



review





SUBSEA TECHNOLOGIES BUILD UP

Boosting the speed of subsea production from end-to-end



GENERATION RESILIENCE

Regenerating the talent pool through Hunting apprenticeships



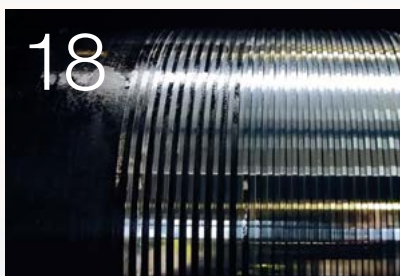
EDEN RENEWABLE

The first successful geothermal venture to power the Eden Project



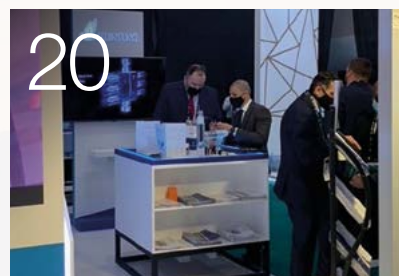
GOING INTO THE DEEP

Hunting engineering expertise expanding new projects in the Gulf of Mexico



INDIAN EXPANSION

A new joint venture to grow Hunting's presence in the growing Indian OCTG market



OUR HUNTING COMMUNITY

News from our community



Hunting Review the external house magazine of Hunting PLC
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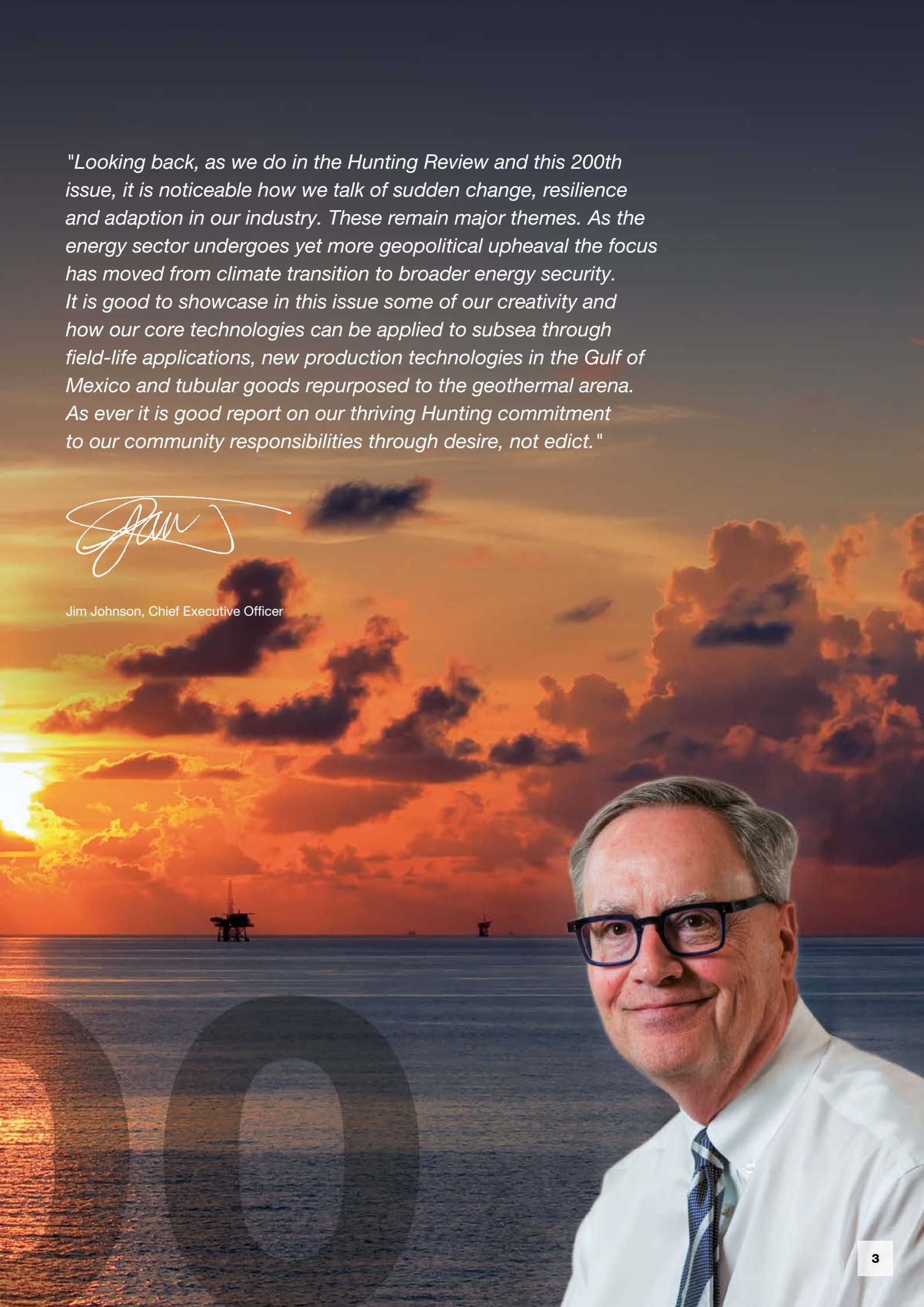
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"Looking back, as we do in the Hunting Review and this 200th issue, it is noticeable how we talk of sudden change, resilience and adaption in our industry. These remain major themes. As the energy sector undergoes yet more geopolitical upheaval the focus has moved from climate transition to broader energy security. It is good to showcase in this issue some of our creativity and how our core technologies can be applied to subsea through field-life applications, new production technologies in the Gulf of Mexico and tubular goods repurposed to the geothermal arena. As ever it is good report on our thriving Hunting commitment to our community responsibilities through desire, not edict."



