).

Topsoe has already taken a financial investment decision on a 500-megawatt facility in Denmark. It recently also announced a 1-giga-



Topsoe's SynCOR™ autothermal reforming technology (previously called ATR) is often the preferred technology in many syngas-producing plants around the world

watt facility in the US.

For Topsoe, the opportunity in Saudi Arabia surely is the Kingdom's ambition to driving the economy towards a low carbon economy and in achieving its environmental objectives.

These objectives are being pursued both in what it calls the blue transition, which involves the utilisation of natural resources like natural gas, and it is also driven in the green space, where Topsoe is expanding its solar and wind capacity to actually produce enough power to make green hydrogen.

But despite promising opportunities, Topsoe acknowledges the challenges ahead.

While the transition to a low-carbon economy is underway, securing offtakers remains a hurdle.

"We see that Saudi Arabia is ready to move ahead. But it is, of course, waiting for offtakers to give clear signals that they are ready to purchase these new low carbon intensity modules," says Poulsen.

Looking ahead, Topsoe harbours long-term plans for expanding its operations within Saudi Arabia.

Bolstered by revenue growth and market traction, the company anticipates further expansion, particularly in renewable fuels and low-carbon chemicals production.

In the renewable fuels' portfolio, its proprietor HydroFlex solution, which converts waste oil into renewable and diesel into sustainable aviation fuel, is a gamechanger.

Poulsen sees growth ramping up in this segment, especially in the North American market.

He also sees a desire building up in the Middle East to have renewable fuels being produced and definitely to produce low carbon chemicals.

Excited about Saudi Arabia's potential, Poulsen emphasises the unique opportunity it presents, with abundant natural resources and a conducive environment for solar energy.

"It's a unique position to be in that Saudi Arabia actually has the opportunity to exploit both," he says, adding, "many regions have either, or. So either they have a lot of sun but no oil and gas, or they have a lot of oil and gas but no Sun."

He anticipates a surge in mega-scale projects harnessing both traditional and green energy sources.

In the coming decade, Topsoe envisions Saudi Arabia emerging as a global leader in sustainable energy, with the company playing a pivotal role in shaping this transformative journey.

Ras Al-Khair SEZ entices investors with tax breaks

THE Ras Al-Khair Special Economic Zone (SEZ) aims to host the largest shipyard in the Middle East and North Africa (MENA), leveraging partnerships with major maritime players and backing by the Saudi government to attract investment.

Ras Al-Khair is located on the eastern Arabian Gulf coast of the Kingdom, just north of Jubail Industrial City.

The shipyard is King Salman International Complex for Maritime Industries and Services, which aims to be both the largest shipyard in the Mena region and the most technologically advanced.

Major activities include shipbuilding, repair, offshore rig fabrication and repairing.

The shipyard leverages modern technologies like AI and IoT in its bid to drive innovation, in addition to renewable energy sources.

The SEZ also includes a fully integrated offshore cluster to localise end-to-end offshore supply chain.

Four entities have been created in the SEZ in pursuit of meeting the region's increasing demand for maritime applications. The entities include:

- International Maritime Industries (IMI), a joint venture of Aramco, Lamprell, Bahri, and Hyundai Heavy Industries (HHI).

- Saudi Engines Manufacturing Company (Makeen), a joint venture of Aramco, Hyundai Heavy Industries (HHI), and Saudi Arabian Industrial Investments Company Dussur.

- McDermott Arabia Company,
- Aramco-Baosteel steel plate plant, a joint venture of Aramco and Baoshan Iron and Steel Company.

This is in line with Ras al-Khair's proactive approach to seeking diverse partners and investors globally, with multiple incentives promised for both the short and medium term.

These include a 5 per cent corporate income tax for up to 20 years. There will also be 0 per cent customs duties deferral for goods inside the zone and 0 per cent withholding tax for profit repatriation abroad – both indefinite. There will also be 0 per cent VAT for intra-SEZ goods exchanged within the zone and between zones.

IMI has already signed offtake agreements totaling \$10 billion over 10 years with partners Aramco and Bahri, for the delivery of 20 rigs and 52 vessels acquiring, at least, 75 per cent of Bahri commercial vessel needs over the period from the shipyard.

