Preventing Corrosion in Welded Duplex Stainless Steels

The use of duplex stainless steel in welded applications has grown quickly and continuously because duplex stainless steels:

- Are twice as strong as regular austenitic or ferritic stainless steels.
- Have a range of corrosion resistance similar to the range for austenitic stainless steels.
- Show very good stress corrosion cracking (SCC) resistance.

A key to using duplex stainless steels successfully in welded applications is to ensure that the material will maintain its properties after welding. This requires a variety of precise controls on the welding process, including the welding techniques, electrical parameters, preheat, and interpass temperature.

If the weld procedure is properly developed, and if all welding is done in compliance with the WPS, then the microscopic properties of the steel will be preserved after welding. If, however, the WPS is inadequate, or if the WPS is adequate but the welder fails to strictly adhere to the required controls, the result can be severe degradation of the steel's microstructure, resulting in preferential corrosion in those areas. And as the June 2012 Algo Mall disaster in Elliot Lake showed, corroded welds can lead to catastrophic failure.

Corrosion testing is a common requirement in the development of a WPS for duplex stainless steel. Corrosion testing validates that compliance with the specified weld procedure will, in fact, preserve the corrosion resistance of the steel.
Qualimet's new corrosion testing laboratory provides complete corrosion testing services, including testing for duplex stainless steels. Corrosion lab services are available as part of Qualimet's complete WPS development service, which includes gathering requirements, researching code and other compliance issues, weld procedure development and validation, and onsite support and 3rd party auditing.

Let Qualimet's experienced welding engineers and support staff take the worry off your hands. We'll developing a cost-effective WPS that's right for your application.

For more information on corrosion testing, call John Milner at 780-641-0760 or email john@qualimet.ca.

For information on WPS development, call Mike at 780-641-0750 (email mike@qualimet.ca) or EJ at 780-641-0757 (email ej@qualimet.ca).