Jim Johnson, Chief Executive Officer



Subsea technologies build up



The early adoption of Flow Access Modules by BP in the deepwater Gulf of Mexico over five years ago was a contributing factor to the customer achieving a subsea tieback schedule from sanction to first oil in just under a year



The more quickly a subsea production system is built and the faster a well starts producing, then the sooner the operator sees a return on their investment. The technology to achieve that is central to Hunting Subsea's Enpro offering. Flow Access Modules (FAM) and closely related Flow Intervention Services (FIS) fully align with this fast track, low cost mantra. Over 75 offshore wells around the world have now maximised production from these systems either from the original design phase or through retrofitting.

KEEP IT IN THE FAM

What are they and how do they achieve the benefits? Essentially, they are patented hubs onto which many different applications can be phased – just like the concept of a USB port. These sit on the seabed and are integral to the flow, or 'jumper' line. This allows the operator superb flexibility in how the well is managed using standard subsea architecture such as Christmas Trees, Pipeline End Manifolds or Pipeline End Terminations. This means that different technologies can be employed through life of field and outside the scope of the original design. They are retrievable packages made to optimise various production functions such as flow measurement, flow assurance, data acquisition and intervention access. In BP's Gulf of Mexico operations this has meant that moving the flow assurance off the customised Christmas Trees and onto generic ones has saved around six months of scheduling. It also simplifies the subsea infrastructure such as allowing for a single spur flow line instead of a dual flow loop, providing additional cost savings. →

