

# Increased district heat extraction to strengthen commercial viability

## Snapshot

### Client

Combined Cycle Gas Turbine plant, Austria

### Challenge

Maximize district heating supply by bypassing the steam turbine.

### Solution

We engineered a new bypass system including an advanced control concept to permit fully-automated change-over from combined cycle to bypass operation and vice versa, using dynamic process simulation. Implementation and commissioning of the systems was successfully performed on site.

### Benefits

By increasing maximum district heat extraction from 250 MWth to 360 MWth, the operating range of the plant and its commercial viability have been significantly improved.

The ability to extract district heating is vital to the economic viability of many combined cycle power plants in Europe. We upgraded our client's 400 MW single-shaft CCGT plant for bypass operation, enabling the entire steam production of the heat recovery steam generator to be used for district heating. We developed the project from original concept through to final commissioning.

### Full automation

We used our long experience and technical know-how as independent operator of gas-fired plants to analyze the impact of the new operating mode on the steam turbine, district heat exchangers and auxiliary systems.

Our engineers developed fully automated sequences to control the change-over to and from bypass operation, taking account of all operating states such as low load and cold steam turbine start-up. The new control functions were integrated into the existing plant control system without changing existing functions for normal combined cycle operation.

### Dynamic simulation model

Central to our approach was to engineer a dynamic simulation model of the plant for early and cost-effective identification of potential issues and for the design and development of the new change-over controls.

Having worked closely with the plant staff throughout the project we took an active part in the test runs and commissioning, during which further optimizations were conducted.

Increased district heating supply significantly strengthened the commercial viability of our client's plant. Change-over to and from combined cycle operation is fully automated and is also suitable for remote unit control i.e. in response to power-heat dispatching.

# 45%

increase in district heating supply

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