

Stainless steels in waste and biomass power plant applications

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Abstract

Power generation, particularly from corrosive fuels such as biomass and waste, places severe demands on construction materials in many parts of the boiler and flue gas cleaning systems. Stainless steels are attractive materials alternatives in many cases, and the correct selection of grades can make a significant contribution to the extension of equipment lifetimes.

Corrosion data and application examples are given in which high temperature steels are used in waterwalls and superheaters. Materials selection for boiler components is addressed, together with a discussion on the potential for increasing steam temperatures. Finally, the use of corrosion-resistant grades for flue gas cleaning is presented together with results from field testing.

Materials employed for simulated superheater corrosion tests (wt%)

Design.	EN	UNS	Fe	Cr	Ni	Mo	Si	Mn	Other
T22	1.7380	K21590		2.25		0.9	0.2	0.5	
253 MA [®]	1.4835	S30815	Bal	20.97	10.89	0.18	1.61	0.56	Ce
310S	1.4845	S31008	Bal	25.06	19.36	0.13	0.56	0.99	
625 weld #			3.0	21.3	62.6	8.9			3Nb
C-276 weld #			11.0	14.9	54.9	15.5			3.5W

Compositions analysed 6 mm from fusion line

