

STEAM TURBINE CONTROL

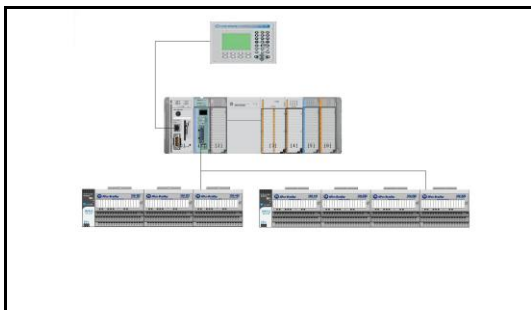
CONTROL SOLUTIONS DESIGNED TO FIT RIGHT IN

Maximizing your
plant's efficiency
with control systems
built to fit your needs –
exactly.

Energy Control 
Technologies

Energy Control Technologies (ECT) provides the latest in steam turbine control solutions designed to maximize your turbomachinery plant's production and efficiency. ECT engineers high value control solutions for steam turbines (*historically available only in proprietary hardware*) and delivers them in an open platform using Rockwell Automation hardware and software.

ECT provides solutions for steam turbines including speed control, extraction control, overspeed detection systems, and vibration and temperature monitoring.



ECT's Steam Turbine Control System Using Standard Rockwell Automation Hardware and Software

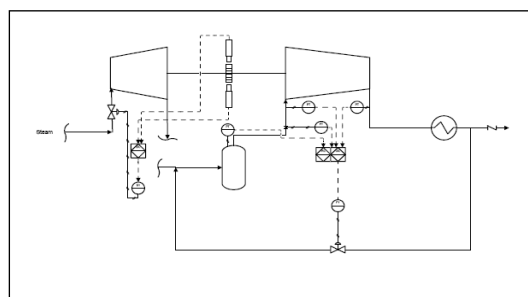
HIGH RETURN ON INVESTMENT

Steam turbines are critical machines that require precise control to maintain speed. If the steam turbine is down, your process is down, costing you revenue and profit. In addition, if your turbine is driving a generator, trips can cost you big money especially if you get hit with a demand charge from your power company. This combination creates steam turbine control system retrofit opportunities with high ROIs

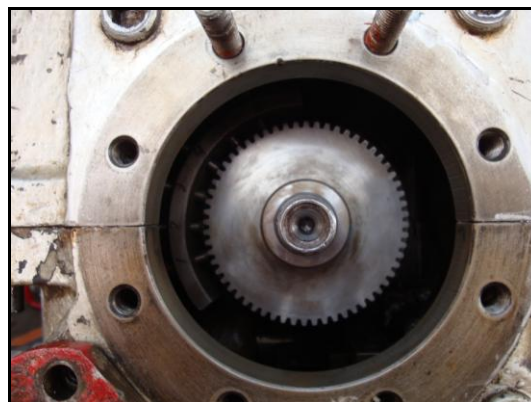
justified by fewer trips and lower maintenance.

Steam Turbines

- Startup/shutdown sequencing
- Critical speed avoidance
- Extraction control
- Overspeed detection
- Vibration monitoring
- Temperature monitoring
- Mechanical retrofit kits



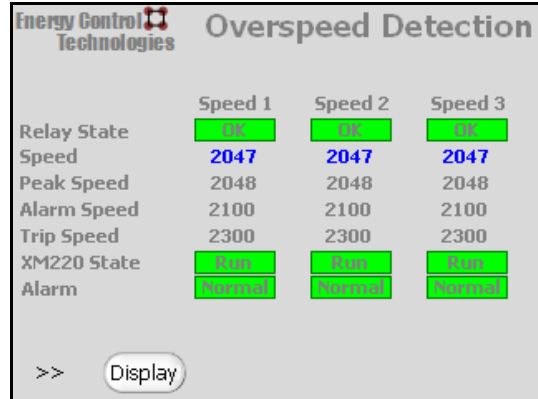
ECT's Steam Turbine Speed Control on a Compressor Drive



