

Certificate of Approval

This is to certify that

Inno Steel Co., Ltd.

62, Angok-ro 333beon-gil Hallim-myeon, Gimhae-si,
Gyeongsangnam-do, 50852, Korea

is approved by MAN Energy Solutions for the manufacture and supply of:

Forged Steel Piston Crown
Material: S20CrMoVS
for all engine types, up to 95 Bore


for MAN B&W engines (two-stroke) in accordance with the Terms and Conditions
stated in Appendix A.

issued on 2020-07-24

expires on 2025-07-24

Certificate no.: 2700-2020-774.0

MAN Energy Solutions


Cristina Ferreira


Steen Krogh Jensen

Appendix A:

Certificate no.: 2700-2020-774.0

The approval as Vendor is based on the premise that the production and testing facilities, associated procedures and relevant qualifications are found in compliance with:

- Quality Control Ident no. 0743172-1.11 “General Procedure for First-Time Production Approval of Controlled Components”
- Quality Control Ident no. 0743815-7.2 “S20CrMoVS – Forged Steel Piston Crown, First-Time Approval”
- Quality Specification Ident no. 0742779-2.6 “Forged Steel Piston Crown”
- Material Specification Ident no. P374-2 “S20CrMoVS – Forged, hardened and tempered Cr_Mo_V steel”
- Report from Inno Steel Co., Ltd. “Results for First-Time Approval Test of MAN ES Forged Piston Crown (Ident No. 0743815-7.0), <Engine Type: G95ME-C, Mat’Spec: S20CrMoVS / HBF-32”, ref.: DSM-FTA-03, dated November 2018

And supporting documents:

- Report from Inno Steel Co., Ltd. “Results for First-Time Approval Test of MAN ES Forged Cylinder Cover (Ident No. 0743426-3), <Engine Type: G80ME-C, Mat’Spec: S20CrMoVS / HBF-32”, ref.: DSM-FTA-02 dated April 2018
- “LOD (List of Differences), Doosan Engine, S20CrMoVS ref.: ED-LODM-1300 dated 18th July 2012
- “Posco, Mill Test Certificate”, ref.: 18030-FS01PN-0008A3-0002 dated 8th October 2018
- “Report of Ultrasonic Examination” from Korea Testing Engineering Co., Ltd., ref.: KTE-NS-DS-UT-181020-001 dated 20th October 2018
- Analysis of the FTA process, ref.: “rereRE Request of approval for Piston Crown material using casting slab – Inno Steel Co Ltd”, dated 2020

The Certificate of Approval is subject to the following Terms and Conditions:

Certificate no.: 2700-2020-774.0

1. Vendor shall at all times comply with the restrictions stipulated in the Undertaking of Confidentiality signed by Vendor on 2019-11-15
2. The Certificate of Approval (the "Approval") is given on the strict condition that Vendor undertake to indemnify MAN Energy Solutions against any and all claims arising from the Product's actual or alleged infringement of any third party intellectual property rights.
3. For Product's designed by the Vendor, the Approval is given on the strict condition that Vendor undertakes to indemnify MAN Energy Solutions against any and all claims arising from the Product's design.
4. The Approval is given on the basis that the Product conforms with MAN Energy Solutions' drawings and specifications valid at the time of the Approval. MAN Energy Solutions reserves the right to make changes to its drawings and product specifications notwithstanding that such changes may invalidate the Approval.
5. The Approval shall not relieve Vendor from its responsibility always to manufacture the Product in compliance with good manufacturing practice, free from any defect and in strict compliance with any drawings and specifications received from MAN Energy Solutions or its licensees.
6. Changes made to the Product specification by the Vendor must be informed to and accepted by MAN Energy Solutions in writing. Failure by the Vendor to obtain such written acceptance from MAN Energy Solutions may render this Approval invalid.
7. The Approval is given under the strict condition that MAN Energy Solutions has the right to assess periodically the Vendors continued ability to manufacture the Product in accordance with the requirements of MAN Energy Solutions.
8. The Approval does not imply (whether directly or indirectly) that MAN Energy Solutions in any way guarantee the quality of the Product manufactured and supplied by Vendor.
9. The Approval may be withdrawn by MAN Energy Solutions at any time without notice if Vendor should fail to comply with the conditions of this Certificate of Approval, the duly signed Undertaking of Confidentiality and Quality Control 0743172-1 "General Procedure for First-Time Production Approval of Controlled Components" and may otherwise be withdrawn by MAN Energy Solutions at any time by giving six months prior, written notice to the Vendor.