AZT

ALLIANZ GLOBAL CORPORATE & SPECIALTY

PROJECT ASSESSMENT AND RISK EVALUATION OF GRATE FIRED BOILERS FOR BIOMASS, WASTE AND RDS

Allianz Center for Technology (AZT)

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An increased demand for the erection of grate fired boilers for biomass, waste and residual derived fuels (RDS) can be observed worldwide. In addition, the plant sizes continuously increase. Since the composition and quality of the fuels become more complex, the technical assessment and risk evaluation of such projects are key for future safe operation. The Allianz Center for Technology (AZT) provides a powerful tool for the assessment of grate fired boilers using complex fuels.

PARTIAL VIEW OF A BIOMASS POWER PLANT
The open-type boiler in the background is followed by a cyclone, an evaporation cooler and a baghouse. The blue building on the left is part of the cooling tower.

COMPREHENSIVE PROJECT ASSESSMENT AND RISK EVALUATION

PROJECT ASSESSMENT

On the basis of only a few data, such as fuel types and quantities, the expected values for the key process parameters can be calculated.
The tool proposes the suitable type of grate and the best grate size, and also a warning is given when the wrong grate type has been selected.
With regard to the risk of corrosion and wear, protection proven refractory lining systems and tube protection systems are recommended.
In conclusion, the technical concept of such projects and related risks are illustrated comprehensively.

RISK EVALUATION DURING OPERATION

Existing plants can also be evaluated by using this tool. By comparing the registered process data with the expected data (generated by the tool), the actual properties of the fuel (e.g. humidity content) become evident. Hence, the operation of the boiler can be adapted more easily to unknown, changing fuel properties.
In addition, it can be checked, if the boiler could be fed with alternative fuels and what are the possible fuel capacities.

YOUR BENEFITS

- ✓ AZT provides a tool for a quick and comprehensive check of the technical concept as well as of the operating conditions of a grate fired boiler.
- ✓ Weak points of the boiler and fuel concepts can be identified, and risks for corrosion and wear are evaluated.
- ✓ For a given fuel type and quantity the described tool allows for the proper selection of the grate type and for the choice of suitable corrosion protection.
- ✓ During operation this tool can detect unforeseeable changes in the fuel quality (e.g. increasing water content) und thus can help to prevent from accelerated wear.

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INPUT DATA:

- Fuel capacities (tons per hour)
- Fuel type (18 types or any possible combination)

OUTPUT DATA:

- The suitable type of boiler
- The expected caloric values (minimum / design values / maximum)
- The expected fuel throughput rate (minimum / design values / maximum)
- The expected combustion air flow rates
- The expected flue gas flow rates
- The expected grate dimensions (numbers of grate runs, length and width)

GENERATED DIAGRAMS:

- Principle scheme of the boiler showing all key data (Fig. 1)
- Combustion performance diagram
- "Flingersche" corrosion diagram containing the expected process data of the boiler (Fig. 2)

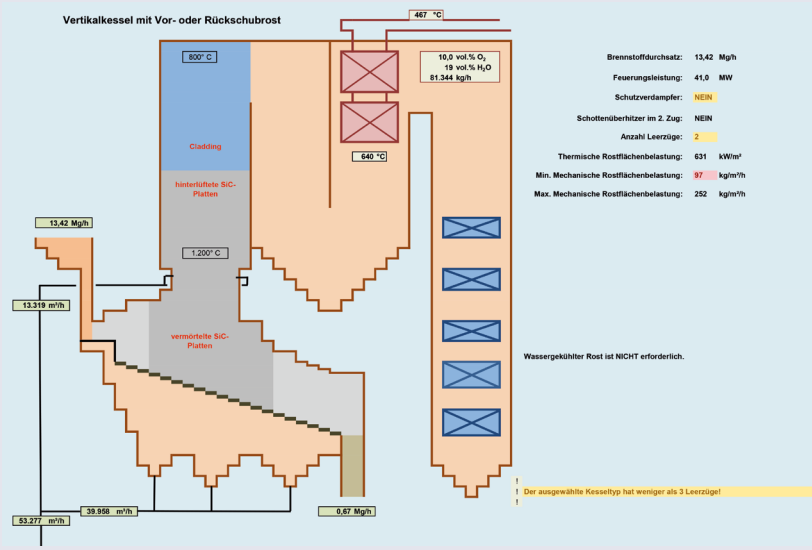

FIG. 1: Principle scheme of a grate-fired boiler

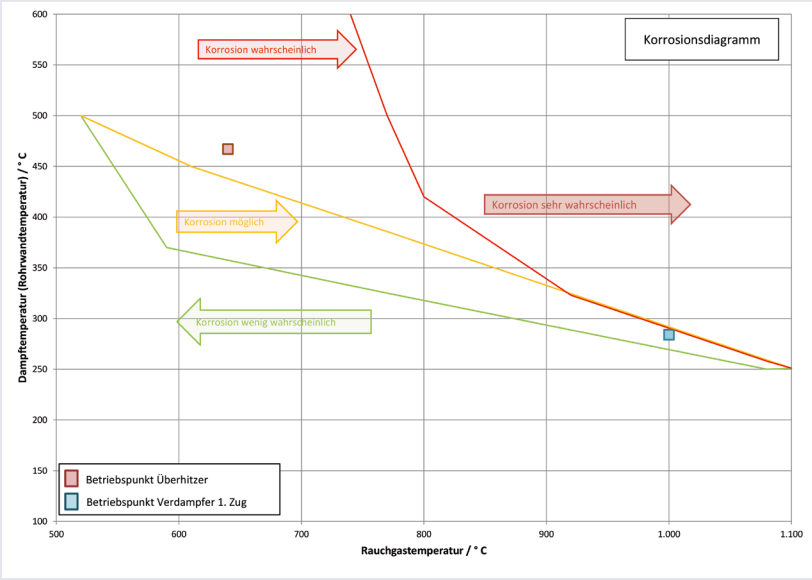

FIG. 2: The "Flingersche" corrosion diagram

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