KEEP IT FIS

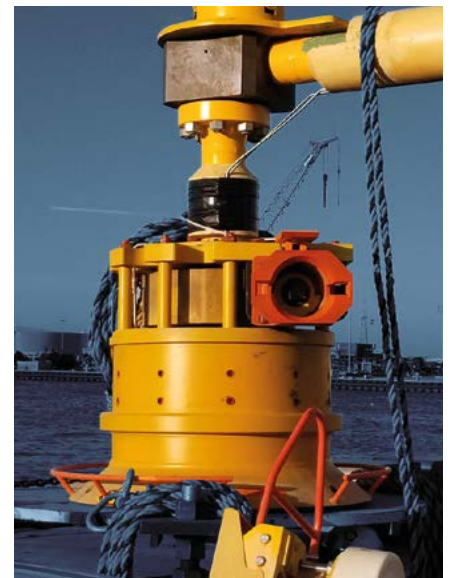
The core product within Flow Intervention Services is a field-proven hydraulic intervention system allowing a spectrum of low-cost fluid operations from a range of vessel types, instead of just a rig. Because it is modular by design, it can include acid stimulation, scale squeeze, hydrate remediation as well as flow line flushing and well kill treatment. It can also be configured to a range of operational criteria such as depth, pressure and flow rate.



END OF FIELD

At the end of a field's life, a variant technology can be employed for decommissioning as is used by Shell to remove trapped fluids at the base of the Brent Bravo platform north of Shetland. The patented Anchor Hub reduces the size and complexity of associated subsea hardware by once again providing a single access point for a range of applications. In these four instances with Shell, it allowed for the sampling and recovery of fluids trapped in top domes of the cells of gravity-based structure platforms. ■

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Generation Resilience

Looking ahead to regenerate the talent pool, a new generation are being trained through Hunting apprenticeship programmes in Norway and Holland



Henrik Erikson is a bright young Norwegian who joined Hunting in April 2021 as an apprentice Industrial Fitter and has since moved over to HESWI to develop his Well Intervention competencies. Guided by Chief Mechanic, Terje Hogstad, and QA Manager, Tove Kvalvik, Henrik is progressing his training through the regional Training Office for Industrial Sciences, Rogaland (OFIR).

Hunting is a member of OFIR, a non-profit organisation which provides training programmes for apprentices in the field of mechanics. The training office oversees the training placements for apprenticeships, but the member companies employ the apprentices and nurture their talent.

Henrik is on a two-year placement, at the end of which he will receive certification and have the possibility of a position with the company.

GOING DUTCH

The dedication to developing a new generation of talent, while diversifying the talent pool, is also to be found at Hunting Energy Services in Holland. The HESBV team has enrolled six new employees between the ages of 20-25 who have just completed 2-3 years of company-sponsored certification. During the “schooling” period, the apprentices work for Hunting for four days per week and receive theory lessons for the fifth day at government accredited colleges. The theory module is designed so that, on graduation, the apprentices can apply their learning straight away.

Hunting continues to pay a full salary on the school days, as well as sponsoring the schooling; while the apprentices commit to completing the course and staying with the company for at least three years.

The benefits of this have shown to be: increased productivity, loyalty, deeper knowledge of the “shop floor”, while also bringing in fresh mindsets and new approaches to the business. ■



Henrik with Total owned Pressure Control Equipment being packed for shipping to the operator, Altus



