

Dissimilar Welding Of New High Oxidation Material - Thor™ 115 With Vm-12 Shc

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Abstract : The development of materials used in the power generation industry for the production of boilers and their parts is characterized by high steam parameters, which present new challenges. Implementation of new combinations of alloying elements that lead to the best possible mechanical properties, including creep resistance, greatly affects new steels' weldability. All new grades have to undergo many different examinations, in regards to bending and welding, in order to enable the development of fabrication technologies, ensuring failure-free production and assembly of boiler components. 12% Cr martensitic steels like THOR™ 115 or VM-12 SHC are characterized by high oxidation resistance in high-temperature environments. At the moment, VM-12 SHC can be found in many boilers where both headers and superheater coils were produced. As this material is very difficult to obtain, a search for a proper replacement has begun. A new creep strength-enhanced ferritic steel for service in supercritical and ultra-supercritical boiler applications was developed by Tenaris in Italy and it is designated as Thor™ 115 (Tenaris High Oxidation Resistance). As high demand in power plants occurred to replace some parts of existing installations fabricated from VM12-SHC with other alternatives, a new development of welding procedures has begun to prepare fabricators for the challenges of joining old components with new THOR™ 115 material. This paper covers the first research of welding of dissimilar joints made out of VM12-SHC and THOR™ 115.

Keywords : thor, vm12, dissimilar welding, weldability

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