According to Eng Ahmed Hassan, CEO of Ras Al-Khair City for Mining Industries:



A rendering of King Salman International Complex

"This is an exciting time for Saudi Arabia. Projects like Ras al-Khair are spearheading the Kingdom's drive to become a global investment destination by developing a modern, sustainable maritime and logistics powerhouse."

The development of the SEZ and King Salman International Complex for Maritime Industries and

Services is designed to contribute to Saudi Arabia's Vision 2030 by further developing and diversifying the Kingdom's economy.

The SEZ aims to reach a maritime industry target value of \$14 billion annually and create over 80,000 direct and indirect jobs while attracting investment from around the world.

New Honeywell naphtha tech to boost efficiency

HONEYWELL has announced a transformational new naphtha to ethane and propane (NEP) process that will enable regions across the world to improve the efficiency of light olefin production and lower CO2 emissions per metric ton of olefin produced.

Ethane and propane are the ideal feedstocks for producing ethylene and propylene – important petrochemicals used in the production of chemicals, plastics and fibers.

This innovation demonstrates Honeywell's alignment of its portfolio with three compelling megatrends, including the energy transition.

The NEP technology generates a tunable amount of ethane and propane from naphtha and/or LPG feedstocks.

In a typical NEP-based

olefin production complex, the ethane will be fed to an ethane steam cracking unit and the propane will be fed to a propane dehydrogenation unit.

This approach generates more high-value ethylene and propylene with reduced production of lower-value byproducts compared to a traditional mixed-feed steam cracking unit directly processing the same quantity and composition of feedstock.

This new approach results in net cash margin increases from 15-50 per cent.

An NEP-based olefins complex also reduces CO2 intensity per metric ton of light olefins produced by 5-50 per cent versus a traditional mixed-feed steam cracker.

Honeywell's latest technology expands our port-

folio of offerings to help meet growing demand for efficient petrochemical solutions.

"The petrochemical industry faces strong competition and challenges in obtaining raw materials globally," says Matt Spalding, Vice-President and General Manager of Honeywell Energy and Sustainability Solutions in MENA.

"Our technology helps to enable more efficient production of ethylene and propylene, two chemicals which are in high demand, while also helping our customers lower their carbon emissions."

This new solution is a part of Honeywell's Integrated Olefin Suite technology portfolio – a first of its kind in the industry that creates differentiated offerings to enhance the production of light olefins.



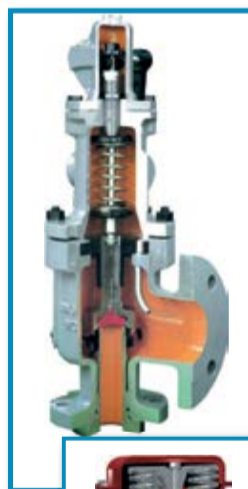
The NEP process will lower CO2 emissions of olefin produced

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Enhancing the performance of pressure transmitters

Endress+Hauser's TempC membrane diaphragm seal provide more accurate performance when measuring lower pressures, without the need to increase the size of the process membrane, writes Sivaji Nimalipuri, Product Manager - Level and Pressure

PRESSURE measurement is extensively used in the petrochemical and oil and gas industries to measure the process pressure of a vessel, equipment, or pipeline for surveillance purposes.

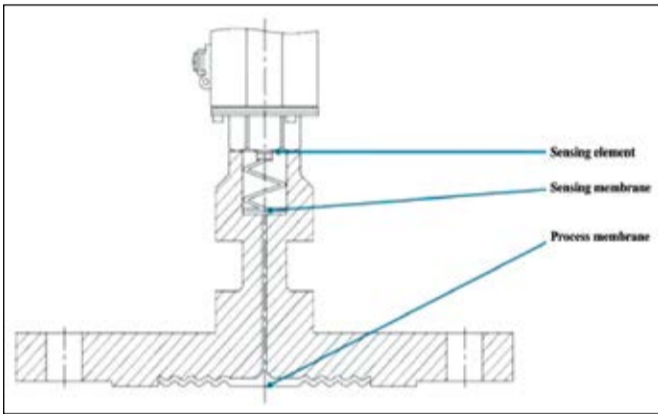
In more complex scenarios, pressure measurement can be employed to calculate a compensated level measurement in a sealed and pressurised vessel, or to measure the flow by combining with primary elements like orifice plate, Venturi, etc.