Jari Pols



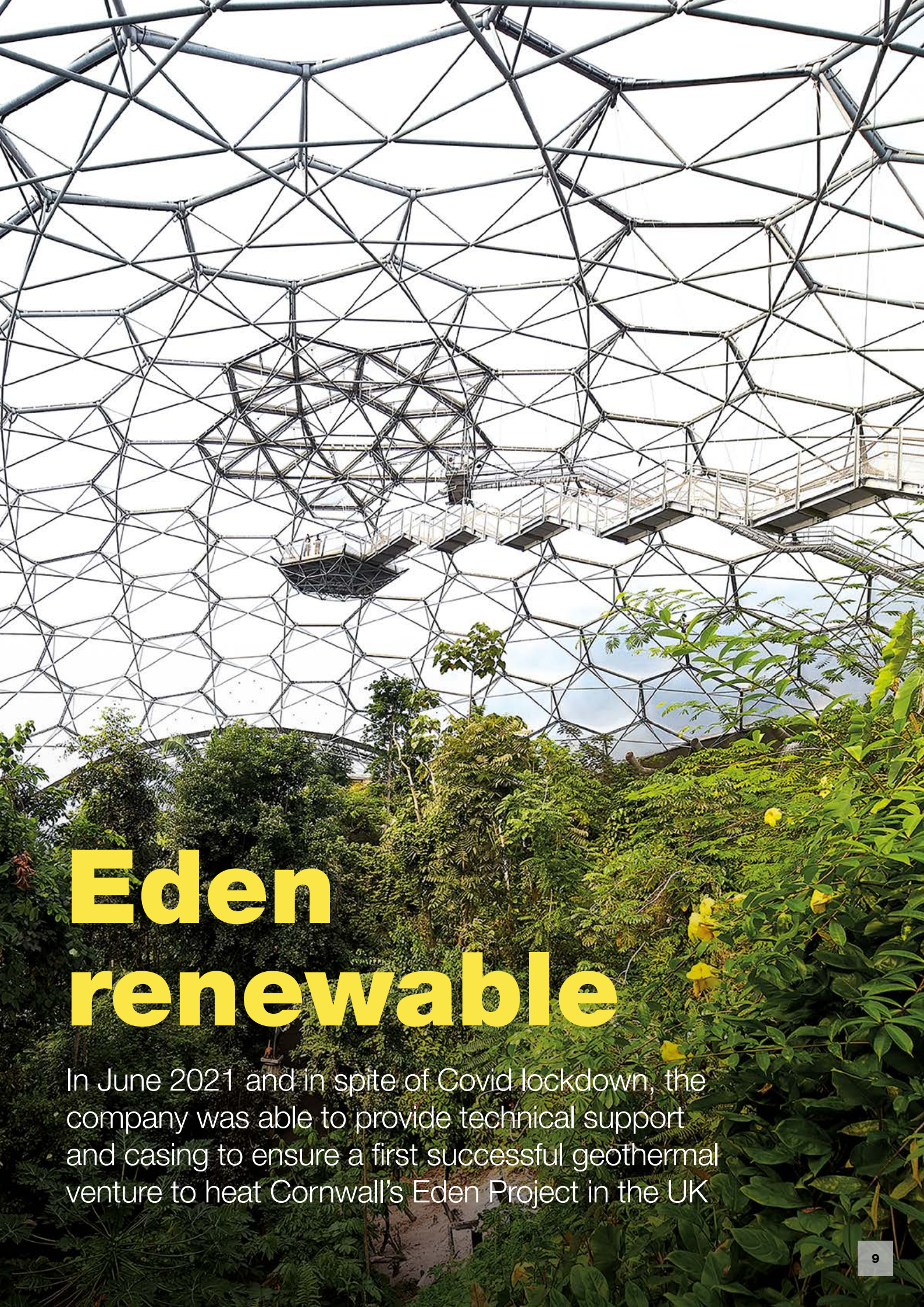
Claudia van Dijk



Marjolein Gertenbach



Murtada Al-Buarab



Eden renewable

In June 2021 and in spite of Covid lockdown, the company was able to provide technical support and casing to ensure a first successful geothermal venture to heat Cornwall's Eden Project in the UK



The Aberdeen arm supported the initial phase of the ambitious Eden Geothermal project. The mainly EU funded enterprise has been set up to unlock energy over 4,800m deep in the granite and supply heat to the Eden Project's famous Biomes, kitchens, and greenhouses. The ambition is also to generate electricity through steam turbines for Eden and the locality in the region of 4-5Mw, which could power an additional 14,000 homes.

The Eden Project is an extraordinary rendition of Sir Tim Smit's vision to create a movement that builds relationships between people and the natural world, in a worked out clay pit in the southwest of England. Opened some twenty years ago, it comprises temperate botanical gardens outside and indoor

Biomes that simulate tropical rainforest, Mediterranean, desert and other global environments. These geodesic domes are probably the largest in the world.

