



Certificate No:
TAA00003B2

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Gas Turbine System

with type designation(s)
N2 Package PCS 7 Control System

Issued to

Siemens Energy Industrial Turbomachinery Ltd
Lincoln, United Kingdom

is found to comply with
DNV rules for classification – Ships

Application :

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV.

Issued at **Høvik** on **2025-03-10**

This Certificate is valid until **2027-03-09**.

for **DNV**

DNV local unit: **UK & Ireland CMC & VMC**

Approval Engineer: **Thorbjørn Hansen**

Siri Tag
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.



Form code: TA 251

Revision: 2022-12

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Product description

The "N2 Package PCS 7 Control System" is a gas turbine control- monitoring and safety system designed for the Siemens SGT-400 gas turbine series, intended to operate both on gaseous and liquefied fuel. The SGT-400 gas turbine series and the corresponding SGT-400 package are covered by separately TA certificate no's TAM00001AK and TAM00001CT respectively.

The N2 Package PCS 7 Control System incorporates the following functionality (see Applications/Limitations):

- GT core engine control
- HMI for local control
- Safety Related Functions
- Turbine Sequencing
- Turbine Speed Governing
- Engine / System Failure Protection Monitoring
- Gas monitoring inside GT enclosure
- Fire detection inside GT enclosure
- Vibration monitoring system
- Interface to the vessels integrated C&M system
- Interface to the ships gas safety system
- Interface to the ships fire detection system

The main C&M components/systems in the N2 Package PCS 7 Control System and their corresponding DNV Type Approval certificates are listed below.

Table 1: Main components in the N2 Package PCS 7 Control System, installed in JB72

Component / System	DNV TAC
Simatic GT control system, Main PLC	TAA00000GE TAA00001UJ
Simatic GT control system, HMI & SW	TAA00000DV TAA00002AK
Simatic GT control system, Safety system	TAA0000120 TAA0000227 TAA00001MN
Simatic GT control system, IO system	TAA0000227
ESD, DeviceNet to Profibus converter	See Table 2
GMI, Temperature Signal Converter, Multifunction	TAA00001U0
PR Electronics, Barrier	TAA00000JD
Moore Industries, Frequency to mA converter	See Table 2
Allen-Bradly 1440 series, Vibration module	See Table 2
Stahl, Barrier	MRA000000V
P+F Barrier	TAA00001WX
Siemens Energy Lincoln, Overspeed module	See Table 2
Simatic, Scalance network components	TAA0000136
Bently-Nevada Vibration monitoring system	TAA000034K

Place of manufacture

Siemens Energy Industrial Turbomachinery Ltd, Lincoln, United kingdom.

Approval conditions

Function tests of the N2 Package PCS 7 Control System, demonstrating compliance with the applicable requirements in the DNV rules to be witnessed by DNV at Simens Energy's premises prior to shipment and installation onboard.

The C&M components covered by the different TA-certificates listed in Table 1 shall be those complying with temperature-class B or D when installed inside JB72, see Pt.4 Ch.9 Sec.5 Table 1.

Siemens Energy shall ensure that all TA certificates referred to in Table 1 are valid and that the approval limitations stated in these are complied with prior to uploading the required system documents for approval in delivery projects. In case of expired TA certificates, documentation of HW for each delivery according to table 2 is to be submitted.

Siemens Energy shall upload system documents as specified in Table 2 for approval in due time prior to factory acceptance test.

Power supply to the gas detection system shall be as specified in the applicable rules.

Product certificate

Each delivery of the type approved system is to be certified according to DNV Pt 4. Ch 9 Sec.1. Project-specific documentation shall be submitted for approval as per Table 2 below. Certification test shall be performed at the manufacturer premises before the system is installed onboard.

This Type Approval certificate confirms compliance with requirements as specified in Table 2 below.

Table 2: TAC coverage

This TA certificate covers:	For each delivery of the Type Approved system, the following documents shall be submitted for approval:
- Hardware components in accordance with: - Table 1.	- Environmental compliance with the requirements in Pt.4 Ch.9 Sec.5 for the following components: - DeviceNet to Profibus converter - Frequency to mA Converter 1440 series vibration module - Overspeed module
- System arrangement of the GT control, monitoring, alarm, and safety in accordance with: - DNV-RU-SHIP Pt.4 Ch.9 Sec.3 [1.1.3]. - Interface of the enclosures gas detection system to the N2 Package PCS 7 Control System.	Project specific system topology drawings (I030), demonstrating system architecture and interfaces with other systems and equipment. Any principal modifications compared to the Type Approved drawings to be clearly identified.
	- Functional description (I020). - System block diagram (I030). - User Interface documentation (I040). - Power supply arrangement (I050). - List of control and monitored points (I110), including data transferred on communication links). - Circuit diagrams (I150). - Software change handling procedure (I320). - Equipment list (Z090). - Test program for product certification (Z252). - FMEA (Z071). - Network analysis (Pt.4 Ch.9 Sec.4 [3.2]). - Cause & effect diagram (G130).
In addition to the documents above, any modifications in the system to be delivered compared with the type approved system covered by this certificate shall be documented and submitted for approval. For further description of document content, see DNV-CG-0550	

Application/Limitation

This TA certificate covers the system arrangement of the GT control, monitoring alarm and safety system, inclusive the interfaces between these and the enclosures internal gas detection system.

This TA certificate does not cover SW.

Depending of function the gas turbine(s) serves after installation and the vessels class notation, additional requirements compared to those considered in this Type Approval certificate may apply.

The subject TA certificate does not cover installations in hazardous areas.

Tests carried out

See Approval conditions.

Marking of product

Siemens Energy.

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

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

END OF CERTIFICATE



Job Id: **262.1-038406-1**
Certificate No: **TAA00003B2**

Annex 1