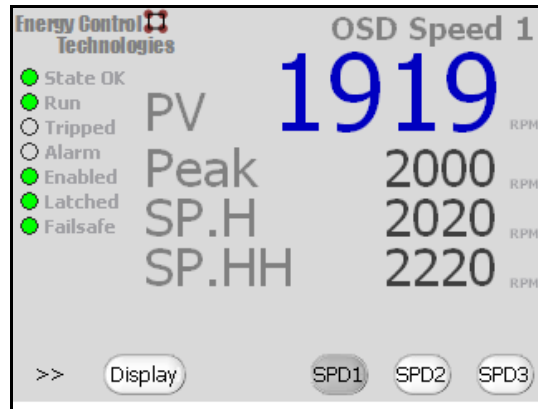
ECT's Mechanical Retrofit Using Speed Sensing Gear



ECT's Mechanical Retrofit Using Magnetic Pickups, Brackets, and Speed Sensing Gear



ECT's Mechanical Retrofit Using Pneumatic Actuator on the Steam Valve



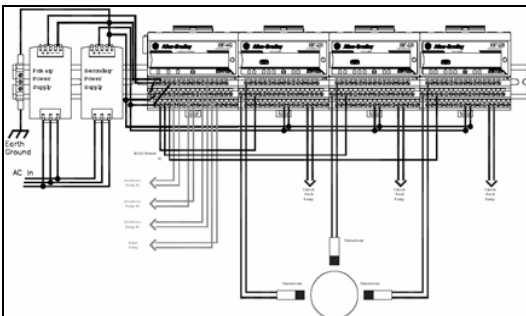
ECT's Electronic Overspeed Detection System Displays

OVERSPEED DETECTION

ECT delivers Electronic Overspeed Detection Systems to replace your mechanical system using standard Rockwell Automation hardware meeting API 670 specifications.



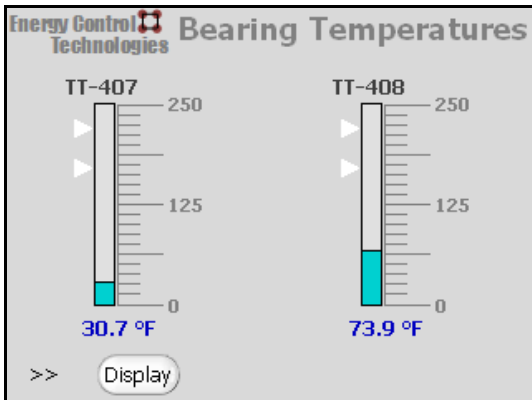
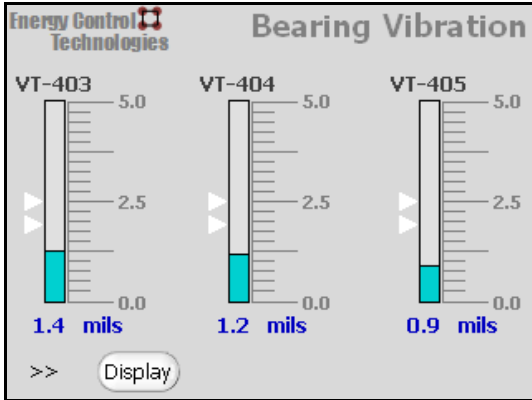
Redundant solenoid arrangement for trip & throttle valve



ECT's Electronic Overspeed Detection System

VIBRATION AND TEMPERATURE MONITORING

ECT uses standard Rockwell Automation hardware for vibration and temperature monitoring.



