

SAFE CO-COMBUSTION AND EXTENDED USE OF BIOMASS IN CHP FB PLANTS, FBCOBIOW

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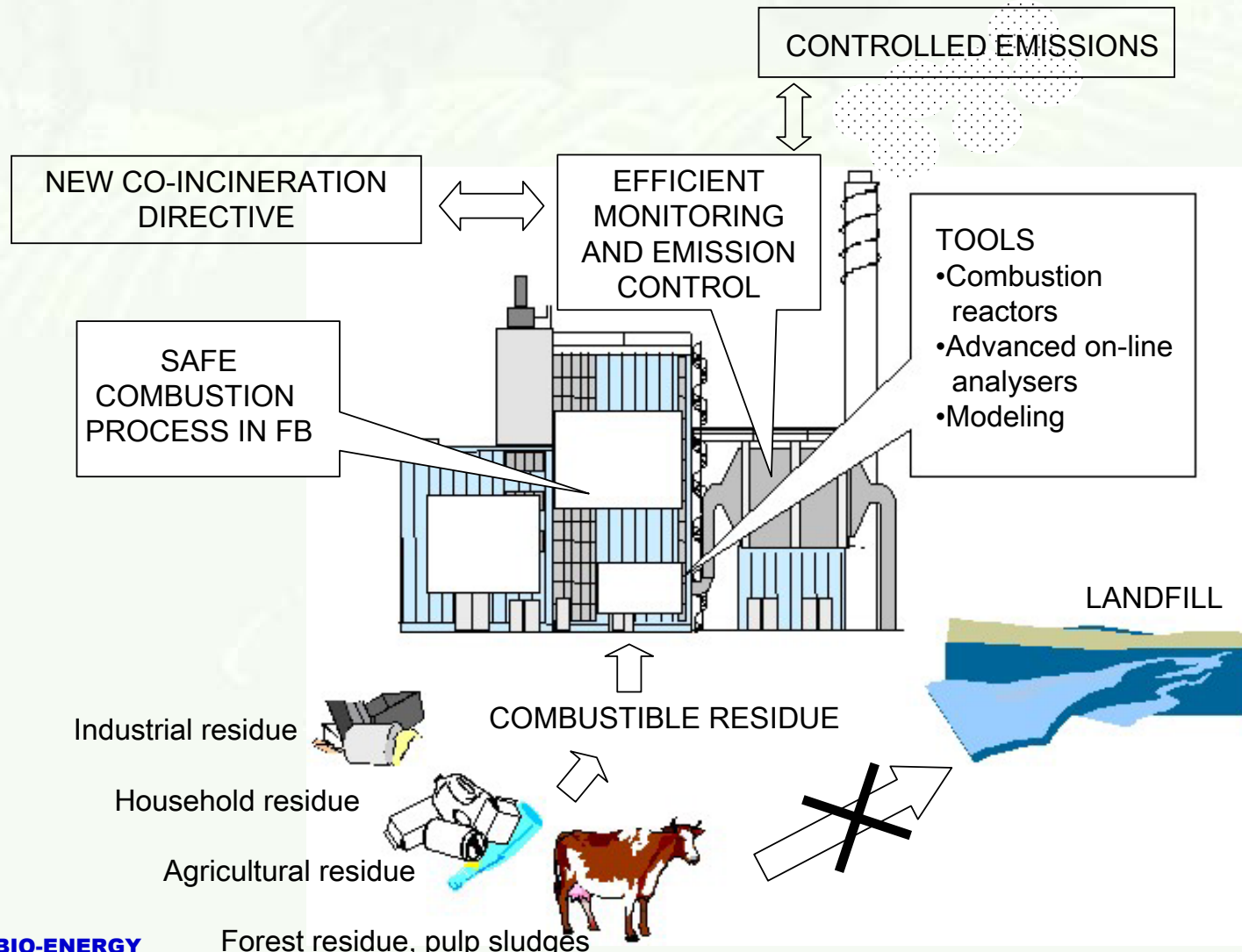
