TYPE APPROVAL CERTIFICATE

Certificate No:
TAM000018W

This is to certify:

That the Diesel Engine

with type designation(s)
CX52

Issued to
China Shipbuilding Power Engineering Institute Co., Ltd.
Shanghai, China

is found to comply with
DNV GL Rules for classification, Ships - DNVGL-RU-SHIP-Pt4 Ch3 Sec1
Reciprocating Internal Combustion Engines

Application :

propulsion

Issued at **Hamburg** on **1st September, 2021**
This Certificate is valid until **31st August, 2026**.

DNV local station: **Shanghai**

for **DNV**

Approval Engineer: **Sven Neddenien**

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, liquid fuel, SCR on engine

Cylinder bore [mm]	520
Piston stroke [mm]	2315
No. of cylinders	6

Additional place of production
not applicable

Application/Limitation

Rated power [kW/cyl.]	1940
Rated speed [rpm]	105
Mean effective pressure [bar]	22.5
Max. firing pressure [bar]	220

The exhaust gas cleaning system, SCR on engine is type approved with the certificate TAP000022M and accepted for this engine type.

Type Approval documentation

Tests carried out
Documentation:

Test report title	CSSC CX52 Engine TAT Report
Place of test	Dalian, China
Date of test	2020-12-07 until 2020-12-09

Test engine:

Model	6X52
Serial no.	1261
No. of cylinders	6
Power [kW/cyl.]	1940
Speed [rpm]	105

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
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 GL Rules Ships Pt.4 Ch.9 Sec.1 Table 5 and/or as listed in relevant Type Approval certificates.

END OF CERTIFICATE