

## AVEVA™ Predictive Analytics for Power Generation

To meet critical business objectives, you need performance that's smarter, faster, and more precise. With the most accurate, optimized intelligence, you can lead the way. AVEVA and the PI System join forces to elevate your possibilities.

Machines don't have to fail. The modern power plant generates massive amounts of data. AVEVA Predictive Analytics turns that data into actionable information to avoid equipment failure and maintain machines at optimal performance.

### The most comprehensive predictive analytics solution for the power generation industry

Your asset reliability, performance, and safety are top priorities. Designed to reduce unscheduled downtime and maintenance costs, AVEVA Predictive Analytics provides early warning notification and diagnosis of equipment issues before they impact critical operations.

"It's the holy grail if a plant manager calls you and you can say your turbine is going to fail three weeks from Friday."

Director of Maintenance and Diagnostics, Duke Energy

**\$4,000,000+**

avoided through early identification of power generation turbine blade damage

**\$500,000+**

avoided due to early identification of a motor coupling approaching failure

**\$370,000+**

avoided due to early warning of pump feedwater heater and bypass valve problems

**\$250,000+**

avoided due to early warning of a bearing seal differential pressure problem

### Maintenance strategy

Strategic, proactive, optimized

**Risk-based maintenance**

Connects the asset strategy to the corporate strategy

**Predictive and prescriptive maintenance**

Diagnostics to predict impending failure

**Condition-based maintenance**

Rules-based logic using sensor data

**Preventive maintenance**

Planned based on time or usage statistics

**Reactive maintenance**

Run to failure

AVEVA's customers monitor over 550,000 MW of power generation today.

### Where predictive analytics is used in power generation

#### Power plant types

- Nuclear
- Hydroelectric
- Coal-fired
- Diesel-fired
- Geothermal
- Gas-fired
- Solar
- Wind



#### Power generation assets

- Gas turbines
- Steam turbines
- Wind turbines
- Hydraulic turbines
- Generators
- HRSGs
- Boilers
- Pumps
- Fans
- Motors
- Gearboxes
- Cooling towers
- Heat exchangers
- Condensers
- Air heaters
- Inverters
- Transformers

### Customers using the PI System and AVEVA Predictive Analytics have saved millions of dollars in averted asset failures and maintenance costs

AEP uses AVEVA Predictive Analytics to detect turbine damage and avoid forced outage

**+\$17.5 Million**

In avoided costs from reactive maintenance repairs and unplanned downtime

Duke Energy leverages AVEVA Predictive Analytics to avert potential eight week unplanned outage

**+\$34.5 Million**

In avoided costs from reactive maintenance repairs and unplanned downtime

EDF uses AVEVA Predictive Analytics for fleet-wide asset monitoring

**+\$1.5 Million**

In savings on a single early warning catch in nuclear, renewable, combined cycle, and fossil-fired fleet

Southern Company uses AVEVA Predictive Analytics to identify over 1,000 events in their thermal fleet

**+\$4.5 Million**

In savings from performance efficiency improvements

### Comprehensive, advanced predictive monitoring at scale

Artificial Intelligence (AI) and machine learning are the easy part. Implementing AI at scale is the difference between success or failure.



Model templates and validation



Performance monitoring



Alert management



Transient analysis



Fault diagnostics



Case management



Prescriptive analytics



Asset comparison and reporting



Integrated alert workflow



Remaining useful life estimation

### The most proven path to predictive maintenance. Accelerate time to value.



#### Alerts and notifications:

Create alerts on deviations between actual values and predicted values. Manage and trend alerts by category, level, criticality, duration, and frequency.



#### Rapid analytics and model development:

Models can be rapidly deployed from existing templates and validated using model playback prior to production deployment of the predictive models.



#### Accelerate rollout and time to value:

Spend less time learning and more time using. AVEVA Predictive Analytics combines data science with in-depth understanding of physical assets, including a comprehensive prebuilt asset library with over 20,000 hours of development.



#### Cybersecurity:

The safety and security of your data is our top priority. As an established leader with over fifty years' experience, delivering industrial software solutions, we recognize that your data demands a stringent cybersecurity posture and the highest operation standards.

### Flexible deployment models



Software as a service (SaaS)



On-premises



Remote monitoring and diagnostics as a service

### Cut through the hype and invest in an industry leading solution

AVEVA's Predictive Analytics solution delivers value for leading power generation companies with a combined power generation capacity of 550,000 MW. With proven results and a trusted software portfolio, AVEVA delivers solutions for maximum reliability and performance.

For a closer look at AVEVA's Asset Performance Management software portfolio, visit [sw.aveva.com/asset-performance-management-4-0](http://sw.aveva.com/asset-performance-management-4-0)