Certificate no.:
TAP00002KM

TYPE APPROVAL CERTIFICATE

This is to certify:

that the Bulk Loading Hoses with Permanently Fitted Couplings

with type designation(s)
METHANOL ST, TESS part No. 11602

issued to
TESS Logistikk as
Lierstranda, **Norway**

is found to comply with
DNV class programme DNV-CP-0183 – Type approval – Flexible non-metallic hoses

Application:

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

Temperature range:	**-20°C to +70°C**
Max. working press.:	**17 bar**
Sizes:	**4 inches**

Issued at **Høvik** on **2023-11-10**

This Certificate is valid until **2028-11-09**.

for **DNV**

DNV local unit: **East & South Norway CMC**

Approval Engineer: **Jane Lozanov**

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

Soft rubber hose reinforced with high strength synthetic cord with antistatic copper wires for delivery of methanol and designed according to IVG specifications.

Manufacturer of the hose:		IVG Colbachini S.P.A., Padova, Italy.
Hose type:		METHANOL ST (same as PL METHANOL)
Materials:	Inner tube:	smooth EPDM rubber.
	Cover:	Flame retardant CR rubber, acc. to ASTM C-542

Coupling manufacturer:	Shand UK, Kiln Ln, Stallingborough, Grimsby DN41, 8DL, UK
Material of Couplings:	Carbon steel A106 with zinc protection or AISI 316/316L

The coupling designations and material:

Insert: 33111, 330041, 33004, 330021, 32968, 33002 in Carbon Steel (A106 with zinc protection)
33062, 33061, 33070, 33604, 33064, 32967 in Stainless Steel (AISI 316/316L)

Ferrule: 30134 in Carbon Steel (A106 with zinc protection)
301462 in Stainless Steel (AISI316/316L)

Application/Limitation

This certificate is valid for the specific assembly of hose and coupling type as specified, assembled and delivered by the holder (named as “Issued to”) of this certificate and below approved locations:

- TESS Logistikk AS, Lierstranda, Norway
- TESS Vest (Norway): Kokstad and Mongstad

Hose assemblies are not fire tested, therefore, they shall not to be used in applications where fire resistance is required. Materials and material protection chosen for the specific system shall be suitable for the intended medium and environmental conditions.

Each hose assembly is to be hydraulic pressure tested to 1.5 times the maximum working pressure before delivery and shall be delivered with a pressure test report with reference to this certificate. No product certificate will be required.

Hose assemblies covered by this certificate are approved for installation on DNV classed ships and mobile offshore units as a "methanol loading hose" ("Rig supply hose") and may be used for transfer of Methanol.

Hoses covered by this certificate are not to be used in:

- DNV classed drilling units (applications covered by DNV-OS-E101)
- wherever they might be subject to axial load during operation
- wherever they might be subject to twisting during operation
- vacuum conditions during operation

The outer end of the pipe coupling (performing the connection to the fixed piping) is not covered by this certificate and shall follow the below requirements:

- Flanged ends shall be according to a recognized standard;
- Slip-on threaded joints having pipe threads where pressure-tight joints are made on the threads with parallel or tapered threads, shall comply with requirements of a recognized standard. Limitations stated in DNV-RU-SHIP Pt.4 Ch.6 Sec.9 [5.2.6] to be followed;
- If these outer ends are going to be part of a mechanical joint as covered by Table 10 DNV-RU- SHIP Pt.4 Ch.6 Sec.9, then they shall be separately type approved.

Type Approval documentation

Production testing

Each hose assembly shall be hydraulic pressure tested to 1.5 times the maximum working pressure before delivery and shall be delivered with a pressure test report with reference to this certificate.

Tests carried out

Dimensional check, burst pressure, resistance against liquid of the lining, ozone resistance, proof pressure test, electrical resistance tests, tensile test, break load test, cover adhesion, cover abrasion resistance.

Marking of product

For traceability to this Type Approval, the products are at least to be marked with:

- hose manufacturer's name or trademark;
- date of manufacture (month/year);
- designation type reference;
- nominal diameter;
- pressure rating;
- temperature rating.

Where a flexible hose assembly is made up of items from different manufacturers, the components are to be clearly identified and traceable to evidence of prototype testing.

Periodical assessment

For retention of the Type Approval, a DNV Surveyor shall perform periodical assessment after two years (+/- 90 days) and after 3.5 years (+/- 90 days) to verify that the conditions for the approval are complied with. Reference is made to DNV-CP-0338.