Geothermal energy is produced naturally from the earth's core. Typically, vertical wells are drilled deep underground to access the thermal energy stored in the rocks and fluids beneath the earth's crust, often reaching temperatures of 370°C. For the Eden Geothermal project, the

heat being harnessed is closer to 180°C. The first of a two-well system has been drilled and on completion both will allow for hot water to be pumped down one well and the second will allow steam to rise to the surface and power the turbines. Effectively this is an industrial scale Ground Source Heat Pump that will provide Base Load renewable energy that is not subject to weather when the sun does not shine or the wind does not blow.

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Following a competitive tender, Hunting was awarded the contract to support the first well phase during the summer of 2021.

The Hunting team, successfully project managed and delivered 20,000ft (approx. 6,100m) of casing from its Aberdeen facilities at Potlethen and Fordoun, to the Eden Geothermal site. Around 20 of its personnel, including logistics, OCTG engineers, manufacturing and operations were involved in the campaign as well as providing onsite tubular running support.

This included the installation of racking to store the pipe when delivered and the loan of a forklift truck. The outcome was one hundred percent successful and it is a measure of the collaborative spirit that there were no issues. Peace of mind all round for client and company.

Casing is integral to ensuring a well's structural integrity, as well as creating a primary barrier to the surrounding formation. It is manufactured from a solid billet, extruded and machined as

per American Petroleum Institute (API) specifications to create the finished tube with standard buttress joints linking the pipe in the wellbore. Hunting has been supplying casing to the oil and gas sector for decades, and its Dutch operation has recently supported a geothermal project in Europe with similar products. →



Ian Park Managing Director for HESUK from Hunting said: “We are very excited that our first foray to support the UK’s energy transition is with the pioneering Eden Geothermal project.

“There are great synergies for our tubular product line across many of the renewable energy industries including geothermal, making us the ideal choice for this ground-breaking project. We

have been able to apply our expert methodology, technical support, logistics and project management skills to deliver our casing safely, which has opened the door for us to support further geothermal projects in line with our overarching energy transition growth strategy.”

Set up by partners Eden Project, EGS Energy Ltd, and Bestec (UK) Ltd, the project received a grant from the European

Regional Development Fund, alongside Cornwall Council and a balance from institutional investors. It aims to provide a greater understanding of Cornwall’s geology at depth, enabling resources in the region to become characterised as reserves.

Eden Geothermal Project Manager, Max Skerrat, wrote in support of the Hunting team’s role and commitment:





"Hunting Energy Services supplied us with all of our casing needs for a 5,277m (MD) geothermal well in granite. The casing was ordered in the middle of the first COVID lockdown however, Hunting still managed to deliver all the casing with no delays to the programme. The communication and aftersales service with experienced onsite technicians in order to help us run the casing was a great help. We would not hesitate to use Hunting again for any of our OCTG requirements." ■

Effectively this is an industrial scale Ground Source Heat Pump that will provide Base Load renewable energy that is not subject to weather when the sun does not shine or the wind does not blow



Going into the Deep

Hunting Subsea Technologies is proving a successful addition to the Subsea division with timely new projects in the Gulf of Mexico





It has been a busy 12-18 months for the team at Hunting Subsea Technologies in Spring, Texas.

In 2020 the site began the process for designing of and manufacturing five titanium stress joints and eight steel stress joints, all of which were delivered in 2021. With that underway, the team is already developing a further four titanium stress joints to be delivered in 2022.

TITANIUM PERFORMANCE

In late 2019, Chevron announced an expansion of production at its Jack and St Malo fields in the Gulf of Mexico. To accommodate the increase of production to over 675 million barrels over the course of the next 30 years, Hunting Subsea was commissioned to provide the necessary equipment. In February 2020 the team began work on designing and producing the 10.75" titanium stress joint to replace an existing steel flex joint, which required forging, machining, welding, assembly, and thorough hydro-testing. Titanium was chosen as it has the advantage of good resistance to attack from sour and acidic well flows, as well as gas permeation. Titanium also gives lower vessel loads than steel and typically has better performance against metal fatigue.



