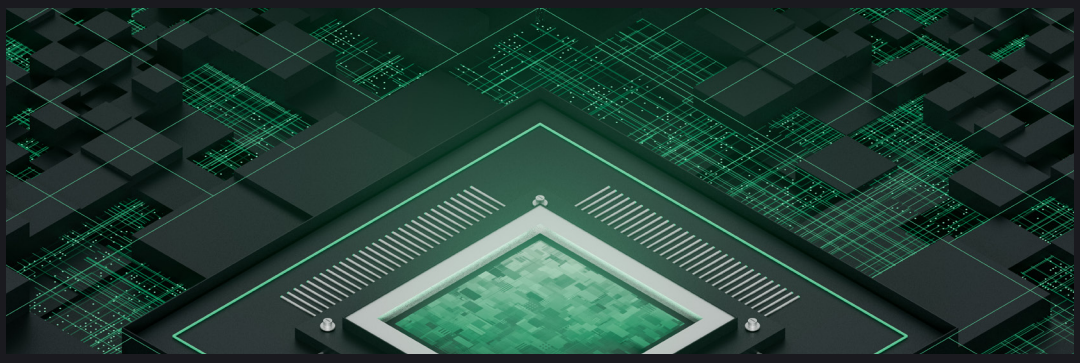
CASE STUDY

PDO improves alarm management and establishes OT/ICS cybersecurity best practices with Octave



Key facts:

Company: Petroleum Development Oman (PDO)

Website: www.pdo.co.om/en

Industry: Oil and gas

Country: Oman

Octave products used: Tempo Automation Integrity *(PAS Automation Integrity)*, Cyber Integrity (PAS Cyber Integrity), Tempo Alarm Management *(PAS AlarmManagement)*

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.

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 improving 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

"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

How PDO used Octave 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 Tempo Alarm Management in 2010.

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 Octave 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 Octave. The agreement allowed for full collaboration and a close partnership between PDO and Octave, and within this framework, the Octave 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 Octave 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.

The Octave 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.

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

"Working with Octave 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 Octave and the 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 Octave partnership
- The flexibility of the software

Moving forward

The next phase of the five-year contract is implementing the Tempo Control Loop Performance (formerly PAS ControlWizard) and Tempo Safety System Performance (formerly PAS IPL Assurance) modules. PDO's process optimization team is using Tempo Control Loop Performance to review and analyze the performance of control loops plantwide. Tempo Safety System Performance is being used by the control discipline team for the management of safety integrity functions (SIF) and independent protection layers (IPL) to ensure that these mission-critical safety systems are designed and functioning properly. These technologies and associated processes are leading 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 Octave."

About Octave

Octave is a leader in enterprise software, turning data into decisive action and intelligence into your edge. Our software solves for and simplifies complexity, from the design and build to operations and protection of people, property and assets – for any scope, at any scale. For decades, we've partnered with customers to sharpen performance, elevate efficiency and amplify results. From factory floors to entire cities, our solutions are tuned to scale up what's possible from day one onward.

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