Performance improvement through steam-net optimisation

CASE 2: DYNAMIC SIMULATION STUDY FOR AN INDUSTRIAL POWER PLANT

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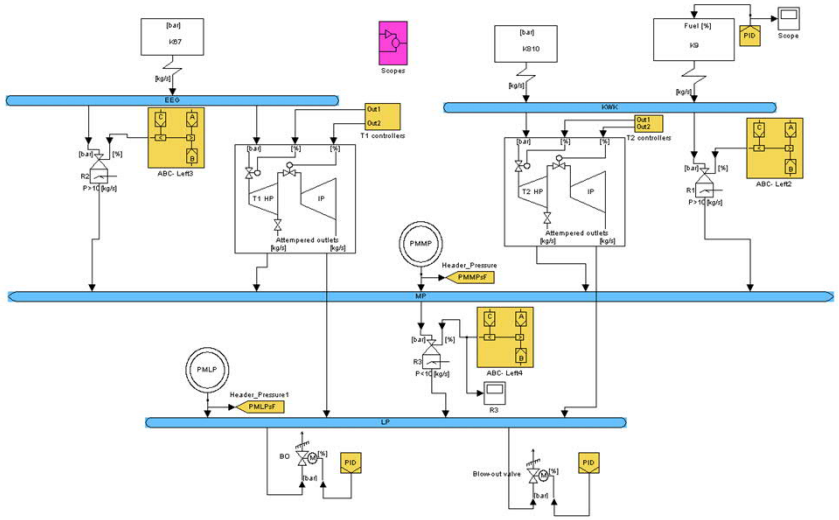
Study results indicate substantial annual savings to be achieved by just reprogramming the power plant steam-net controls

INTRODUCTION



The power plant at the site used to be completely manually operated: operators were constantly adjusting turbine, reducing station and vent valve positions by hand, while at the same time a substantial amount of steam produced with gas was blown into the atmosphere, worth over EUR 1.5 million annually.

SUMMARY

Client:

Pulp/paper mill

Project goals:

- Develop an optimal control concept for the power plant
- Reduce operating costs by automating the existing manual operation
- Estimate annual energy savings
- Calculate project implementation costs

Key findings and results:

Automating power-plant steam balancing by reprogramming the controls in the DCS results in over 400 kEUR annual savings in gas costs. Pay-back time for the implementation is approx. 0.5 years.

Highlights and lessons learned

ORIGINS OF SAVINGS

Industrial power plants are still even today very often manually operated: operators are constantly adjusting turbine and boiler loads because of the process disturbances

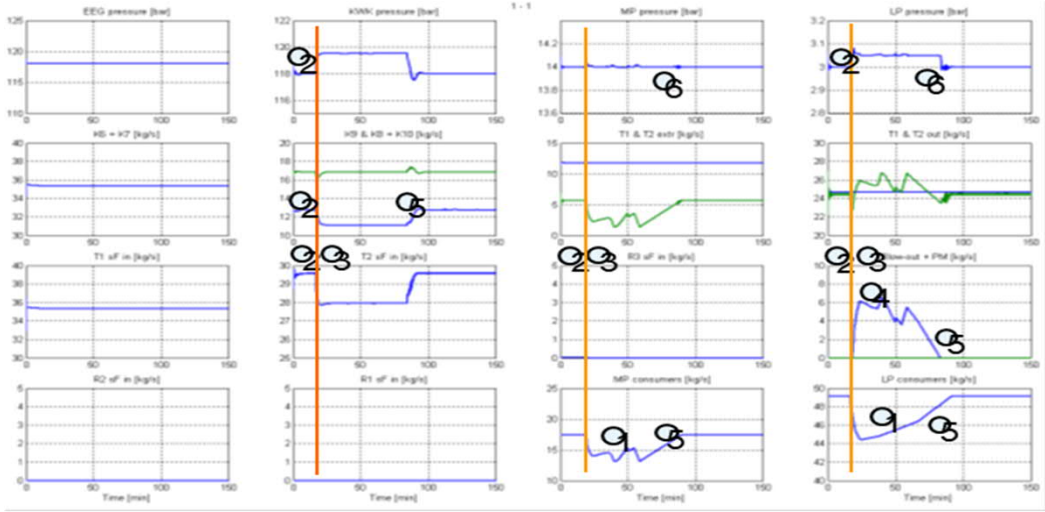
In the study an optimal heat balance for the base case year was calculated and compared to actual figures, which revealed a huge savings potential

In this case study the savings originate purely from reduction in fuel costs.

Typically savings are also achieved by:

- reducing turbine by-passing and increasing power generation
- stabilising process steam pressure and lowering the setpoint
- automating the low-pressure setpoint by letting it glide based on the process steam consumption
- reducing uneconomical condensing power generation

DYNAMIC SIMULATION RESULTS



- In the study a dynamic simulation model was built and the actual process disturbances were fed in
- The simulation confirmed that the operation can be optimised by raising the automation level

Contacts

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