INP Reference

Grödig – Wood Chip Heating Plant

LOCATION: Grödig, Austria

SERVICES: Commissioning, Project management, Basic-engineering and pre-engineering

INDUSTRY BRANCH/TYPE OF PLANT: Green Energy, Power Generation, Power plants

CLIENT: BHKW Grödig

POINTS OF CONTACT

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INTRODUCTION

INP Deutschland GmbH presents the process engineering and economic successes at the wood chip heating plant in Grödig by changing over from conventional combustion power controls to a multi-variable characteristic map control system. With only low investment costs, lots of electric energy is saved by reduced regular operation of the blowers, great control and fuel output after the conversion. The increase in plant efficiency due to more efficient combustion has been confirmed. Improved fuel combustion efficiency can be clearly verified by the measurement series and test runs that have been performed. The amount of work for maintenance and support has been reduced.

INITIAL SITUATION

Describing the conventional firing control system used in the past was very complicated because of the ever-changing fuel batches and plant situations. In some cases, there were uncontrollable deviations because the fuel always varies in terms of its composition, age, degree of decomposition, moisture level, flammability, conversion speed and calorific value. In addition, the control loop, firing and boiler parameters change continuously and unpredictably as a result of contamination, the color of the stored dust and the slag flow. This is a classic multi-parameter system that is non-linear. As a result, significant potential for improvement existed.

SUMMARY

The process and control behavior of a biomass firing system cannot be described algorithmically, because it is a "highly non-linear multi-parameter system". In spite of this, experienced plant operators were able to maintain the firing within an acceptable range by means of manual interventions. The knowledge possessed by these experience experts was implemented in combustion power controls at reasonable expense.

SUCCESS

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The success achieved in the wood chip heating plant at Grödig can be quantified not only in terms of the increase in fuel conversion efficiency to 1.41 srm (the amount of a cube full of loosely poured wood chips with a side length of 1 meter)/kW or 7.42 kW/srm, the even firing control and reduction in the plant's own electricity consumption by 24.3 %. In addition (but non-quantified) there is the positive effect on reducing the support required by about 50%. The even and more efficient operation of the induced draft fans, fresh air fans, fuel feed and grate movement alone will enable several thousand euros to be saved every year.