PDO, Oman

Key Facts:

Company: Petroleum Development Oman (PDO)

Website: www.pdo.co.om

Description: Petroleum Development Oman (PDO) is the leading exploration and production company in the Sultanate of Oman. It delivers the majority of the country's crude oil production and natural gas supply, but above all, it focuses on delivering excellence, growth and sustainable value creation within and well beyond the industry. The Company is owned by the Government of Oman (60% interest), the Shell Group (34% interest), Total (4% interest) and PTTEP (2% interest). Gas fields and processing plants are operated by PDO exclusively on behalf of the Government.

Employees: 7,000

Industry: Oil & Gas

Country: Oman

Products Used:

- PAS Automation Integrity™
- PAS Cyber Integrity™
- PAS AlarmManagement™

Petroleum Development Oman (PDO) Improves Alarm Management and Establishes OT/ICS Cybersecurity Best Practices with Hexagon

Identifying Goals

Petroleum Development Oman (PDO) is the leading oil and gas exploration and production company in the Sultanate of Oman. Its operations include 205 producing oil fields, 64 gas fields, 29 production stations, more than 8,400 active wells, more than 33,000 kilometers of pipelines and flowlines and 231 operating units in its well engineering fleet, including 49 rigs and 39 hoists.

PDO's Five Keys to Improve Business Operations:

- Improve the capacity and capability of the Omani people and businesses to secure commercial and sustainable benefits for their country

- Reduce operational costs

- Increase operational efficiency

- Avoid unnecessary asset integrity process safety incidents

- Enhance cybersecurity to protect operational assets

How PDO Used Hexagon Solutions

The ISA/IEC standard in alarm management was first released in 2009. Around the same time, official reports on several industrial incidents noted the lack of alarm management as a contributing factor for the incidents. The industry was gaining a greater appreciation of the necessity of alarm management solutions. With this emerging awareness and its own alarm situation in mind, PDO began its alarm management journey with PAS AlarmManagement[1] in 2010.

1 PDO first started working with PAS Global, which was acquired by Hexagon in 2020.

In the early 2010s, each console operator within PDO was being inundated with alarm events (up to 4,000 alarms per hour). This is far too high for anyone to effectively manage or respond to. So, PDO started to search for a solution provider who could not only provide the technology it needed but also expertise and experience in implementing the best practices with the PDO team.

The Hexagon team helped PDO host alarm rationalization workshops to implement alarm management best practices and decide which alarms should go to the operators and which should go the operations journals. Thanks to this work, the alarm rate presented to console operators went down to an average of three alarms per hour with peaks limited to twenty alarms per hour. This performance put PDO in line with the targets of the ISA/IEC standards. Within one year of collaboration, all the facilities achieved the targets that were set for alarms per facility and shift.

Realizing Results

Fast-forward nearly 10 years later, and PDO was searching for a partner to help with operational cybersecurity and execute a full asset inventory by the end of 2021. In 2019, PDO signed a five-year partnership agreement with Hexagon. The agreement allowed for full collaboration and a close partnership between PDO and Hexagon, and within this framework, the Hexagon team helped PDO create a realistic project schedule and roadmap for what was needed for a full Operational Technology (OT) cybersecurity module to be implemented. First, the Hexagon team reviewed the existing PDO infrastructure, and a plan was developed after a thorough review to upgrade PDO's existing infrastructure to support the software implementation.

> **We went down from literally tens of thousands of alarms per shift to less than 12. This helped our operators, and PDO overall, tremendously in improving efficiency and safety, as personnel can now focus on critical work."**
>
> **Jamal Balushi**
> Control and Automation Team Lead
> PDO

The Hexagon team worked collaboratively and seamlessly with the PDO team to identify and resolve issues proactively and quickly. This collaborative approach increased the efficiency of the deployment activities and delivered the software ahead of an already aggressive timeline.

> **Working with Hexagon personnel has been excellent — the communication has been precise and clear from the beginning, and we've had a full overview of expectations on both sides. It's a true partnership between our companies."**
>
> **Jamal Balushi**
> Control and Automation Team Lead
> PDO

The Secret of the Solution

What made Hexagon and the PAS Cyber Integrity solution stand out from the competition:

- The increased software interoperability capabilities

- An easy to implement functional infrastructure

- Their staff expertise and the successful PDO and Hexagon partnership

- The flexibility of the software

Moving Forward

The next phases of the five-year contract will be implementing the PAS ControlWizard™ and PAS IPL Assurance™ modules. PDO's process optimization team will use ControlWizard™ to review and analyze the performance of control loops plantwide. IPL Assurance will be used by the control discipline team for the management of Safety Integrity Functions (SIF) and Independent Protection Layers (IPLs) to ensure that these mission-critical safety systems are designed and functioning properly. These technologies and associated processes will help lead to continued success and improvement in PDO's quest for operational excellence. As Balushi said, "PDO is looking forward to the upcoming implementations and continuing the cooperation with Hexagon".

HEXAGON

Hexagon is a global leader in digital reality solutions, combining sensor, software and autonomous technologies. We are putting data to work to boost efficiency, productivity, quality and safety across industrial, manufacturing, infrastructure, public sector, and mobility applications.

Hexagon's PPM division empowers its clients to transform unstructured information into a smart digital asset to visualize, build, and manage structures and facilities of all complexities, ensuring safe and efficient operation throughout the entire lifecycle.

Hexagon (Nasdaq Stockholm: HEXA B) has approximately 22,000 employees in 50 countries and net sales of approximately 4.3bn EUR. Learn more at hexagon.com and follow us @HexagonAB.