

Feasibility Studies with the Aim of Developing a
Joint Crediting Mechanism in FY2017

Improvement of Power Generation Efficiency by Upgrading Gas Turbines in Thailand

New Energy and Industrial Technology Development Organization (NEDO)

Mizuho Information & Research Institute, Inc. and Mitsubishi Hitachi Power Systems, Ltd.

Improvement of Power Generation Efficiency by Upgrading Gas Turbines in Thailand

Conducted by: Mizuho Information & Research Institute and Mitsubishi Hitachi Power Systems

Study Outline

Summary

The study was conducted for a project designed to improve power plant generation efficiency by introducing “gas turbine upgrade” technology to an existing gas turbine combined cycle power plant. The candidate power plant is owned by the Electricity Generating Authority of Thailand (EGAT).

Needs of partner country

EGAT needs to improve the efficiency of its existing power generation plants. Achieving higher levels of efficiency and performance at the candidate plant, one of EGAT’s most important, is therefore a high priority.

Technical issues

Although there are almost no technical issues pertaining to a “gas turbine upgrade” as basic technology, it is necessary to confirm its integrity within the context of an actual power plant system.

Furthermore, a business model for replacement of turbine blades using such technology needs to be investigated.

Prospects of dissemination

Turbine blades must be replaced once every few years in accordance with their planned maintenance schedule, and both new and refurbished blades are used for this purpose. In anticipation of the need to replace turbine blades, plant owners already periodically purchase conventional blade types.

By creating a business model for the replacement of blades using new gas turbine upgrade technology, this would promote the dissemination of this technology and encourage its use by other power plants around the world.

Study result

Mitsubishi Hitachi Power Systems (MHPS) and EGAT have discussed and prepared a preliminary draft business model.

Estimated reduction of greenhouse gas emissions

For this project

Emissions reduction estimate = approximately 20,000 t CO₂/year

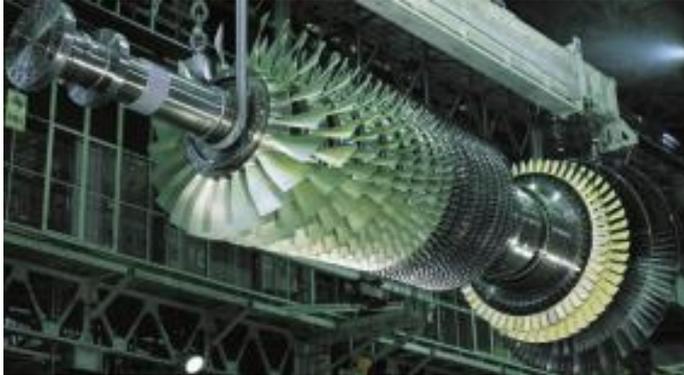
Future potential around the world

Possibility to apply same solution to about 100 other power plants worldwide

Note: The above figures are for reference only and may change after a detailed feasibility study has been completed.

Technology Outline

Gas turbine upgrade



A “gas turbine upgrade” refers to an improvement in turbine performance by applying cooling air reduction technology. For this type of upgrade, the amount of air used for cooling turbine blades and vanes is reduced, and the amount of air used as combustion air for gas turbines is increased. As a result, overall gas turbine performance is improved.

ICT solutions by MHPS-TOMONI



The Japanese word *TOMONI* means “together” and it symbolizes bold actions taken by MHPS to revolutionize ICT solutions for thermal power industries together with its customers.

Through forming such partnerships, MHPS ensures customer satisfaction by using strategic development to expand mutual benefits in a sustainable way.