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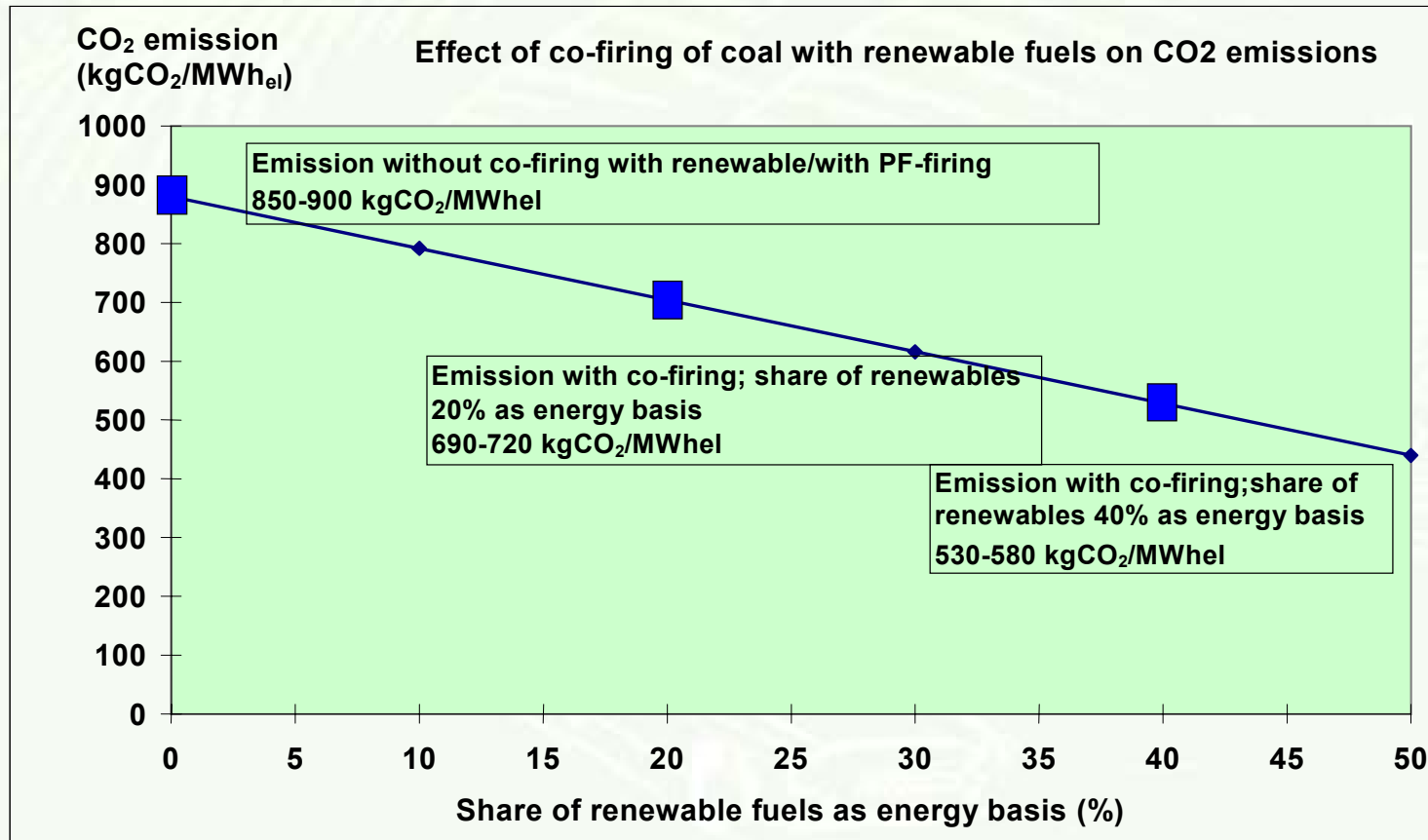
**BIO-ENERGY
ENLARGED PERSPECTIVES**

