APPLICATION GUIDE:

ELECTRONIC OVERSPEED PROTECTION FOR GAS TURBINE

CHALLENGE
Preventing a gas turbine from reaching damaging overspeed conditions or experiencing failed starts due to false overspeed alarm indications requires two highly reliable and rigorously tested overspeed trip (OST) protection systems. On many existing gas turbines, the first is a mechanical overspeed trip (MOST) mechanism that provides the primary means of overspeed protection, while an electronic overspeed trip (EOST) system serves as the backup.

Traditional testing of the functionality of the MOST means removing the gas turbine from service and manually overspeeding it. This increases stress to the unit and increases downtime. Such testing of MOST systems has typically been recommended annually or while returning the unit to service after outages.

SOLUTION
With the TOMONI™ solution, additional speed sensors are installed and the existing MOST is replaced with a new main electronic overspeed trip (MEOST) system, which is fully independent of the existing EOST backup system. The MEOST system’s operation can be verified online through individual channel testing without needing to trip and reset the gas turbine. System reliability is improved with OST piping modifications to ensure that no single valve failure can prevent or initiate a trip of the gas turbine. Since the mechanical trip mechanism in the exhaust tunnel is eliminated, the need to repair or reset that device after outages for overspeed testing is eliminated, which results in shorter outages and increased starting reliability.
FEATURES

- Redundant electronic overspeed trip protection systems
- Upgraded logic to support MEOST and online system testing
- Addition of new speed sensors to create the MEOST
- Prevention of single valve failure tripping the GT
- Removal of original mechanical overspeed device
- Individual channel testing without tripping the GT

BENEFITS

- System operation can be verified online without tripping the GT, allowing extension of current annual recommended testing interval and testing whenever desired
- Improves system and starting reliability
- Shorter outages by eliminating repair or reset of mechanical trip mechanism
- Reduces stress cycles from overspeed operation and trips/restarts
- Individual testing of solenoid valves to discover the problem before any planned or unplanned downtime
- Reduces maintenance costs

IMPLEMENTATION

Mitsubishi Power technical advisors can install the MEOST solution during a turbine or major inspection.

MEOST SOLUTION

Red color shows the newly-added sensor and solenoid valves.*

*Actual arrangement may vary according to user requirements and site specifications.

TOMONI™ is a suite of intelligent solutions that accelerates decarbonization with power plant design, O&M and system knowledge, together with strong customer and partner collaborations. TOMONI leverages advanced controls, artificial intelligence and machine learning with multi-layered cybersecurity to make energy systems smarter, more profitable and ultimately more autonomous on the road to a sustainable future.

For more information about TOMONI™ intelligent solutions, visit changeinpower.com/tomoni

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