

APPLICATION NOTE

Application of FISCHER products

AN041en

Measurement of the ferrite content in (duplex) steel and weld seams

Components found in industrial plants – whether chemical, energy, petrochemical or other – are often subject to heat, aggressive agents and high pressure. These conditions demand steel types that are extremely corrosion and acid resistant even at high temperatures. When austenitic steels are used, it is important to make sure the ferrite content of the weld seams is within strict norms, because only the optimal ferrite content can ensure the best corrosion protection. For this reason some industries have set standards, specifications and regulations for ferrite content.



Fig.1: Measuring the ferrite content of a weld seam with FERITSCOPE® FMP30 and the probe FGAB1.3-Fe

During the welding of joints on e.g. boilers and pipelines made of austenitic steel, the heat causes modifications in the crystal lattice structure which lead to the formation of ferrite. Weld seams that are poor in ferrite do not have as much yield strength, but too much ferrite reduces their fracture toughness ductility and corrosion resistance, so it is important that the welding process produces just the right amount.

With duplex steel in particular, the ferrite content in the heat affected zone can easily deviate from the target values, either due to unsuitable filler materials or through incorrect heat input or cooling during the welding. Only onsite spot measurements can provide assurance that the processing did not change the ferrite content at the expense of crucial mechanical or corrosion-resistance properties.

To meet these requirements FISCHER has developed the handheld FERITSCOPE® FMP30 instrument, which measures the ferrite content using the magnetic induction method and displays it either as percent ferrite content or as a WRC (Welding Research Council) ferrite number. The FERITSCOPE® FMP30 can be outfitted with a variety of probes in special shapes such as axial, angled or for measuring inside centre holes.



Fig.2: Highest corrosion protection is required, for example, for pipelines and boilers in the chemical or petrochemical industry

The FISCHER FERITSCOPE® FMP30 allows for reliable and precise determination of the ferrite content in percent or as a WRC ferrite number. For further information please contact your local FISCHER representative.

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