Budapest ,16-17 October 2003

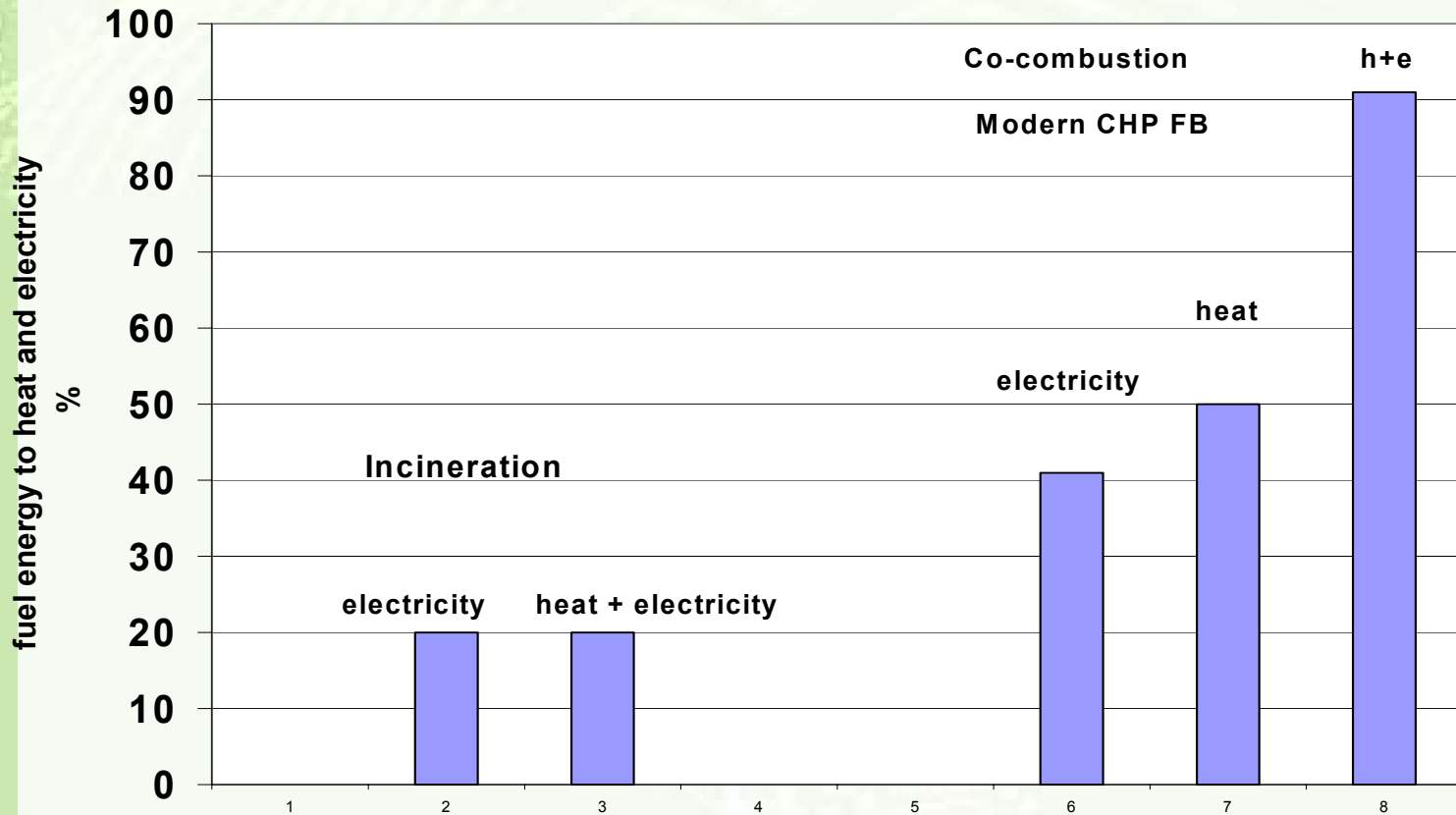
Key issues in the use of biomass residues in energy production



