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POWER AND ENERGY MANAGEMENT, UTILITIES

Customer Success Story

AES Wind Generation
Palm Springs, California

Centralized Wind Farm Monitoring and Control at Lower Cost

AES is an international power company located in North Palm Springs, California and specializes in power generation, utilities and renewable energy. Dedicated to providing cleaner and more sustainable ways to create energy, AES invests in hydro, wind, solar, biomass generation and carbon offsets as alternatives to traditional fossil fuels. AES Wind Generation, a special division of AES, explores worldwide opportunities for wind energy creation based on more than 25 years experience in the power industry. They currently manage over 1,700 megawatts of wind capacity across the US and Europe.

In 2010, AES Wind Generation initialized a 49 turbine (one megawatt each) wind farm as part of the Mountain View IV Wind Energy Project and began searching for a dependable SCADA and alarming system to operate it.

AES



Key Points

- **Centralized monitoring and control: Enabled real-time monitoring and control of 49 wind turbines, with centralized data collection, alarming, and reporting.**
- **Reduced development costs: Simplified configuration across turbines and enabled AES to modify and maintain the SCADA system in-house without relying on third-party developers.**
- **Flexible, web-based access: Provided authorized operators with remote access to wind farm operations while supporting future system modifications and upgrades**

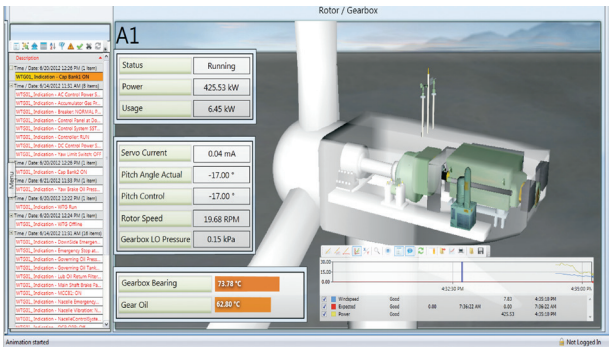
The Challenge

With 49 Mitsubishi Heavy Industries wind turbines, each capable of generating one megawatt of power, AES needed a robust system to perform real-time calculations, monitor turbine availability, and compare actual energy production against the manufacturer's published power curves.

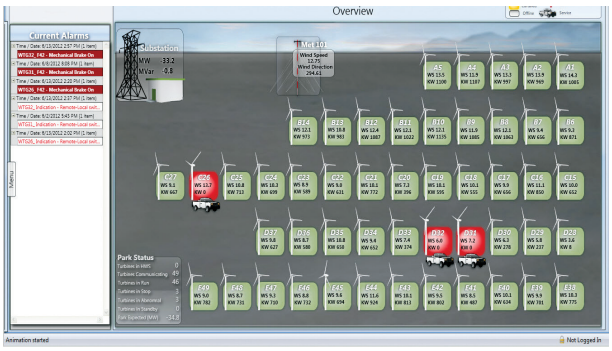
Following an extensive evaluation, AES selected GENESIS and Hyper Historian to provide centralized SCADA, data collection, monitoring, and reporting capabilities.

The implementation included:

- **Accelerated deployment:** GENESIS' global aliasing capabilities simplified configuration across all 49 turbines once the first turbine was configured, reducing repetitive development work.
- **Open-standard connectivity:** OPC interfaces, including Modbus/TCP and a Matrikon OPC server, enabled integration with Mitsubishi Heavy Industries' CNET protocol while allowing turbine data acquisition and monitoring components to be updated independently.



An AES Turbine Screen, Built with GENESIS



An Overview, with Alarming, of the Wind Farm

- **Secure, web-based access:** A web-accessible HMI enabled authorized operators to monitor and control the wind farm without installing software on client computers or sharing internal Windows domain credentials.
- **System resilience and visualization:** Compatibility with virtualized environments supported backup and recovery, while Windows Presentation Foundation (WPF) graphics provided a sophisticated operator interface.

Software Deployed

- GENESIS™
- Hyper Historian™

The Results

AES achieved its monitoring and control objectives while reducing development costs and maintaining flexibility to accommodate future system changes.

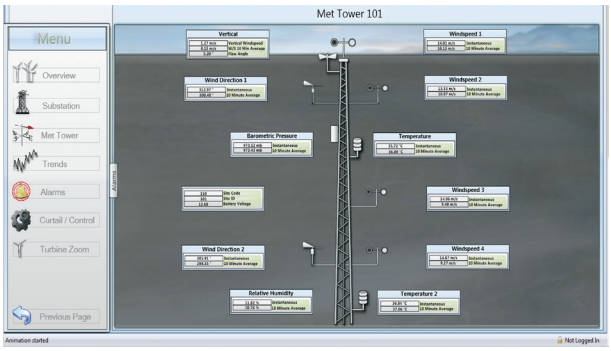
- **Centralized monitoring and control:** Enabled AES and Mitsubishi Heavy Industries (MHI) operators to monitor and control wind farm operations while providing aggregated operational data for reporting.
- **Reduced development costs:** Allowed AES to modify and maintain the SCADA system in-house without relying on third-party developers. For example, AES integrated a new low-wind-speed indication shortly after commissioning without incurring additional development costs.
- **Centralized data access:** Provided authorized users with web-based access to operational data without requiring software installation on individual computers.
- **Long-term flexibility:** Reduced dependence on third-party integrators while enabling AES to accommodate future changes to turbine controller logic, operating systems, and hardware.

Conclusion

AES established a centralized wind farm monitoring and control system that supports reliable operations, comprehensive data access, and independent system management. By maintaining control over system modifications and future upgrades, AES expects to achieve considerable long-term cost savings while adapting to evolving operational and technology requirements.

"We are pleased with GENESIS' ability to provide a solution that can be built, maintained and controlled without paying consultants at every turn."

Greg Howard
Systems Integration Manager
AES



Display of All Data Acquired by a Met Tower

MITSUBISHI ELECTRIC ICONICS DIGITAL SOLUTIONS

HEAD OFFICE: 2 Hampshire Street, Suite 300, Foxborough, MA 02035

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