

Certificate



Suppl.-No.: 03
to Certificate WF 0910057 HH

WPS-No.: 136 138 MAG P16S235PEssmlnb of 2012-04-11

Messrs.

Flanders Ship Repair NV

has been approved on the basis of the welding procedure test supervised by Germanischer Lloyd and specified in a welding procedure specification (see WPS-No.), in accordance with the "Rules for Classification and Construction II, Material and Welding Technology, Part 3 - Welding" for the following welding procedure:

MAG welding with metal cored electrode combined with MAG welding with flux cored electrode of normal strength structural steels

Welding Details

Process:	138 - MAG welding with metal cored electrode combined with 136 - MAG welding with flux cored electrode
Type of weld:	Butt welds, welded from one side in multi-run technique without backing.
Welding equipment:	Suited, in accordance with the instructions of the welding supervisor.
Welding data:	According to the relevant welding procedure specification of the welding supervisor.
Welding consumables:	Metal cored electrode gas combination "Elgacore DWA50 / M21" (Elga), GL-grade "3YH5S" and flux cored electrode gas combination "Elgacore MXA 50 XP / M21" (Elga), GL-grade "4Y40H5S". Other similar flux cored wire-gas combinations tested and approved by Germanischer Lloyd with the relevant grades according to the base materials to be welded.
Edge preparation:	Butt weld: V-joint, included angle approx. 70°, root gap 2mm and root face 2mm; as for the welding procedure test, see WPS.
Weld build-up:	Multi-layer, welded from one side with full penetration (root run: 138; filler- and final run: 136).
Welding heat treatment:	Without preheating, in any case dry out / remove moisture (see remarks). Interpass temperature max. 250°C.
Welders:	Welders recognized by Germanischer Lloyd with valid welder test certificates in the respective test group.
Others:	Flux cored arc welding with protection against wind and weather.

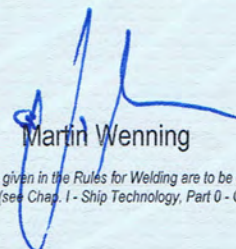
Range of application

Base material(s):	Normal-strength hull structural steels grade GL-A with yield strength up to 275 N/mm ² acc. to GL rules for materials. Other similar steel grades (e.g. S235JR acc. EN 10025-2) with consent of GL.
Wall thickness(es) [mm]:	8,0 - 32,0
Pipe diameter [mm]:	---
Positions:	Butt welds: PA, PE.
Heat treatment condition:	As welded.
Design temperature:	As for base and filler material.
Particularities, remarks:	The need and the temperature of preheating for welding in the upper range of thickness shall be found out in relation to the plate thickness, the chemical composition of the base metal, the hydrogen content of the weld metal, the heat input during welding.

Parts of this approval are the a. m. certificate, the above mentioned WPS, if any, and our letter of approval with ref.-no. 052026-12/MWeg of 2012-07-04.

Hamburg, 2012-07-04

Germanischer Lloyd


Martin Wenning