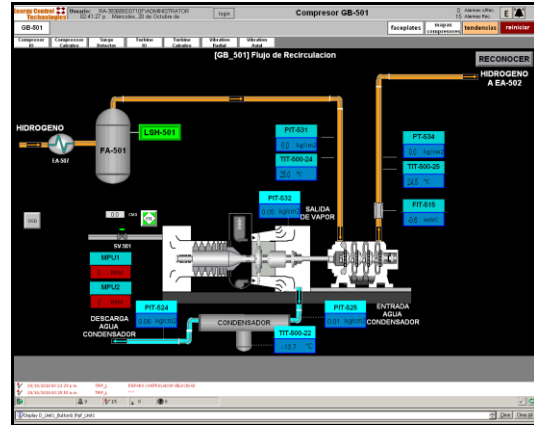
ECT's Vibration and Temperature Monitoring Displays

TURBO PACVIEW®

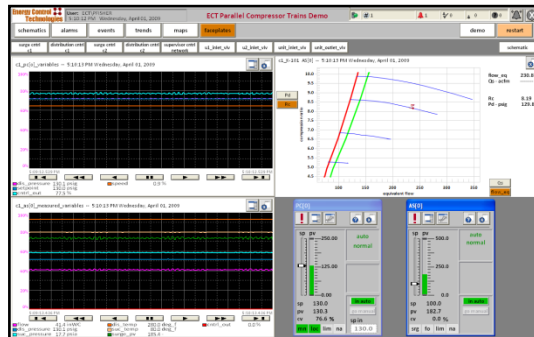
ECT's Turbo PACView® is your window into your turbomachinery plant enhancing operation, maintenance, and monitoring functions. With high resolution data recording capability, Turbo PACView® can capture critical data that you can replay for troubleshooting purposes. Our

engineers customize your Turbo PACView® with the following features:

- Turbomachinery diagram
- Controller faceplates
- High speed trending
- Event-driven fast archiving
- Alarms and events



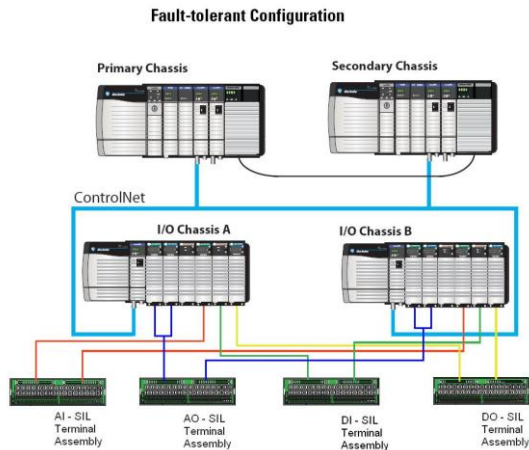
ECT's turbomachinery diagram



ECT's trend screen

FAULT TOLERANCE

ECT can provide a fully redundant control system that is SIL 2 compliant. In addition, ECT's Fault Tolerant Control Action keeps your system running even with failures of non redundant transmitter inputs.



NEW CONSTRUCTION AND RETROFIT PROJECT SERVICES

ECT supports our customers' projects with expertise, from pre-feed control system development to system commissioning, through:

- Applications engineering and consulting
- Site surveys
- Economic justifications
- Project engineering
- Factory acceptance tests
- Field service and commissioning
- Installation supervision
- Simulations
- Training
- Service contracts



ECT's engineers review field-mounted devices for optimum control system performance.

ECT provides site surveys and economic justifications on retrofits and upgrades to justify customer investments in new control systems.

ECT supports our customers during the engineering phase of the project eliminating the guess work on valve sizing, transmitter selection and locations, process equipment sizing and piping layout through high-fidelity simulations.

ECT provides full field service support from system checkout to commissioning including onsite surge testing and tuning of your system. ECT also has the capability to provide remote field support using the latest technology.



ECT provides full field service support, from checkout to commissioning and remote support for system troubleshooting.

PUT ECT TO WORK FOR YOU

Whether it's a site survey to calculate an ROI for a retrofit or to help you with important decisions on piping layout and vessel locations on a new project, ECT is ready to support you on your next turbomachinery control system project.

Contact ECT today at:

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Or visit us on the web at:

www.energycontroltechnologies.com



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