Corrosion of welds in biomass power plants

In addition to understanding the corrosion of base materials in superheater tubes in biomass power plants, it is also important to understand how welded joints are subjected to corrosion or degradation. In the course of corrosion testing in the boiler, two different filler materials were used to weld together 18%Cr 12%Ni austenitic tubes. The two filler materials compared were a high alloyed Ni-based filler material (wt% approx. 20% Cr, 12% Fe, 3.6% Nb, Ti, balance Ni) and the CN 18/11 IG filler material (18%Cr, 10%Ni, balance Fe). Austenitic steel test tubes were exposed in two different plants where the different filler materials were utilized and the attack of the welds and tubes adjacent the welds are described. Preferential attack of the tube material immediately adjacent the weld only occurred for the Ni rich weld and the indications are that this is galvanic corrosion. This type of attack decreased with decrease in steam temperature.