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FACT SHEET

Anhydrous Ammonia Pipe Welding

INTRODUCTION

Minnesota Rules, Part 1513.0160, Subpart 3, states that welding of anhydrous ammonia piping must be done by a welder qualified in accordance with ASME Code, Section IX, "Welding Qualifications." ASME Code, Section IX, Part QW-103.1, states that "Each manufacturer or contractor is responsible for the welding done by their organization and shall conduct the tests required in this Section to QUALIFY the welding procedures used in the construction of the weldments built under this Code, and the performance of welders and welding operators who apply these procedures."

DEVELOPING WELDING PROCEDURES

ASME Code, Section IX, Part QW-200.1, states that "Each manufacturer and contractor shall prepare written Welding Procedure Specifications." The Welding Procedure Specifications (WPS or ASME form QW-482) is a qualified welding procedure prepared to provide direction for making production welds to Code requirements. Within a WPS document are welding specifications or variables which provide detailed directions to assure the repeatability of production welds by a qualified welder or welding operator. The WPS may be developed by the contractor or manufacturer, welding consultant, authorized testing agency, or by obtaining sample weld procedures of various welding processes through the American Welding Society at 1-800/334-9353.

QUALIFYING THE WPS

Each newly developed WPS must be qualified to demonstrate that welds made by a specific welding procedure meets Code requirements. The document used to qualify the WPS is the Procedure Qualification Record (PQR or ASME form QW-483). The PQR is a record of the welding specifications or essential variables used to weld a test weld speciman or coupon. The PQR also serves to record the test results performed on the coupon. The test weld is perfomed on a coupon prepared as specified in ASME Code, Section IX. The testing requirements outlined in Section IX are quite complex. For this reason, a contractor or manufacturer will require the services of an authorized testing agency to provide ASME Code information, perform the required tests on the coupon, and assist in compiling the PQR.

QUALIFYING WELDERS AND WELDING OPERATORS

As mentioned in the previous paragraph, the coupon is tested by an authorized testing agency to qualify the weld procedure. The welder who successfully performs the weldment on this coupon will be considered qualified in the positions recorded on the PQR. The Welder Performance Qualification is recorded on a WPQ or ASME form QW-484. Additional welders must qualify for each weld procedure used. Upon successful weldment on a coupon, a separate WPQ form is compiled for each welder.

The weldment testing requirements for Welder Performance Qualification as outlined in ASME Code, Section IX, are less stringent than those required for procedure qualification. For this reason, either an authorized testing agency or contractor/manufacturer may perform the required tests upon the coupons. However, contractors or manufacturers not thoroughly familiar with Section IX may be best served by obtaining the services of a welding consultant or authorized testing agency to assist in meeting the WPQ requirement.

SUMMARY

In order to comply with Minnesota Rules, Part 1513.0160, a welding contractor or manufacturer must:

- Prepare a weld specification and compile a WPS/QW-482;
- Qualify a WPS by welding a coupon and having the coupon tested per ASME Code, Section IX, at an authorized testing agency;
- Record successful weld test results on the PQR/QW-483; to qualify the weld procedure/WPS;
- Qualify each welder for each qualified welding procedure by having the welder weld a coupon that successfully passes the testing requirements outlined in ASME Code, Section IX. Record the results of the welder performance test on the WPQ/QW-484;
- Maintain current QW-482s, QW-483s and QW-484s for inspection.
- Maintain a continuity record for each welder and for each weld procedure used for a period not exceeding 6 months; and
- Maintain these records and welding documentation for inspection.