Certificate No:
TAD00001KK

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Hoisting, Rotation and Pipehandling Equipment

with type designation(s)
TD-500-XT Top Drive

Issued to
Bentec GmbH
Bad Bentheim, Niedersachsen, Germany

is found to comply with
DNV-OS-E101 – Drilling facilities, Edition July 2021

Application :

See next page.

Issued at **Høvik** on **2023-10-19**
This Certificate is valid until **2028-10-18**.
DNV local unit: **Hamburg Verification**

Approval Engineer: **Axel Janson**

for **DNV**

Per Esvall
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.

Coded and Standards used as reference

API Spec 8C, Specification of Drilling and Production Hoisting Equipment, 5th Edition, October 2012

Product description

Load-bearing components of the Bentec Top drive model TD-500-XT:

- Main shaft
- Yoke
- Upper Links
- Gearbox housing
- Load Collar
- Link adapter

Application/Limitation

Design Parameter	Value	Equivalent
Max. Load Rating:	4450 kN	500 sT
Max. make up torque:	68 000 Nm	50 150 ft-lbs
Min./Max. design temperature:	-45 °C / 55 °C	-49 °F / 131 °F
Max. Drilling Speed:	230 rpm	

Type Approval documentation

Tests to be carried out on each individual product

Test Procedures:

1. Functional testing shall be performed in accordance with DNV-OS-E101 and witnessed by DNV surveyor.
2. Charpy Impact testing shall be conducted according to the strictest requiremens of API 8C Ch. 6.3/DNV-OS-E101, i.e. the required Charpy test results at -45 °C is 42 J.

NDE Procedures:

3. Non-destructive examination methods shall be in accordance with DNV-OS-E101 Ch.2 Sec.8.

Welding Procedures:

4. Qualification of welding procedures and qualification of welders shall be in accordance with DNV-OS-E101 Ch.2 Sec.8.

Marking of product

For traceability, marking of each product shall be carried out in accordance with API Spec 8C Ch.10 and contain:

- Serial No.
- Rated Load capacity
- Manufacturers Name or Mark
- Product Specification Level (PSL)
- Primary load-carrying component shall be marked “SR2 -45 °C” as specified in API 8C Annex A.3

Conditions and comments

- Electric motors and control system is not within the scope of this design review and shall be separately approved
- PSL 2 units shall meet the stricter demands for welding, quality control (NDE) and materials as described in API Spec 8C Ch. 6/7/8
- This Type Approval Certificate replaces the previously issued certificate TAD00000ZW

Periodical assessment

For retention of this Type Approval Certificate, biennial product audits shall be performed by a DNV surveyor.

END OF CERTIFICATE