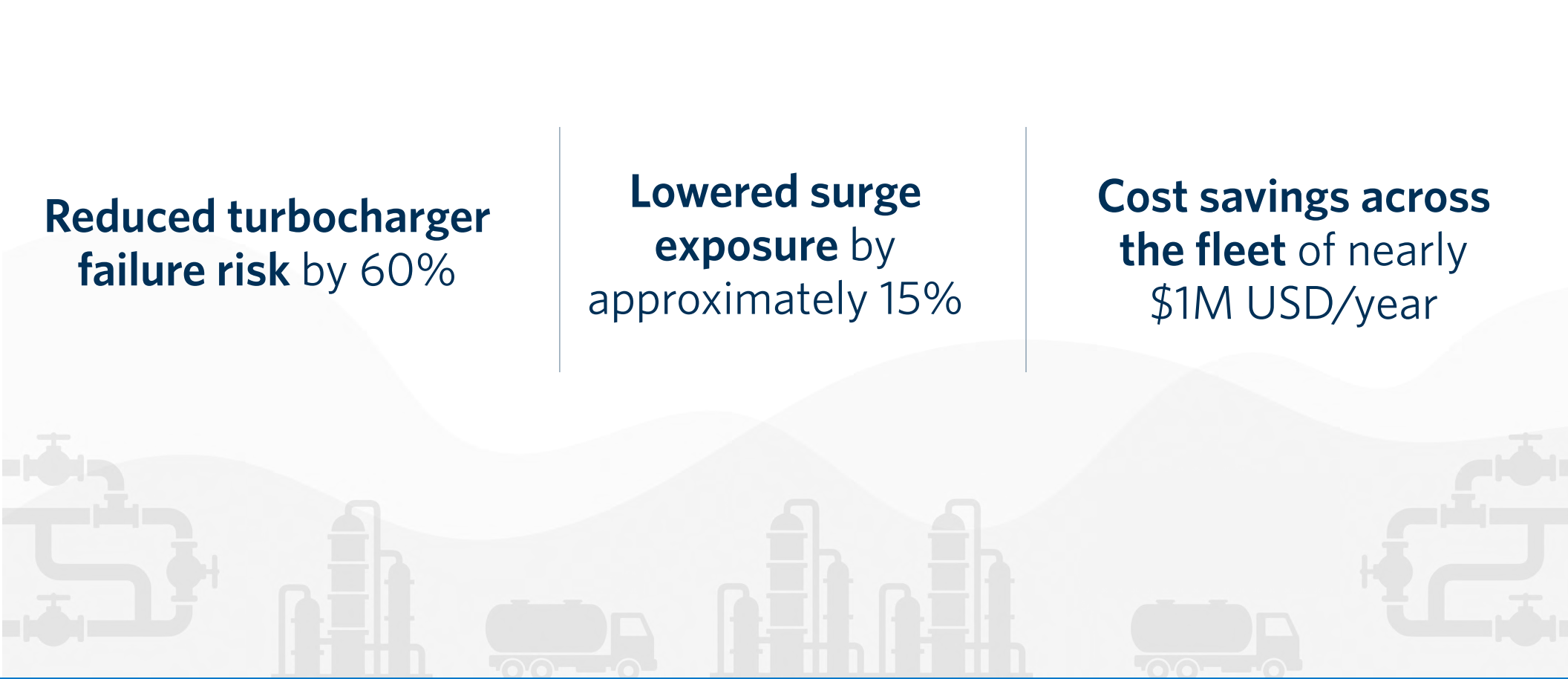




OCP Ecuador Reduces Turbocharger Failure Risk with AI-Driven Reliability



**Reduced turbocharger
failure risk by 60%**

**Lowered surge
exposure by
approximately 15%**

**Cost savings across
the fleet of nearly
\$1M USD/year**

CHALLENGE

OCP Ecuador needed earlier visibility into degradation across 22 main engines and 44 turbochargers. Failures were occurring in advance of the planned 12,000-hour maintenance interval, and frequent surge events increased pipeline instability, mechanical stress, operational risk and maintenance costs.

SOLUTION

OCP Ecuador utilized Aspen Mtell® to analyze operational data, detect abnormal behavior patterns and identify degradation signatures before failures occurred.

VALUE CREATED

- **Early surge detection and more precise, FMEA-guided operational responses**, reducing turbocharger failure risk by 60%
- **Improved visibility into compressor conditions and enabled proactive operational adjustments**, lowering surge exposure by approximately 15%
- **Reduced maintenance, repair and failure-related costs**, achieving cost savings of approximately \$1M USD/year



Heavy Crude Midstream Operator Faces Early, Unplanned Turbocharger Failures

OCP Ecuador operates a critical 485-kilometer heavy crude pipeline responsible for transporting approximately 30% of the country's oil production, placing its reliability at the center of Ecuador's energy infrastructure. With 22 main engines and 44 turbochargers supporting pipeline operations, asset availability and equipment performance are essential to maintaining stable, continuous transport of heavy crude.

Turbocharger failures began to occur as early as 6,000 to 10,000 operating hours, well ahead of the planned 12,000-hour preventive maintenance interval. Frequent surge events increased instability, mechanical stress and progressive degradation across critical assets. OCP Ecuador's team identified recurring failure drivers such as fouling, airflow restriction, charge air cooling degradation and compressor blade wear. However, they needed earlier warnings to address these issues proactively—before they elevated operational risk or drove up maintenance costs.

Aspen Mtell Enables Team to Course Correct, Avoiding Critical Failures

OCP Ecuador utilized Aspen Mtell to improve visibility into turbocharger failure modes and detect early signs of abnormal asset behavior. Aspen Mtell agents analyzed operational data to detect abnormal patterns and identify degradation signatures. These insights helped the team recognize when turbochargers were trending toward unstable operating conditions, contributing to a 15% reduction in surge exposure events.

With earlier detection and FMEA-based guidance, OCP Ecuador could adjust engine load, change operating conditions, or perform compressor/turbine washing before conditions progressed to critical failure, helping reduce failure risk by 60%. By better understanding the failure mode and the actions needed to prevent it, they extended overhaul intervals from 12,000 to 13,500 hours, improved maintenance planning, and contributed to approximately \$1M USD in annual cost savings across the fleet.



OCP Ecuador's reliability program demonstrates how AI-driven reliability can move beyond detection to proactive, operational action. By using Aspen Mtell for turbocharger surge prediction, the team improved visibility into early asset degradation and established a more consistent way to respond before instability progressed to failure—enabling reduced failure risk, lower surge exposure, decreased costs and optimized maintenance planning through repeatable workflows across critical assets.

The broader value of reliability programs comes from connecting early insight to guided action across the enterprise. For OCP Ecuador, this meant giving maintenance and operations teams a repeatable approach to identify abnormal behavior, intervene earlier and apply corrective actions more consistently.

For asset-intensive operators with mission-critical equipment, OCP Ecuador's approach provides a practical model for improving reliability across broader operations.





About Aspen Technology

Aspen Technology, now part of Emerson, is a global software leader helping industries at the forefront of the world's dual challenge meet the increasing demand for resources from a rapidly growing population in a profitable and sustainable manner. AspenTech solutions address complex environments where it is critical to optimize the asset design, operation and maintenance lifecycle. Through our unique combination of deep domain expertise and innovation, customers in asset-intensive industries can run their assets safer, greener, longer and faster to improve their operational excellence.

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