Reducing CO₂ emissions by adding biomass residues to fossil fuel



Comparison of co-combustion to incineration



Partners

1. VTT Processes (Coordinator) FIN
2. Kvaerner Power OY FIN
3. Offenbach Power Company GER
4. Dekati Measurements OY FIN
5. Institute of Process Engineering and Power Plant Technology,
University of Stuttgart GER
6. Technical University Wroclaw (<-> Turow) PL
7. Emissions-Reduzierungs-Concepte GmbH GER
8. Thermal Power Engineering, Technische Universiteit Delft NL
9. W.K. Crone B.V. NL

Main goals

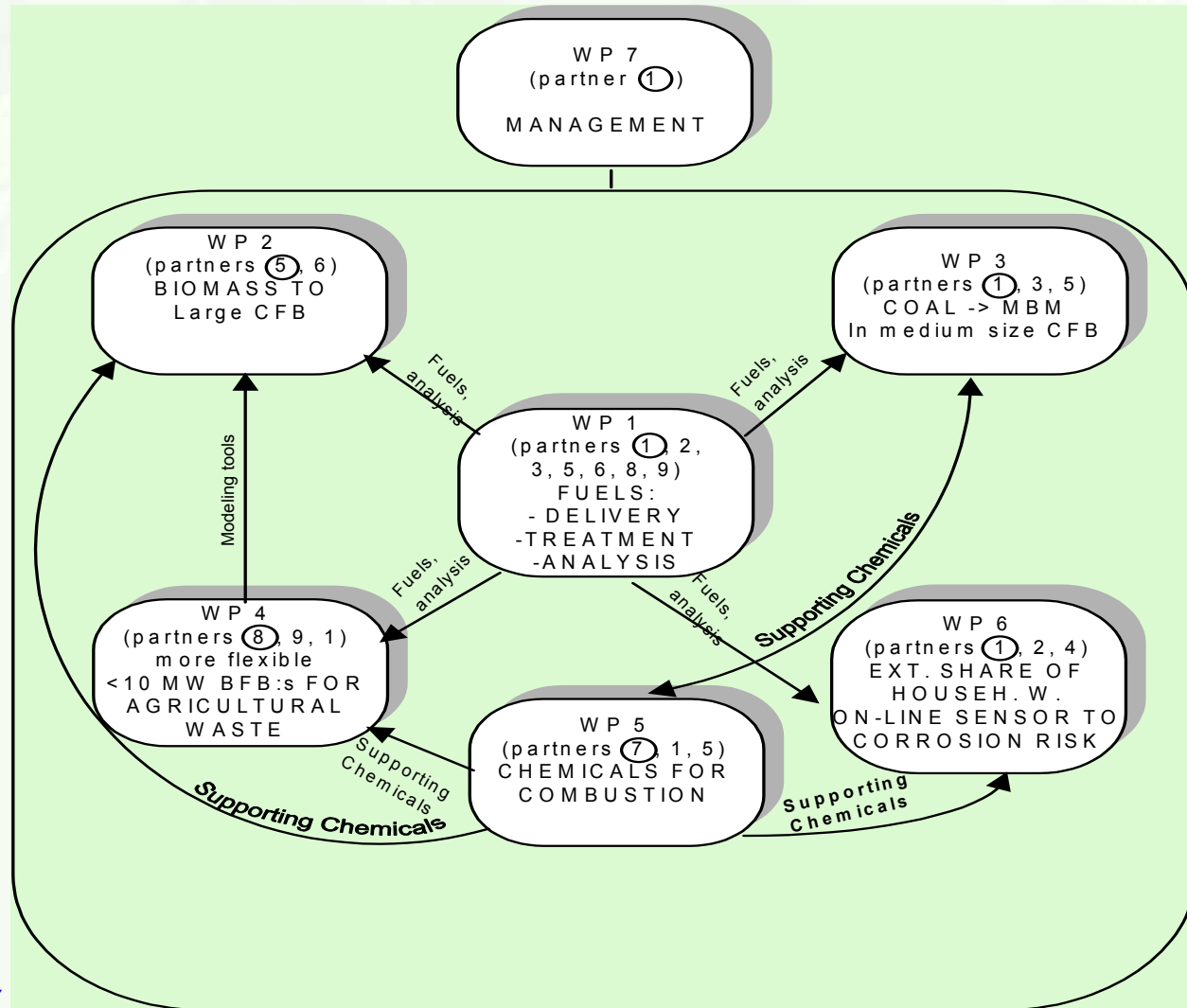
Industrial:

- 1 Biomass for FF fired Polish 235 MW_e CFB plant**
- 2 Increased share of meat and bone meal in a CFB plant**
- 3 Means to replace coal or bark with recycled household waste in FBC**
- 4 Higher portion of agric. waste to small FB boilers**

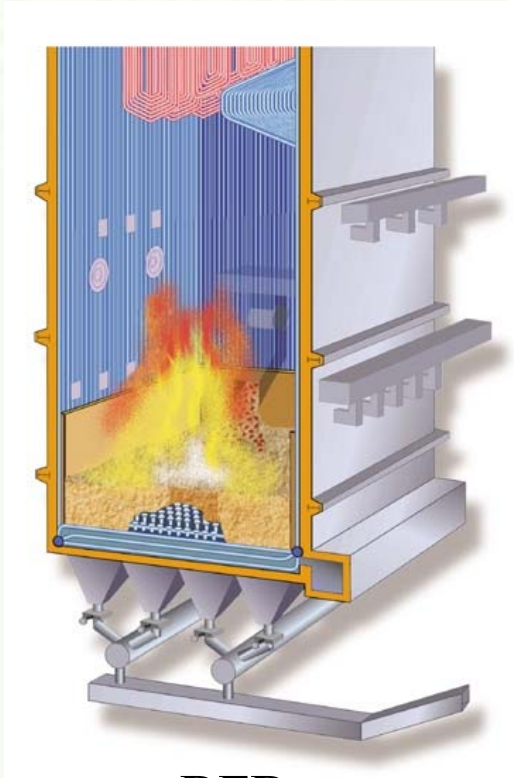
Technical:

- 5 Improved models for emissions and prediction of operational problems**
- 6 Effective additives to avoid operational risks and decrease emissions**
- 7 Optimal operation of gas cleaning equipment**
- 8 Real-time sensor detecting corrosion risk from flue gas composition**