However, application conditions can be often challenging, demanding special precautions to protect pressure transmitters from harsh process conditions.

These harsh process conditions could be high process temperatures, aggressive media, or high vibrations.

The diaphragm seal will be employed to manage such severe conditions, effectively isolating, and protecting the pressure transmitter.

Serving as a secondary line of defence, positioned between the pressure transmitter and the process, a diaphragm seal offers an additional process membrane ahead of an oil-filled, sealed system linked to the sensing membrane of the pressure transmitter.



A cross-sectional view of a pressure transmitter fitted with a diaphragm seal

The addition of this secondary membrane allows for more flexibility in the build specifications to tackle harsh process conditions.

For aggressive media, a broader selection of process membrane materials, such as Monel, Tantalum and gold-plated, can be considered to provide a more abrasion-resistant or chemically compatible measuring surface.

For high-temperature applications, an extension piece can be added between the process and sensitive transmitter electronics to ensure that transferred temperatures from the process have sufficiently reduced before impacting the sensor element and associated electronics.



Pressure transmitters fitted with capillary lines (left) and extension pieces for cooling purposes (centre and right)

For applications that involve high vibrations, a flexible extension segment, also referred to as a capillary tube or line, can be utilised to mitigate or completely remove any vibration that might be transmitted from the process to the transmitter.

The flexibility of capillary tubes makes them a popular choice for dealing with other installation issues related to pressure measurement.

For example, in installations where space is limited, a capillary tube can be beneficial by enabling a smaller physical attachment to the process and allowing the related transmitter to be remotely mounted in a more suitable location.

However, diaphragm seals, in any form, can introduce their own factors into pressure measurement.

For lower pressures, like those in millibar ranges, a bigger process membrane is necessary to ensure appropriate sensitivity and hence accuracy in measurement.

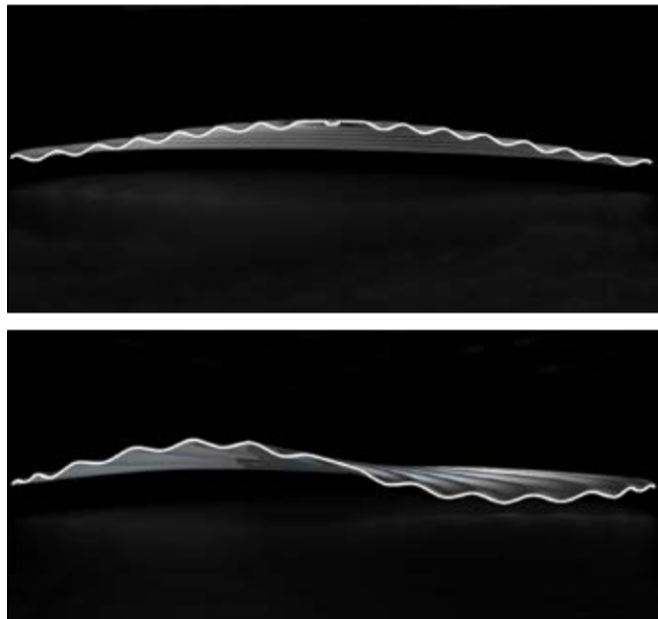
This larger membrane often necessitates a bigger process connection, which typically requires the use of mechanical fittings like adaptors for installation.

Not only do these adaptors add to the cost, but they also take up extra space around the fittings and increase the number of potential leak points in the installation, thereby decreasing on-site safety.

Diaphragm seals can encounter problems due to environmental temperatures, particularly those with capillary system designs.

Each capillary system contains a fill fluid that can be affected by the ambient temperature. If the fill fluid becomes sufficiently heated, it can expand and apply pressure on the inner walls of the filled system chamber.