In addition, Subsea supplied ancillary equipment including adapter bushings, first steel welding, a hang-off collar and a shipping basket. Assembly was completed in July 2021 and the material was installed in December, highlighting Hunting's ability to adapt and respond to bespoke customer requirements. →

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ANCHOR AWAY!

In 2020 the team also successfully supported Chevron's Anchor project in the Gulf of Mexico; the industry's first deepwater high-pressure development. In order to handle pressures of up to 20,000psi, Chevron needed to upgrade its infrastructure. In response, Hunting Subsea designed and built 12 adapter bushings, along with two integral steel tapered stress joints for a 10" production riser. The steel stress joints were the largest single pieces of steel Hunting has ever worked on, requiring 55,000lbs of steel at delivery and resulting in a joint weighing 41,000lbs once the machining was complete.

As well as the stress joints and adapter bushings, the team produced an 18" oil export riser, which required a complementary 18" titanium stress joint. This was another first, as it was the largest titanium stress joint the company has built to date, requiring 65,000lbs of titanium and three titanium welds. A 16" gas export riser and ancillary equipment was also delivered.

Throughout the course of the project Hunting acquired additional value adding work to provide plate forgings and weldments. All of the design and production was completed in November 2021 and is now in storage awaiting installation on the Anchor project.

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The King's Quay Semi-submersible Floating Production System (FPS) was delivered to Ingleside, Texas, in September last year. After a 14,000 mile journey from the Hyundai Heavy Industries Shipyard in South Korea, King's Quay arrived in Texas and required extensive upgrades before production could begin. For this project

Hunting was tasked with designing and building six steel stress joints (the longest we have ever produced) which involved procurement, machining, the welding of a steel production riser pipe, along with hydrotesting and installation of upending and pull heads. The single steel forging was 60 feet long, coming from a vendor

in Italy, and each joint required roughly 350 hours of longbed lathe machining. Hunting Subsea has also been commissioned to deliver the first ever titanium stress joints on a Floating Production Storage and Offloading (FPSO) vessel destined for Phase One of the Bacalhau field in the Brazilian pre-salt Santos area. The delivery of four titanium stress joints will take place later this year.

Rounding off a successful year, in December 2021 ExxonMobil put in another order for five titanium stress joints with seven direct pull-through tube assemblies. ■

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Indian expansion

A new joint venture is growing Hunting's presence in the prosperous Indian OCTG market

Hunting Energy Services has agreed to form a new joint venture with Jindal SAW Limited, an Indian conglomerate based in Nashik. The agreement formalises a closer bonding of the partnership between the two businesses, following a strategic agreement in 2019. In the years since, Hunting and Jindal have worked together to develop their presence in the rapidly growing Oil Country Tubular Goods (OCTG) market in India.

In accordance with the terms of the joint venture agreement, Jindal SAW and Hunting are establishing a dedicated premium connection

threading facility near the existing steel mill in Sinnar, Nashik, with a proposed 130,000 sq. ft. manufacturing site.

Jindal will provide the piping and coupling stock, along with infrastructure and utilities. Hunting will supply the connection technology, as well as training and field supervision and engineering support to customers for the selection of materials. Hunting's international network of suppliers and customers will be complemented by Jindal's knowledge of local markets and patterns.

The facility will be fully operational by the end of 2022, with three threading lines. Prior to this agreement, one hundred percent of Premium OCTG in India was imported.

With an annual OCTG capacity of 50,000 metric tons, the facility will be utilised for all manufacturing work. Hunting and Jindal SAW will contribute start up cash in proportion to the shareholdings, with additional funding which will be complemented by cash flows generated from the joint venture. The potential annual market for Premium OCTG in India is close to \$200m.





Hunting's international network of suppliers and customers will be complemented by Jindal's knowledge of local markets and patterns

OPPORTUNITIES FOR ALL

The joint venture provides both companies with a platform for significant growth within the Indian market; Hunting's premium connections will be designed and manufactured domestically. All the equipment will be sourced through local channels, and the venture will create 100 skilled jobs in the region, from engineers, to machinists, logisticians and site inspectors. The venture will also stimulate Indian vendor development as materials such as protectors and forgings can now be sourced locally, in line with the Indian Prime Minister's vision of 'Atmanirbhar Bharat,' meaning a self-reliant India.

