Certificate no.:
TAA00003S6

TYPE APPROVAL CERTIFICATE

This is to certify:

that the Burner Management System

with type designation(s)
Boiler control and monitoring system (BMS)

issued to
Saacke Qingdao Marine Boiler Co., Ltd.
Qingdao,, China

is found to comply with
DNV rules for classification – Ships Pt.6 Ch.5 Sec.21 Cyber security

Application:

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV. The Type Approval covers security capabilities in accordance with DNV security profile 1 and IACS UR E27 Rev.1, subject to conditions stated in this certificate.

Issued at **Høvik** on **2025-11-21**
This Certificate is valid until **2027-11-20**.
DNV local unit: **Qingdao NB & CMC**

for **DNV**

Approval Engineer: **Vinay Bhardwaj**

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 USD 300 000.

Product description

The Type Approval of cyber security capabilities is for the SAACKE QINGDAO MARINE BMS system.

The following systems and components are covered:

Component Description	Brand/Manufacturer	Product model/Type	OS/Application SW version	Connection/Interface type
Sequence Safety CPU	Siemens	SIMATIC S7-1200 Series	S71200 V2.0	Ethernet Profinet PN Communication
Control CPU	Siemens	SIMATIC S7-1200 Series	S71200 V2.0	Ethernet Profinet PN Communication MODBUS
HMI	Beijer	X2 PRO 7 X2 PRO 10	S71200 V2.0	Ethernet Profinet PN Communication
Remote HMI	Beijer	X2 PRO 7 X2 PRO 10	S71200 V2.0	Ethernet Profinet PN Communication

Application/Limitation

Each type approved system intended for DNV classed vessels shall be delivered with a vessel-specific Product certificate (PC). The Product certificate shall confirm compliance with applicable DNV rules for the project and shall be issued based on assessment of design documents and certification survey with testing as specified in DNV-RU-SHIP Pt.4 Ch.9.

For newbuilding projects, design documents for identical deliveries to sister vessels with the same DNV project ID shall be submitted for approval in one common document transmittal. Certification survey and testing is required for each delivery.

When the type approved system is delivered to a vessel with class notation Cyber secure(Essential), the following additional verification applies as per DNV-RU-SHIP Pt.6 Ch.5 Sec.21:

1. It shall be demonstrated that the architecture of each delivery is documented in a project-specific system topology F030 and that this is consistent with type approved document "**F030 Burner Management System Topology REV 1.1"**.
2. It shall be demonstrated that each delivery is correctly represented by a vessel-specific asset inventory (F071) and that this inventory is consistent with type approved document **"Burner Management System Inventory List REV 1.0"**
3. It shall be demonstrated by a declaration or test report (Z261) that each delivery has been configured and hardened as per the type approved document **"F252 Burner Management System Procedure for test of security capabilities REV 1.1" and "F141 Burner Management System Guidelines for hardening and configuration of security capabilities REV 1.1"**. Certification testing of cyber security capabilities is not required if the delivery is fully covered by this TA certificate.

If a delivered system differs from the type approved system, this shall be described and submitted for assessment.

Application/Limitation

The boiler control system contains two logic controllers: Sequence control CPU (Safety) and control CPU. These CPUs use Ethernet based Profinet communication with HMI's. The Profinet connectivity must be limited to local network only. No other ethernet communication outside Profinet must be allowed on Safety CPU e.g. MODBUS TCP, IP ethernet etc.

Type Approval documentation

Drwg./Doc. No.	Customer document ref.	Rev.	Title
F071	F071	1.0	Burner Management System Inventory List
F021	F021	1.1	Burner Management System Description of security capabilities
F030	F030	1.1	Burner Management System Topology
F252	F252	1.1	Burner Management System Procedure for test of security capabilities
F259	F259	1.1	Burner Management System Description of secure development lifecycle processes
F141		1.1	Burner Management System Guidelines for hardening and configuration of security capabilities

Tests carried out

Tested in accordance with requirements for
- Pt.6 Ch. 5 Sec 21 for Cyber Secure (Essential), i.e. DNV Cyber security profile level 1 (SP1) and
- IACS UR E27, Sec.5 on Secure Development Lifecycle (SDLC) Requirements

Tests carried out on June-2025 as per Test procedure document - Test procedure at manufacturer version 1.3

Marking of product

Hardware devices are marked with product name and type as listed in ‘Product description’ above.
Software version(s) can be seen via each product’s management interface.

Periodical assessment

The scope of the periodical assessment is to verify that the conditions stipulated for the type are complied with, and that no alterations are made to the product design or choice of systems, software versions, components and/or materials.

The main elements of the assessment are:
- Ensure that type approved documentation is available
- Inspection of factory samples, selected at random from the production line (where practicable)
- Review of production and inspection routines, including test records from product sample tests and control routines
- Ensuring that systems, software versions, components and/or materials used comply with type approved documents and/or referenced system, software, component and material specifications
- Review of possible changes in design of systems, software versions, components, materials and/or performance, and make sure that such changes do not affect the type approval given
- Ensuring traceability between manufacturer’s product type marking and the type approval certificate
- Review documented evidence of adherence to Secure Development Lifecycle processes.

A renewal assessment will be performed at renewal of the certificate.

Manufactured by:

Saacke Qingdao Marine Boiler Co., Ltd.
No.159 Yanhe Road, Huangdao District ,266510 Qingdangdao