

## RETROFIT OF WtE BOILER: CASE STUDY ON BONN PLANT

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### Abstract

The implementation of the European-directive requiring a residence time of at least two seconds at a temperature above 850°C (1562°F), the change in waste characteristics, and the pursuit of higher thermal efficiencies has pushed many of the existing WtE plants in Europe to their operational limits. Most existing WtE plants were not designed to operate under these conditions and may require modifications to the combustion system.

Within the *SEGHERSbetter technology* (SEGHERS) company, the SEGHERS-IBB-Prism was developed to deal with the cause of these problems, which are essentially related to insufficient mixing and burnout of the flue gases in the combustion area. In the Boiler Prism the flue gas flow is divided into two parallel flows prior to entering the first radiant pass of the boiler. This division is achieved by means of a prism shaped construction, which is water-cooled and integrated with the natural circulation system of the boiler. Additional secondary air injection nozzles are fitted in the prism. This technology results in a more uniform flue gas temperature and a complete combustion of the flue gas immediately above the prism. In the Bonn Plant, these improvements in the combustion process resulted in a decrease of the fireside cleaning requirements of more than 50%.