As part of the commercial agreement with Jindal SAW and Hunting, this venture will open the doors of premium connection for OCTG from India to numerous regions, particularly the Middle East, and provide import substitution for big players in the production of oil and gas. ■

The joint venture provides both companies with a platform for significant growth within the Indian market

Our Hunting Community

UK INTERNATIONAL TRADE SECRETARY AND US TRADE REPRESENTATIVE VISIT ENPRO SUBSEA

In April this year the Enpro Subsea facility in Westhill, Aberdeen UK, hosted Anne-Marie Trevelyan MP, UK International Trade Secretary; Andrew Bowie MP for Aberdeenshire West; and Katherine Tai, US Trade Representative, as part of the second

joint dialogue on the future of Atlantic trade. Ms Trevelyan used the visit to highlight the UK's approach to energy strategy, which is aimed at energy security and independence, and was welcomed by Enpro Subsea CEO, Ian Donald.

During the visit, Ms Trevelyan cited Enpro Subsea as "a great example of a company playing a key role in the safe decommissioning of North Sea oilfields as part of the Government's Energy Security Strategy." She praised Enpro for how its "clever" technology demonstrates that

environmental goals can be achieved hand-in-hand with an evolving North Sea industry.

Enpro was acquired by Hunting in early 2020, and continues to develop cutting-edge production-boosting technology for use across the globe.



CONTINUOUS IMPROVEMENT IN WUXI

Hunting Wuxi has proposed the use of robotic arms instead of manpower for coupling processing, in line with Hunting's wider commitment to Continuous Improvement in all facilities to improve efficiency, reduce costs and safeguard our personnel.

Innovative designs include a set of safety guard rails in the robotic arm operation area which, when breached, cause automatic cut-off of the robotic arms. Moving the emergency cut-off switch outside the guard rail also allows the automatic opening

or closure of the lathe doors, further increasing the safety of the operators.

Further safety measures have been implemented with the use of high-pressure air jets to remove waste iron filings which can impede the movement of

machine parts, and custom tools have been installed. New jaws and locators have also been installed.

We are constantly striving to improve all processes, boosting safety, efficiency, and customer satisfaction.



NEW CONNECTION TECHNOLOGY

Earlier this year we introduced the new Wedge-Lock High Torque Connection (WLHT). The WLHT is currently available in sizes ranging from 4.5 – 5.5 inches, with wedge-style thread form and optimum

run-out thread design for maximum axial effectiveness.

The WLHT has extremely high torque capacity, having been exhaustively tested for combined load, torque and fatigue, in accordance with

relevant API protocols for testing connection performance in multi-fractured horizontal wells. The WLHT's Pin Nose metal-to-metal radial seal offers maximum performance under tension, compression, bending and torsional loads.



SPE GALA DINNER

Hunting Energy Services Dubai is a proud to be the long standing sponsor of local SPE Section in UAE covering Northern Emirates. Graham Goodall as GM Hunting MENA Region received a plaque as a token of appreciation from SPE Northern Emirates Executive team. Oumer Tahir, in his capacity as Chairperson of SPE Northern Emirates Section hosted representatives of E&P and Service firms

during SPE ATCE 2021 in September in Dubai.

Dignitaries included: SPE President Kamel Bennaceur, 2021 SPE President Tom Blasingame, 2023 SPE President Med Kamal, SPE CEO & EVP Mark Rubin, and Regional Directors from MENA Region: Qasem Al-Kayoumi and Hisham Zubari were also present.



MORE SUCCESSES IN TEXAS

Early this year the Titan Division of Hunting Energy Services announced an exclusive licensing agreement with Nammo Defense Systems Inc. for the manufacture of time delay fuses for Hunting's perforating applications.

