



**CERTIFICATE OF APPROVAL OF MANUFACTURERS OF
MATERIALS**
No. FAB025919PU

This is to certify that the manufacture of the product identified below is in compliance with the applicable requirements of the RINA Rules for the Approval of Manufacturers of Materials.

<i>Description</i>	Steel forgings
<i>Type</i>	Steel forgings for machinery and semi-built crankshafts
<i>Manufacturer</i>	DOOSAN HEAVY INDUSTRIES & CONSTRUCTION CO., LTD.
<i>Place of manufacture</i>	22, Doosan volvo-ro, Seongsan-gu, 51711 Changwon-si (Gyeongsangnam-do) REPUBLIC OF KOREA
<i>Reference standards</i>	RINA Rules for the approval of manufacturers of materials

Issued in **BUSAN** on **April 17, 2019**. *This Certificate is valid until* **April 6, 2024**




RINA Services S.p.A.
Dong-Hun Lee

This certificate consists of this page and 1 enclosure



CERTIFICATE OF APPROVAL OF MANUFACTURERS OF MATERIALS

No. FAB025919PU

Enclosure - Page 1 of 1

Steel forgings for machinery and semi-built crankshafts

APPROVAL CONDITIONS

Steel making products : steel ingot from approved manufacturers

Steel types: carbon, carbon - manganese and low alloy steels.

Forging process : open die forging.

Products max. weight : 300,000 kg

Condition of supply : normalizing and tempering, quenching and tempering by manufacturer.

Survey conditions: all forgings to be used for construction of ships classed with RINA shall meet the requirements of the RINA Rules and shall be tested accordingly.

General conditions for the approval

-The approval is granted on condition that the RINA Rules for the approval, manufacture, testing and certification of materials are complied with in all respects.

-RINA is to be notified of any change of materials, manufacturing process, quality control routines that may affect the validity of this certificate.



A handwritten signature in black ink, consisting of a series of loops and curves, positioned to the right of the RINA logo.

BUSAN April 17, 2019