



**DNV**

# TYPE APPROVAL CERTIFICATE

Certificate No:  
**TAM0000186**

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## This is to certify:

**That the Dual Fuel Engine**

with type designation(s)  
**X92DF**

Issued to

**Winterthur Gas & Diesel Ltd.**  
**Winterthur, Switzerland**

is found to comply with

**DNV GL Rules for classification, Ships - DNVGL-RU-SHIP-Pt4 Ch3 Sec1**  
**Reciprocating Internal Combustion Engines**

## Application :

mechanical propulsion (fixed pitch propeller)

Issued at **Hamburg** on **5th August, 2021**

This Certificate is valid until **5th August, 2026**.

DNV local station: **Augsburg**

for **DNV**

Approval Engineer: **Sven Neddenien**

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**Olaf Drews**  
**Head of Section**

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid.  
The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV AS, its parent companies and their subsidiaries as well as their officers, directors and employees ("DNV") arising from or in connection with the services rendered for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to 300,000 USD.

**Product description**

two stroke, in-line engine, reversible, crosshead, with supercharging, with charge air cooling, constant-pressure charging system, direct injection, injection operation electronically controlled, valve operation electronically controlled, dual fuel

|                    |                        |
|--------------------|------------------------|
| Cylinder bore [mm] | 920                    |
| Piston stroke [mm] | 3468                   |
| No. of cylinders   | 6, 7, 8, 9, 10, 11, 12 |

**Additional place of production**

not applicable

**Application/Limitation**

|                               |      |
|-------------------------------|------|
| Rated power [kW/cyl.]         | 5320 |
| Rated speed [rpm]             | 80   |
| Mean effective pressure [bar] | 17.3 |
| Max. firing pressure [bar]    | 200  |

The operation in gas mode is limited from 8% to 100% rated power.

**Type Approval documentation****Tests carried out**

2021-05-22, CSSC-MES Diesel Co., Ltd. (CMD), Shanghai, China, initial type approval test, 262.1-032711-1  
2020-09-24, CSSC-MES Diesel Co., Ltd. (CMD), Shanghai, China, power increase, 262.1-032711-1

**Marking of product**

The product to be marked with manufacturer's name or trademark and type number identification.

**Periodical assessment**

Meetings on regularly basis and at least every second year with the Type Approval applicant (hereof: the Engine Designer) shall be arranged with the objective to verify that the conditions for the Type Approval are not altered since the Type Approval Certificate was issued, and to keep DNV updated with regard to:

- The latest development status and design as covered by the Type Approval certificate.
- Damages and failures of products certified by DNV leading to break down or other malfunctions in service. The causes and reasons for the failure and results from investigations are to be made available to DNV upon request. Failure to inform DNV may lead to suspension of this Type Approval certificate.

In cases where the Type Approved design is manufactured at other companies, DNV shall verify that the Type Approval applicant has a quality control system for consistent production at their licensees/subcontractors.

**Other Conditions**

1. Engine safety, control and monitoring systems, including sensors and actuators, are not covered by this certificate. Documentation for engine safety, control (including speed governing), and monitoring systems shall be submitted for approval according to DNV Rules Ships Pt.4 Ch.9 Sec.1 Table 5 and/or as listed in relevant Type Approval certificates.

2. The integrated gas pressure regulation (iGPR-9.6) is type approved with the certificate TAM0000187 and accepted for this engine type.

END OF CERTIFICATE