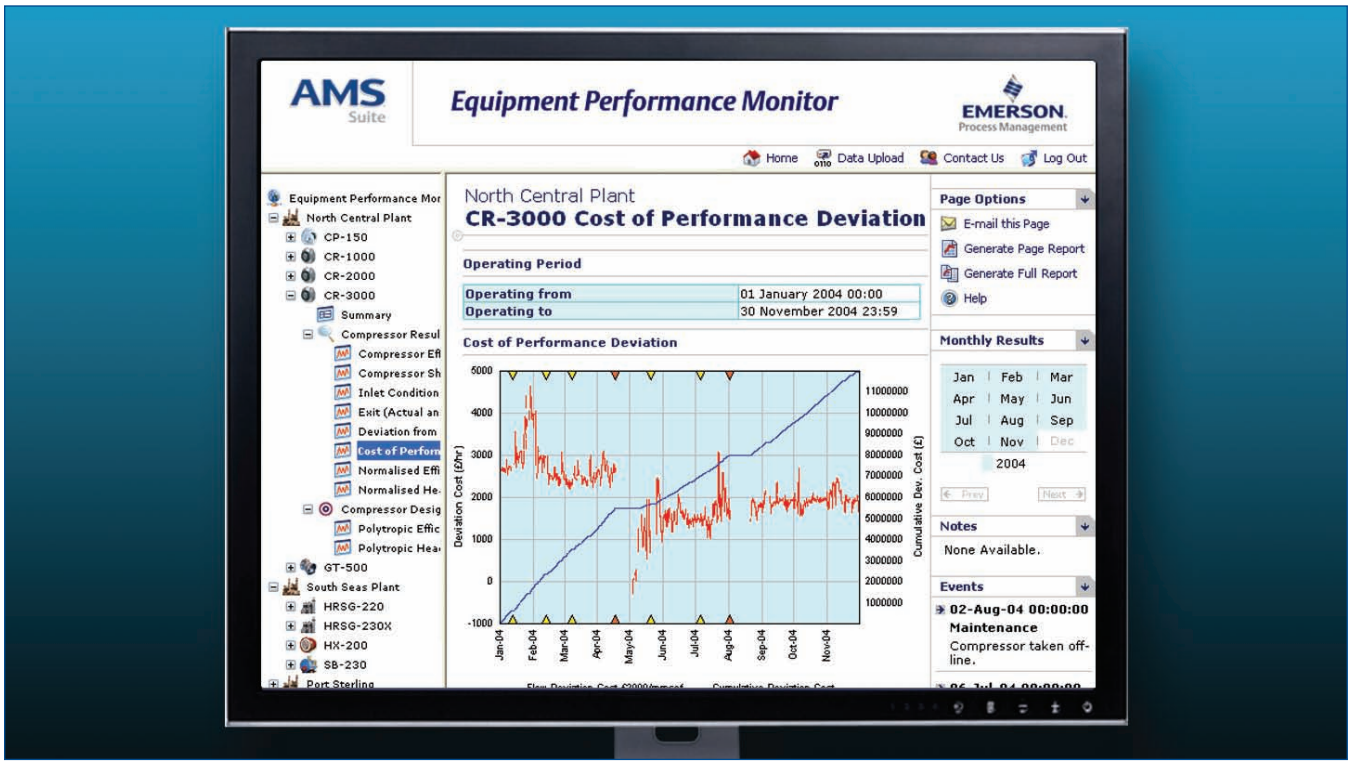
AMS Suite: Equipment Performance Monitor

Performance Monitoring - Compressors



Cost of degradation, based on original compresssor performance.

- *Increase throughput, availability, and reliability*
- *Determine optimal predictive maintenance strategies for operation*
- *Prevent unnecessary downtime and costly shutdowns*
- *Optimize load sharing strategy at multi-compressor sites*
- *Maximize compressor train or station potential by improved control*
- *Quantify financial implications of performance degradation*
- *Optimize wash frequency*
- *Ensure production targets are met*

Enable Predictive Maintenance

AMS Performance Monitor helps achieve peak performance of Compressors. It facilitates the move to predictive and proactive maintenance programs, maximizing equipment performance.

Equipment Categories

- Axial
- Centrifugal
- Multi-stage
- Power Generation
- Reciprocating
- Rotary Screw

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Success Stories

- Highlighted relative performance of compressors on parallel trains to optimize load sharing, which increased throughput by 3%.
- Identified deteriorated compressor performance. On investigation, significant rotor wear was discovered. Subsequent bundle change improved throughput by 14%.
- Identified control setpoints for intercoolers within compressor trains to improve polytropic efficiency by 3 to 4%.
- Detected drifting instrumentation that was causing compressor to recycle and halt production.
- Streamlined a maintenance program after identifying a poorly performing stage in a reciprocating compressor (saving 1 to 2 days downtime every second month).
- Quantified the requirement for vital maintenance on an entire compressor train. After the completion of maintenance, performance increased by 10%.

Capabilities

- Analyze performance according to manufacturer specifications.
- Quantify compressor performance within operating envelopes and identify real causes of performance loss.
- Investigate upstream factors on operation.
- Compare operation between compressors.
- Validate and reconcile of process data using rigorous mathematical routines.
- Diagnose the root cause of performance degradation and impending compressor failure.
- Reduce costs by scheduling maintenance based on performance.
- Establish the effect of component wear on performance to determine appropriate maintenance strategy.

Key Performance Indicators (KPIs)

The following indicators are typically presented using ASME PTC 10 thermodynamic custom-built modeling techniques:

- **Compressor Efficiency (polytropic and adiabatic)** - Used to determine thermodynamic operation of machine.
- **Compressor Inlet Operation** - Trend of flowrate/speed to meet required outlet conditions (delivery pressure at flow).
- **Inlet Conditions** - Together with performance KPIs, identify 'uncontrolled' inputs that affect compressor operation.
- **Actual and Predicted Exit Conditions** - Trends of exit pressure/temperature (measured and model predicted values) that affect overall operation. Continual model and instrumentation data validation.
- **Compressor Deviation** - Current load-independent comparison of performance relative to design.
- **Deviation Cost** - Track cost of performance degradation through lost opportunity/increased operating cost — both current and cumulative.
- **Operating Envelope** - Graphical trend of Normalized Head vs. Flow, and Efficiency vs. Flow to show performance relative to design.
- **Original Equipment Manufacturers Performance Curves** - for design performance reference.

Compressor Demonstration available at www.AMSPerformanceMonitor.com

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