



Eaton: solutions for maximising safety, reliability and performance

In the offshore oil and gas sector, where a breakdown or an accident can have huge financial implications, there is an understandably strong emphasis on maximising safety, reliability and performance in every aspect of operations. These three crucial factors are, however, by no means independent of each other. In particular, it is impossible

to maximise plant safety and performance without addressing reliability.

Reliability is, however, influenced by many factors, ranging from the inherent reliability of individual components to the overall complexity of a plant, its operating conditions and the effectiveness of its maintenance regime. Eaton maintains that it is, therefore, essential when specifying

and acquiring new plant to adopt a proactive approach to ensuring reliability from the outset.

Aware of the pressing need for reliability in offshore oil and gas applications and of the influence of reliability on safety and efficiency, Eaton Hydraulics Group has developed novel technologies that provide dependable and



Eatonite Laser
Clad coating
technology.

cost-effective solutions for two of the most common causes of unplanned maintenance events in the petrochemical sector - piston rod corrosion in hydraulic cylinders and hydraulic hose failure.

Eatonite Laser Clad

Piston rod corrosion and abrasion wear are persistent problems that have been a major source of unreliability for decades, particularly in offshore drilling operations.

"Reliability is critical in the upstream environment. Rig platforms are rented out on day rates, and if you have a day or two of downtime you can walk into the multi-million dollar category."

Now, however, the proprietary Eatonite Laser Clad coating technology has been confirmed and certified by independent test services company DNV as offering effective protection for the piston rods of hydraulic cylinders operating in even the harshest conditions.

The tests carried out by the DNV confirmed that, after processing, not only

is the Eatonite coating twice as hard as Inconel 625, a well-known corrosion resistant alloy (CRA), but also that it has excellent coating homogeneity, thanks to Eaton's laser deposition technology. As a result, Eatonite-clad piston rods deliver mechanical performance equal to that of traditional SAE4130 rods, combined with the corrosion resistance equal to that of the best CRA materials.

The DNV has certified Eatonite-clad rods as meeting the requirements laid down in the 'Guideline for qualification of wear and corrosion protection surface materials for piston rods' developed as part of a Joint Industry Project. Eaton is the first company to deliver products that meet these requirements.

Neal Benedict, global director oil & gas, Hydraulics Group, Eaton Corporation, commented: "Reliability is critical in the upstream environment. Rig platforms are rented out on day rates, and if you have a day or two of downtime you can walk into the multi-million dollar category. It can take six to eight years to bring a field into production, so schedules are aggressively mapped out. And if you start to see downtime in those

schedules obviously the oil company is going to take longer and longer to recoup its investment. So reliability is critical to ensure that companies are meeting their offshore obligations.

"With the corrosive nature of salt water in mind we've developed Eatonite, which is a laser-clad coating made up of a proprietary mix of chemicals. It has a good mix of ductility, so it's actually fairly flexible as a coating. One of the problems with ceramic coatings is that although they're hard they're subject to the forces of the metal and so can crack more easily. And once you have a crack then corrosion becomes a problem. With Eatonite we have been able to bend the metal 180 degrees and still see no cracks."

LifeSense hose

Another major source of downtime in oil and gas operations is failure of hydraulic hoses and, in addition to lost production and revenue, such events create serious safety hazards. With Eaton's LifeSense hose, however, it is now possible to continuously monitor the health of every hose in a hydraulic system and to alert the user when one or more of those hoses is approaching the end of its useful and safe working life.

In the past, it has been standard practice in the petrochemical sector to minimise the risk of hose failure by replacing hoses on a fixed schedule. As a result, large numbers of costly hydraulic hose assemblies are replaced long before they have reached the ends of their lives. With LifeSense hose, which was jointly

LifeSense
hydraulic
hoses.



developed by Eaton and Purdue University, assemblies can safely remain in service for far longer. In fact, tests have shown that up to 50 per cent more service life can be expected from LifeSense hoses,

"LifeSense is not only a new technology, but it's also progressing - not only with regard to the hoses we offer today but also to the hoses we're going to offer in the future."

with complete peace of mind for users.

Eatonite piston rod cladding and LifeSense hoses from Eaton provide genuine improvements in reliability, safety and efficiency that are particularly relevant to users in the demanding oil and gas sector. These are, however, only two of the wide range of groundbreaking technologies that Eaton can offer users in this vital and demanding sector, and the company's experts are always happy to



discuss off-the-shelf and bespoke solutions for specific challenges.

Benedict commented: "LifeSense is not only a new technology, but it's also progressing - not only with regard to the hoses we offer today but also to the hoses we're going to offer in the future. It's moving from a wire technology to a

wireless technology, which we see as being very important. And it is important to us that LifeSense is able to be easily integrated to the user's existing monitoring platform, without the need to implement a new monitoring system."

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SPOTLIGHT

AIR PRESSURE REGULATOR

NORBAR TORQUE TOOLS has launched a new Multi Channel Lubro for regulating air pressure when using pneumatic torque multipliers and other pneumatic tools. This device allows the operator to undertake multiple applications without having to continually refer back to air pressure graphs and without then manually adjusting the pressure setting.

Up to 15 programmable channels are available for multiple applications and settings are protected by supervisor key control. A useful write-on label located on the front of the Multi Channel Lubro can record up to 15 air pressures in psi/bar together with job references and torque measurement settings in Newton metres. These features ensure consistency when different operators have set a particular pressure. The Norbar Multi Channel Lubro can be operated from mains or battery.

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DEWPOINT & PRESSURE MEASUREMENTS

The VAISALA Dewpoint and Pressure Transmitter DPT146 for compressed air is said to be the first transmitter on the market that monitors both dewpoint and process pressure simultaneously, creating the ideal tool for anyone in need of high quality compressed air.

For the first time, dewpoint data is constantly pressure compensated online and in real-time, which means that separate conversions are no longer needed to take possible changes in pressure into account. It also means that no ambiguity exists in the information, making the data reliable and accurate, and consequently, enabling more informative decision making and timely corrective actions.

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HAZARDOUS AREA ENGINE CONTRACT

FINNING POWER SYSTEMS (Finning) bespoke engineering is meeting rigorous, offshore hazardous area requirements in Vietnam. Thanks to its long-standing relationship with SPP Pumps, a global leader in engineered pumping solutions, Finning Power Systems has been selected to supply, engineer and package four hazardous area engines for offshore oil and gas platforms in the Hai Thach & Moc Tinh gas fields, located off the coast of Vietnam. Each of the four Caterpillar 3508 engines will power a firewater protection pump for use in hazardous zones. This is designed and engineered by SPP Pumps to provide critical protection for both equipment and personnel in the event of a fire.

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Petrofac 

BESPOKE DIESEL GENERATOR

Petrofac, the international oil & gas facilities service provider, has selected FINNING POWER SYSTEMS to provide a custom-engineered, hazardous area generator package to power a submersible fire pump and motor.

The Finning diesel generator set, comprising a Caterpillar 3512B marine engine and driving an alternator will provide dedicated power at 6,600v to a floating production, storage and offloading (FPSO) unit, operating offshore Malaysia.

The Finning generator set will be deck mounted and has to comply with a number of stringent safety and environmental requirements, including DNV Marine Classification and SOLAS safety standard. Finning has many years' experience of developing bespoke solutions and is purpose-engineering the generator to meet the customers exacting requirements.

These include the installation of the generator within an H60 container. This is pressurised to create a safe area inside the container as the outside atmosphere could, at times, be classified as a Zone 2, temperature class T3, Gas group IIA hazardous area.

The Finning generator set also has to start and stop in accordance with the NFPA20 rules for fire pumps.

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