



Certificate no.:
TAA00003N2

TYPE APPROVAL CERTIFICATE

This is to certify:

that the **Inert Gas System, Monitoring and Control**

with type designation(s)

Marine Nitrogen Generators, Cabinet Model NC 1.X and NC 2.X

issued to

Air Products AS

Kristiansand S, Norway

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 **2025-08-15**

This Certificate is valid until **2027-08-14**.

for **DNV**

DNV local unit: **West Norway CMC**

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

Marine Nitrogen (N₂) Generation Systems for the Maritime and Offshore Industry — Models NC1.x and NC2.x, engineered to meet the cybersecurity and resilience requirements in accordance with DNV Class notation Cyber Secure (Essentials) and IACS UR E27

Onboard components:

Model: NC 1.X& NC 2.x (topology without external RIOs)

Component Number	Brand/Manufacturer	Product model/Type	OS/Application SW version	Connection/Interface type
A1	Wago 750-362 Beijer M 9289	Remote IO	Wago: 01.Y.Z(A) First Rev: Wago: 01.05.04(9) Beijer 1.Y(Z) First Rev. 1.006(20250407)	MODBUS TCP/UDP Fieldbus Coupler connects ETHERNET
A2	Beijer X2 Control -B2	PLC/HMI	OS version 2.Y Build Z First Rev: OS version 2.3 Build 1103 Compiler version: 3.5.Y.Z.A First Rev: 3.5.18.60.15 Windows Embedded Compact 8.0 .NET Compact Framework: 3.Y First Rev: 3.5	2x Ethernet Ports, 1 x USB, 1 x SD card for external memory and 1 x Serial Port 9-Pin D-SUB

Model: NC 1.X & NC 2.x (topology with external RIOs)

Component Number	Brand/Manufacturer	Product model/Type	OS/Application SW version	Connection/Interface type
5.1 5.15x	Wago 750-362 Beijer M 9289	Remote IO	Wago: 01.Y.Z(A) First Rev: Wago: 01.05.04(9) Beijer 1(Y) First Rev. 1.006(20250407)	2 x Ethernet Ports
5.1	Beijer X2 Control -B2	PLC/HMI	OS version 2.Y Build Z First Rev: OS version 2.3 Build 1103 Compiler version: 3.5.Y.Z.A First Rev: 3.5.18.60.15 Windows Embedded Compact 8.0 .NET Compact Framework: 3.Y First Rev: 3.5	2x Ethernet Ports, 1 x USB, 1 x SD card for external memory and 1 x Serial Port 9-Pin D-SUB
5.3/5.5	Beijer X2 Pro -B	HMI	OS version 2.Y Build Z First Rev: OS version 2.3 Build 1103 Windows Embedded Compact 8.0 .NET Compact Framework: 3.Y First Rev: 3.5	2 x Ethernet Ports, 1 x USB, 1 x SD card for external memory and 1 x Serial Port 9-Pin D-SUB
5.4	Beijer X2 Pro/Control - B2	HMI	OS version 2.Y Build Z First Rev:	2 x Ethernet Ports, 1 x USB, 1 x SD card for

			OS version 2.3 Build 1103 Windows Embedded Compact 8.0 .NET Compact Framework: 3.Y First Rev: 3.5	external memory and 1 x Serial Port 9-Pin D-SUB
5.1	Wago: 852-111/000-001 852-112/ 000-001	Ethernet Switch	Unmanaged switch	Wago: 851-111/000-001 (5p) 851-112/000-001 (8p) IEEE 802.3 10BASET IEEE 802.3u 100BASE-TX IEEE 802.3x Flow Control

Y, Z, A, B – Minor Revision, Build, Service Pack, Patch

Approval conditions:

The following documentation of the actual application is to be submitted for approval in each case where the class notation Cyber secure(Essential) applies:

- Reference to this Type Approval Certificate
- F030 - System topology
- F071 - Inventory list
- F262 - Test report or declaration of hardening and security configuration.

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 in each case.

Major changes of the type approved system affecting future deliveries shall be informed to DNV. If the changes are considered to affect functionality for which rule requirements apply, a new functional type test may be required, and the certificate may have to be renewed to identify the new version. Minor changes are covered by this type approval.

Product certificate

Each delivery of the application system is to be certified according to Pt.6 Ch.5 Sec.21. After certification the clause for software control will be put into force.

Software control

All changes in software are to be recorded as long as the system is in use on board. Documentation of major changes is to be forwarded to DNV for evaluation and approval before implemented on board. Certification of modified functionality may be required for the particular vessel

Application/Limitation

The following conditions shall be satisfied when the system is installed and used on a vessel where the class notation Cyber secure(Essential) applies:

- This Type Approval is based on examination of drawings and documentation as listed below.
- Correct configuration and set-up according to F141 for each delivery and to be verified during commissioning after installation.
- Drawings of complete system configuration from air intake to end user(s) are to be submitted by the shipyard for approval as relevant for each separate delivery.

Limitation

The second unused port on Beijer M 9289 and Wago 750-362 has an integrated switch capability and allows full access to the system network. During the FAT test a special patch & configuration were enforced to disable the unused ethernet port & disabled web interface for configuration. The same settings are approved in this Type approval & should be observed onboard the vessel.

Type Approval documentation

Following documentation was provided for approval:

Drawing/Doc. No.	Rev.	Title
Supplier Doc. No.:	1.3	Cyber security document:
NC1-3-0830-		Content: - Asset inventory

Drawing/Doc. No.	Rev.	Title
001_r05T_Cyber_Security.pdf		- Cyber security capability description - Test procedure at manufacturer - Software development lifecycle - Configuration & security hardening

Tests carried out

Tested in accordance with requirements for DNV rules Pt.6 Ch. 5 Sec 21 security profile 1, edition July 2024. Relevant manuals and instructions of Air Products AS' management system have been verified for compliance with IACS UR E27 chapter 5.

Marking of product

The product shall be marked with

- Manufacturers name or mark
- Type designation
- Reference to DNV TA-Certificate
- Additional marking at manufacturers' option.

Manufactured by:

Air Products AS,
Lumberveien 51-M, 4621
Kristiansand S, NORWAY

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.

END OF CERTIFICATE