According to Jason Mai, managing director of Titan Division, the licensing

agreement allows us to enter the oil and gas market with our own version of time delay products and removes constraints associated with purchasing time delay fuses from outside manufacturers. Nammo Defense's innovative manufacturing method has also allowed the pursuit of non-oil and gas opportunities.

To add to Titan's success, the company received approval from the US Department of Transportation for the international air transport supply of detonating cords in the spring of this year. Following a year of successful detonating cord sales and implementation in North America, the approval for air package shipping

was granted due to the critical nature of det cord dependability in perforating operations. In addition to the standard temperature RDX, the approved product line includes higher temperature HMX products with conventional, low-shrink, and extra-high velocity offerings.

PLATINUM JUBILEE

The 70 year Platinum Jubilee of Queen Elizabeth II was celebrated in the UK with an extended bank holiday in early June 2022. She actually acceded to the monarchy on 6 February 1952. As ever

London loves to put on the pomp and ceremony and the Hunting Head office is no different. A charity fundraising lunch was held and members of staff dressed up for the occasion.



HUNTING EZI SHEAR SAVES THE DAY

During a plug setting on the Martin Linge field, in the Norwegian sector of the North Sea, the Plug setting tool did not release according to procedure. When trying to pull free from the Plug (Interwell ME), the wire broke and left 4473 meters of 5/16 Mono Conductor cable in the well, in addition to the Plug and Setting tool. It became apparent that multi-capable cutting capability may be required to ensure well control.

HESNO contacted Dan O'Brian at Hunting and asked if it would be possible to cut 5-8 strands of 5/16 Mono Conductor with the Ezi Shear. Dan and his team immediately responded and asked if we could supply the cable in question for them to do the testing. Within

16hrs they had proven that the Ezi Shear is capable of cutting 8 strands of 5/16 Mono Conductors in one go if needed.

Equinor and Altus was informed, and based on the results the fishing operation on Martin Linge could be set in motion. The Ezi Shear cutting performance was instrumental in doing the job. Even though the Ezi Shear failed a pressure test after the cutting, it was not a problem since there is a Lower Master/Swab and a BOP that would seal the well in case of an emergency.

Equinor was so impressed by the response from Hunting that they sent us a cake as a thank you.



RICHARD HUNTING RETIRES

After 50 years in the Hunting Group, Richard H Hunting, CBE, announced his retirement at the Annual General Meeting in April.

Richard joined the Hunting group in 1972 and joined the Hunting PLC Board on the formation of the Company on 5 August 1989. Richard was appointed executive Chairman in 1991 and became non-executive Chairman in July 2011. In September 2017 Richard stepped down as Chairman of the Company, but has continued since then as a non-independent, non-executive Director.

As Chairman, Richard led Hunting PLC through its transformation from a conglomerate, consisting of aviation, defence and energy interests, to become a focused upstream energy services group.

"I would like to thank all my fellow Directors and employees, who have been part of the Hunting Group over many years, for their continued support." – Richard Hunting

We wish him all the best in his well-earned retirement.

PAULA HARRIS JOINS THE BOARD

Following the conclusion of the Annual General Meeting, Paula Harris has joined the Hunting Board, being appointed to the Board's Audit, Ethics and Sustainability, and Nomination and Remuneration Committees.

Ms Harris spent over 33 years with Schlumberger

Ltd, the international oilfield services group, before retiring in 2020. Educated as a petroleum engineer at Texas A&M, Paula worked in offshore field operations before progressing into leadership roles in training, sales and ultimately, Director of Global Stewardship.



Pictured above right: Ms Harris



BRENDA FARROW MARATHON

Brenda Farrow completed a sponsored marathon walk, covering 26.2 miles from Winchester Cathedral to Salisbury Cathedral, an ancient pilgrims' trail in Southern England known as The Clarendon Way.

Brenda as Global Head of Tax based in London raised a decent sum from friends and colleagues for Naomi House and Jackspace, a charity providing hospices for children and young adults with terminal illnesses.



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