



HAPPS

(Hitachi Advanced Plant Performance diagnostic System)

Multipurpose Use of Operating Data to Improve Availability, Optimize Maintenance, and Enhance Generation Efficiency

To maximize the effective use of nuclear power—a decarbonized energy source—there is a growing need to improve equipment reliability and optimize maintenance. This is essential for increasing operational availability through shorter outage inspection periods and long-cycle operations. Hitachi GE Vernova Nuclear Energy has developed HAPPS as part of its digital twin technologies. By applying Data Validation and Reconciliation (DVR), HAPPS identifies the most probable state of the plant. This capability supports plant operations management by enabling steam leak detection from normally closed valves, improving thermal output accuracy, extending instrument calibration intervals, reducing calibration workload, and optimizing maintenance timing for major equipment such as heat exchangers and pumps.

VALUE

Improved Availability: Enables advanced monitoring of equipment performance.

Optimized Maintenance: Optimizes maintenance timing through system and equipment health assessment.

Improved Generation Efficiency: Estimates thermal output losses through high-accuracy thermal balance monitoring.

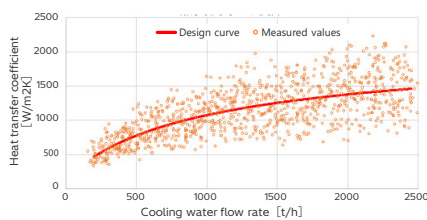
Electric Power Company
Operating Data

HAPPS
Data Validation and Reconciliation

Plant Manufacturer
Functional Physical Model

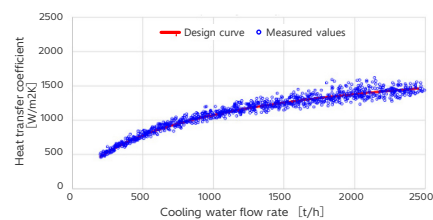
Most probable state of the plant based on operating data

(Minimizing measurement errors in plant conditions, Understanding equipment states close to true values)



Difficult to clearly separate the true value from Variability in measurement results

Improved Accuracy of
Heat Transfer Coefficient



High-Precision Evaluation Enabled
by DVR Application

Monitoring & Higher Accuracy

Equipment Performance

System Performance

Thermal Balance

Improved Availability & Optimized Maintenance

Improved Generation Efficiency

SCOPE

Applicable to a wide range of systems, including reactor, turbine, and auxiliary cooling systems. Beyond these examples, we offer flexible solutions to meet diverse customer needs and challenges.



For further information about this product, please contact your local sales representative or the contact details below.

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