

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Mud and Cementing Equipment

with type designation(s)
5" 7500 Psi Mud & Cementing hoses

Issued to

ContiTech Rubber Industrial Kft.
Szeged, Hungary

is found to comply with
DNVGL-OS-E101 – Drilling plant, Edition July 2015

Application :

Product(s) covered in this certificate are: Cementing hoses, Rotary Mud hoses, Booster Mud hoses, Hydraulic hoses, BOP Hydraulic conduit hoses, Injection hoses.

This Certificate is valid until **2021-09-01**.

Issued at **Høvik** on **2016-09-02**

DNV GL local station: **Oslo Pressure Equipment**

for **DNV GL**

Approval Engineer: **Eric van der Putten**

Marianne Spæren Marveng
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.

Reference standard

API Spec 7K, Drilling and Well servicing equipment, 6th edition.

Product description

Mud hose assemblies including:

- bonded flexible hose
- end termination
- end connector

The hoses in the certificate can consist of the following configurations:

- Without outer protection
- Strip wound outer protection
- Fire proofed
- Fire proofed with strip wound outer protection
- Fire proofed with steel helix moonpool protection

Application/Limitation

Max design pressure:	7500 psi
Internal diameter (ID):	5"
Min Design Temp:	-25 deg C
Max Design Temp:	+100 deg C
Minimum Bend Radius (MBR):	1.4m
Flexible Specification Levels	FSL 0, All hose body drawings in this certificate FSL 1 & 2, All hose body drawings in this certificate
Sour Service	No

Hydraulic & BOP hydraulic conduit hoses shall be fire rated for 30 minutes and have hose body structure, MT 2537-1100, MT 2537-1162, MT 2537-1300 & MT 2537-1301.

Hydraulic hoses, BOP Hydraulic conduit hoses, Injection hoses are only to be used for fluids as listed in document TT-TI-08.



Job Id: **262.1-021726-1**
Certificate No: **TAD00000EZ**

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Tests carried out

1. Design verification testing for FSL 1 performed according to Ch. 9.10.10.1, 9.10.10.2, 9.10.10.3, 9.10.10.5 & Ch. 9.6.10.6 in API Spec. 7K 4th edition.
Reference is made to DNV certificate 26160088.4 Rev 3.
2. Design verification testing for FSL 2 performed according to point 1 and additional to Ch. 9.6.10.5, 9.6.10.6 & 9.6.10.7 in API Spec. 7K 5th edition.
Reference is made to report 18.14322 dated 22-01-2009.
3. Fire testing, 30 min, performed according to Ch. 10.5.1 in API Spec. 16C 1st edition. For hose bodies, MT 2573-1100, MT 2573-1162, MT 2573-1300 & MT 2573-1301.
Reference is made to DNV certificate BUD 14054 Rev 00.
4. Fire testing, 5 min, performed according to Lloyd's OD/1000/499 Rev.2.
Reference is made to DNV certificate BUD 32113 Rev 00.

Conditions and Comments

1. The following end couplings are NOT according to recognised international standard.
 - MT 2495-5000d_end.
 - MT 3093-7000_end
 - MT 3195-4000_end
 - MT 3195-5000_end
 - MT 3272-2000_endCompliance with DNVGL-OS-E101, related to suitability for all internal and external loading, shall be proven for each individual hose. Certification of these end couplings shall be according DNVGL-OS-E101:2015 chapter 3, section 3 table 10.
2. Calculations for the other couplings in this TAC (not mentioned in the point above), have been submitted as these are all modifications of standard couplings or custom designs, these couplings are accepted as suitable for these hoses.
3. Accepted fluids for Hydraulic hoses, BOP hydraulic conduit and Injection hoses shall be according document TT-TI-08.

Manufacturing and Testing

1. Installation and binding of end terminations on hose bodies shall be according procedures:
 - S-MÜV-216-OI
 - S-MÜV-214-OI
 - S-MÜV-217-OI
 - S-MÜV-212-OI
2. Production testing as described in API spec. 7K shall be followed.
3. DNV GL Product Certificate shall be issued for use on DNV GL class vessel and rigs with notation DRILL or WELL.

Marking of product

For traceability the following marking is to be carried out on each product:

- All equipment shall be clearly marked with identification and serial number which relates the equipment to certificates and fabrication documentation.
- Markings in accordance with API spec. 7K, 6th ed.

Periodical assessment

For retention of the Type Approval, DNV GL's representative shall carry out bi-annual Product Audits.

Renewal assessment after 5 years:

Application for renewal shall be submitted to DNV not later than 3 months before expiry date of the certificate. Upon receipt of the application a periodical assessment will be carried out to verify the conditions for the type approval is still complied with. Any changes to the design are to be handled as for initial Type Approval, with regards to additional documentation and testing requirements.