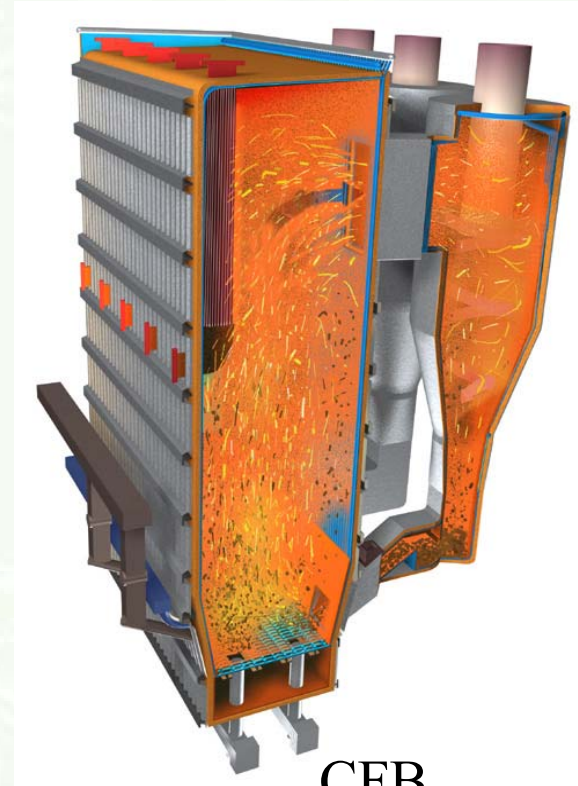
Work distribution



Includes both CFB and BFB combustion



BFB



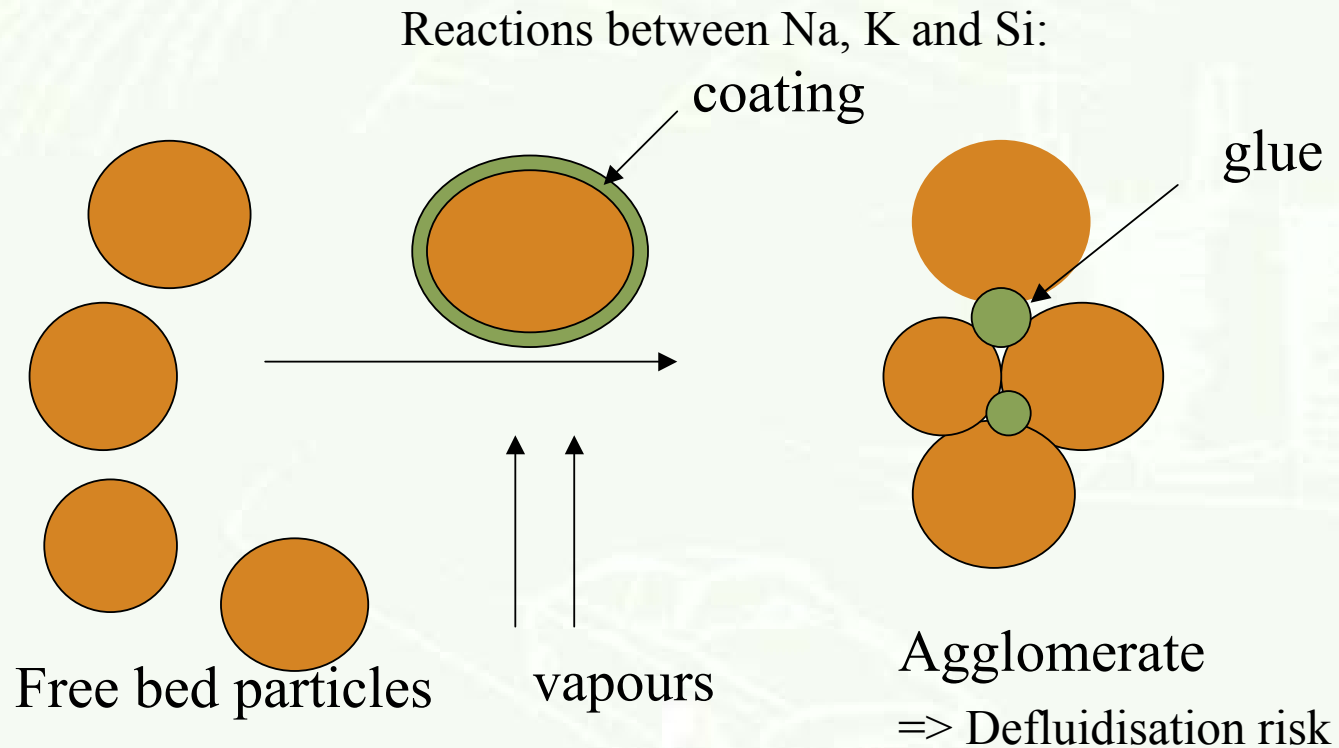
CFB

Figures from Kvaerner Power

Problems to be solved

- Too high emissions of toxic elements, NO_x, CO, C_xH_y, particulates, SO₂, HCl
- Bed agglomeration due to alkali silicates
- Fouling mainly due to alkali compounds, phosphates and sulphur
- Cl deposition followed by corrosion risk of superheaters of CHP plant
- Fuel handling and feeding

Agglomeration



Fouling & corrosion



Problem solution through experiments

