

2016-07-06

NORSOK Standard M-101:2011
Welding and inspection of piping

Group A: Frequently asked questions – FAQ

Group B: Clarification and comment list

INTRODUCTION

NORSOK standard M-101 Rev.5 was issued in October 2011. The standard is used worldwide by many organizations and persons. Questions are being brought up both with respect to use of the standard and to the various requirements and sections in the standard. Some of these will need to be addressed publicly.

The aim of this document is to ensure uniform practicing of the standard. It is the intention to update this document when required.

Group A: Frequently asked questions – FAQ

This group addresses questions of a more general nature.

Group B: Clarification and comment list

This group provides guidance, clarifications and comments to the specific sections and paragraphs in the standard. In some cases guidance are given for subjects, which were not originally covered in Rev. 5

REVISIONS

This edition of NORSOK M-101 Rev. 1 FAQ and clarification list dated 15.06.2016 is the first issue.

- There are currently no FAQs.
- New clarifications are designated; year of revision –sequence No., e.g. 2016 – x1. Revised clarifications are identified with a prefix R, e.g. R2014 – x1.

The updates of the clarifications include:

- 2016-01:
 - 5.3 Welding procedure qualification record (WPQR) - Range of approval
 - 5.3.1 For welding of steels in all strength classes

Group A: Frequently asked questions – FAQ

Currently no FAQ's.

Group B: Clarification and comment list

Number	M-101 section	Question/Topic	Comment and/or clarification
2016-01	5.3.1 a)	<p>Case: Qualification of WPQ for plates or tubulars acc. to ISO 15614-1 with additional requirements as per NORSOK M-101 Rev. 5.</p> <p>How shall the below text be interpreted? NORSOK M1-10 clause 5.3.1 a)</p> <p><i>“control of heat input according to ISO 15614-1, 8.4.8, shall apply. If an approval testing have been performed at both a high and a low heat input level (all specified mechanical testing to be performed for both high and low heat input), then all intermediate heat inputs are also qualified”</i></p> <p>Question: Shall all specified testing be carried out for every weld position as long as it concerns high- and low level heat input?</p>	<p>Considerations:</p> <p>ISO 15614-1, 8.4.2 Welding positions <i>“When impact and/or hardness requirements are specified impact tests shall be taken from the weld in the highest heat input position and hardness tests shall be taken from the weld in the lowest heat input position in order to qualify for all position”</i></p> <p>ISO 15614-1, 8.4.8 Heat Input <i>“When impact requirements apply, the upper limit of heat input qualified is 25% greater than that used in welding the test piece. When hardness requirements apply, the lower limit of heat input qualified is 25% lower than that used in welding the test piece. Heat input is calculated in accordance with EN 1011-1 If welding procedure tests have been performed at both a high and a low heat input, then all intermediate heat inputs are <u>also</u> qualified”</i></p> <p>Discussions:</p> <p>ISO 15614-1 does not specify the extent of testing related to the qualification of low and high heat input, except for hardness and impact testing.</p>

Number	M-101 section	Question/Topic	Comment and/or clarification
			<p>The sentence inside the parentheses in NORSOK M-101 clause 5.3.1 a) should therefore be interpreted as an additional test requirement to ISO 15614-1, since clear test requirements for low and high heat input welding are missing in the standard.</p> <p>ISO 15614-1 states that as long as both high and low heat inputs are tested with impact testing and hardness, respectively, all intermediate heat inputs are <u>also</u> qualified, including 25% extension in each end. Based on this it is reasonable to require full mechanical testing of both the low heat input and the high heat input test piece.</p> <p>The requirement related to additional testing was first introduced in NORSOK M-101, version 4 (2004), Section 5.3.1 a), where the text inside the parentheses said; "<i>(with all specified mechanical testing)</i>". This can be interpreted that only the testing specified in EN 288-3 (the basis document for ISO 15614-1) should be applied. This text was revised in M-101, version 5 (2011), to; "<i>(All mechanical testing to be performed for both high and low heat input)</i>". Based on documentation from the revision group it is interpreted that this requirement meant that full testing (impact, hardness, transvers tensile and bend testing) shall be performed for both positions.</p> <p>Conclusion:</p> <p>Based on the discussion above, it is concluded that NORSOK M-101 ver. 5 (2011) requires full mechanical testing of both the low and the high heat input test pieces if the heat input range is set to all intermediate heat inputs, including 25% extension in each end.</p> <p>Further, it is concluded that welding procedures qualified in accordance with earlier versions of NORSOK M-101, version 5, are still valid without any additional mechanical testing needed.</p>

