Honeywell offers a flexible, standards-based wireless system enhancing the efficiency and accuracy of performance guarantee tests, and reducing capital expenses in a coal-fired power generation plant.

<table>
<thead>
<tr>
<th>Industry Applicability</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Primary:</strong> Power</td>
</tr>
<tr>
<td><strong>Secondary:</strong> Oil and Gas, HPI, Chemicals, Petrochemicals, Pulp and Paper, Metals and Mining</td>
</tr>
</tbody>
</table>

**Customer Challenge**

Tata Power, a major private sector power producer, commissioned its 250 MW coal-fired Unit 8 at the Trombay thermal power station in Mumbai, India in 2009, to increase the total capacity of the facility to 1600 MW. M/s BHEL, the power generation equipment OEM for the Trombay station, supplied, erected and commissioned critical main plant and balance-of-plant equipment under an EPC contract.

As part of the final contract handover, M/s BHEL must establish and guarantee a performance baseline for the plant equipment and perform periodic verification. The following key parameters are typical performance measurements conducted under various load conditions:

- Steam inlet to turbine
- Fuel input
- Combustion air
- Extraction steam to process backpressure steam to process
- Condensing steam
- Condensate from turbines
- Turbine bypass steam
- Flue gas
- Cooling water to condenser

M/s BHEL is required to provide all of the instrumentation and measurement devices for conducting performance guarantee (PG) and performance evaluation tests. The entire instrument setup must be freshly calibrated prior to the testing and carry a certificate of calibration from an accredited lab.

Typically, the setup consists of hundreds of pressure, temperature and flow instruments, as well as flue gas analyzers, power supplies, MUX boxes, cable harnesses, cables, junction boxes, miscellaneous accessories and data logger/analysis software. This equipment is packed, unpacked, repacked again and hauled from one site to another to support performance tests. The capital investment in the instrument setup is approximately $1M.

M/s BHEL faced a number of specific challenges involved in conducting the necessary PG tests. These included:

- Employing high-accuracy digital communications for instrumentation
- Shortening setup and dismantling time
- Reducing hardware required for tests
- Making the instrument setup as portable as possible
- Avoiding temporary cabling work and the costs associated with material waste

**Customer Value**

M/s BHEL's PG test instrumentation and measurement setup is required to be independent of plant control and instrumentation systems as per regulatory standards. Honeywell’s OneWireless™ solution helped achieve such independence and provided additional flexibility and efficiencies to M/s BHEL's overall PG test process.

Approximately $1M worth of CAPEX is locked into the PG test setup, and M/s BHEL must maintain more than 20 percent spares inventory due to the probability of equipment failure. Obsolescence, failure replacement, and wear and tear caused by frequent installation/dismantling and calibration erode the capital value of the test equipment.

With an expected service life of five years for the instrument setup, which will be used to perform 120 PG tests, wireless technology will help save a total of $4.7M.
There are also indirect costs incurred by the end-customer, which can be reduced by as much as 50 percent as a result of improved cycle time and greater test efficiency. Cycle time for the PG procedure, which involves planning, preparation, logistics, calibration and actual testing over 12 weeks or more, can be cut to 6-8 weeks.

In addition, the standards-compliant OneWireless solution provides the ability to source instrumentation from multiple suppliers, ensuring vendor plurality and interoperability.

**Honeywell Solutions**

M/s BHEL invited a select group of vendors along with Honeywell to participate in a field trial. The decision was based on Honeywell’s proven experience, advanced technology and overall capability to manage wireless system deployment.

As part of the wireless system configuration, Honeywell XYR™ 6000 wireless temperature, pressure and flow transmitters were installed at various process points to measure key process parameters. Multinodes were installed at vantage points within the power generation unit, and all monitored process measurement data was made available for real-time visualization, trending/historization reports and data export to Microsoft Excel. The Experion platform was used for data logging, analysis and reporting to support the PG test procedure.

The entire OneWireless infrastructure was installed and commissioned in just two days. M/s BHEL evaluated the performance of the system in order to benchmark it against a conventional wired data acquisition system running in parallel. After completing the evaluation, M/s BHEL is very enthusiastic about using wireless technology in its PG test ecosystem to help address the unmet needs and constraints outlined above.

**Buying Criteria**

The customer had following buying criteria:

- Obtain high-accuracy measurements from instruments with a digital communications capability (i.e., no A-D and D-A conversion accuracy loss)
- Improve setup/cycle time
- Reduce CAPEX and OPEX required for conducting PG tests
- Match the number of PG tests performed to the number of tests required annually, and as such, improve business performance
- Increase measurement coverage during PG tests, thus enhancing test accuracy and integrity
- Reduce electricity tariff-related disputes through proven performance baseline as per central and state regulatory norms
- Reliable and stable wireless communications capability
- Standards-based solution with vendor plurality and interoperability

“We have evaluated the results from the pilot program and compared them to those achieved from our conventional set up, and as a result of our positive experience with Honeywell’s OneWireless solution, we are actively considering a wireless system as part of our performance guarantee testing process,” said Senior Dy, general manager, Technical Services, of M/s BHEL.
Solution Architecture

OneWireless™ and XYR™ are trademarks of Honeywell International Inc.

More Information
For more information on Honeywell’s wireless solutions, visit www.thewirelessplant.com or www.honeywell.com/ps or contact wireless@honeywell.com.

Automation & Control Solutions
Process Solutions
Honeywell

1250 West Sam Houston Parkway South
Houston, TX 77042

Lovelace Road, Southern Industrial Estate
Bracknell, Berkshire, England RG12 8WD

Shanghai City Centre
100 Junyi Road
Shanghai, China 20051

SO-11-01-ENG
January 2011
© 2011 Honeywell International Inc.