The process and sensing membranes, being the only flexible parts of the chamber walls, naturally flex to accommodate the



A conventional symmetric membrane (top) compared with a TempC asymmetric membrane (bottom)

increased fluid volume. This deflection is interpreted by the sensing membrane as a pressure measurement, which can result in a false reading.

TEMPERATURE COMPENSATORY MEMBRANE

Advancements in membrane design aim to tackle issues such as those previously mentioned.

Innovations like Endress+Hauser's temperature compensatory (TempC) membrane are designed to create a non-axisymmetric deflection mode, resulting in an asymmetric movement in the process membrane.

By increasing the material's thickness and altering the pattern imprinted on the membrane, the behaviour of the process membrane is modified to produce a different response when pressure is applied.

This results in increased sensitivity from the diaphragm seal, providing more accurate performance when measuring lower pressures, without the need to increase the size of the process membrane.

This removes the need for adaptors during transmitter installation, thus reducing potential leak points around the on-site fitment.

Different sizes of TempC diaphragm seals:

Flange size	Membrane diameter	Membrane thickness	Membrane material	Welding technology
DN 25 / NPS 1"	28mm	50µm	316L	Laser
DN 50 / NPS 2"	61mm	100µm	316L	Laser
DN 80 / NPS 3"	89mm	100µm	316L	Laser

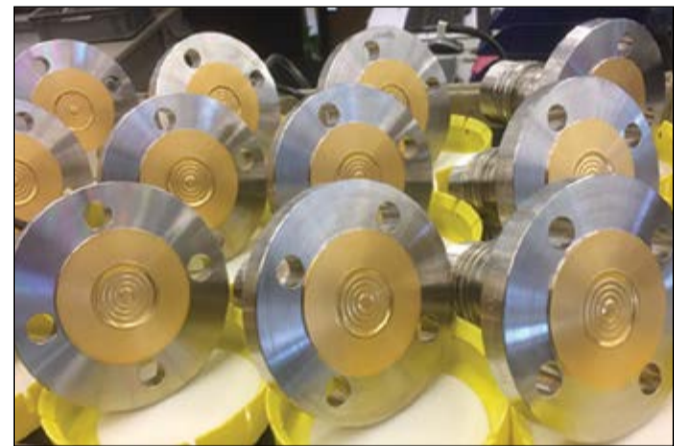


TempC diaphragm seals with 3-inch, 2-inch and 1-inch sizes

The increased flexibility of this type of process membrane also helps correct inaccuracies caused by fill fluid expansion.

As aforementioned, this expansion happens when an external heat source (like sunlight heating the capillary attached to a vessel's top) causes a volume increase in the diaphragm fill fluid, leading to an internal pressure increase that pushes against the sensing membrane, resulting in an error.

By using a more flexible process membrane with improved deformation properties, this increase in fluid volume is physically absorbed, diverting the impact away from the sensing membrane, and thereby reducing any potential error.



Gold-plated TempC diaphragm seals for hydrogen services

The advantages TempC diaphragm seals offer over traditional diaphragm seals include:

- Highest accuracy and process safety.
- Minimised influence of process and ambient temperature fluctuations.
- Smaller dimension process connections with the same or superior accuracy.
- Replace DN80/NPS 3-inch diaphragm seal flange with DN50/NPS 2 inches.

Regardless of their design, diaphragm seals are recognised for their decreased sensitivity to measured pressure and increased sensitivity to external heat sources.

These characteristics should be considered along with the substantial advantages that diaphragm seals provide.

However, with modern advancements from specialists in the instrumentation field and the ensuing technological progress, the effects of these issues can be mitigated. This enhances the reliability and safety of this measurement method, while also lowering installation costs.

TempC diaphragm seals performance compared with traditional diaphragm seals:

DN/NPS	PN/Class/Class	stability & accuracy
DN 25/NPS 1"	PN 10-40/ Cl. 150/ Cl. 300	up to +75%
DN 50/NPS 2"	PN 10-40/ Cl. 150/ Cl. 300	up to +33%
DN 80/NPS 3"	PN 10-40/ Cl. 150/ Cl. 300	up to +20%