DNV·GL

Certificate No:
TAE00002AY

TYPE APPROVAL CERTIFICATE

This is to certify:

That the High Voltage Cable

with type designation(s)
MVCECH 3,6/6, MVCECH 6/10, MVCECH 8,7/15, MVCECH 12/20

Issued to
Untel Kablolari San. ve Tic. A.S.
Dilovasi, Turkey

is found to comply with
DNV GL rules for classification – Ships, offshore units, and high speed and light craft

Application :

Products approved by this certificate are accepted for installation on all vessels classed by DNV GL.

Type	Rated voltage (kV)	Temp. class (°C)
MVCECH 3,6/6	3,6/6 (7,2)	90
MVCECH 6/10	6/10 (12)	90
MVCECH 8,7/15	8,7/15 (17,5)	90
MVCECH 12/20	12/20 (24)	90

Issued at **Høvik** on **2017-10-20**

This Certificate is valid until **2022-10-19**.
DNV GL local station: **Istanbul**

Approval Engineer: **Marta Alonso Pontes**

for **DNV GL**
Digitally Signed By: Andreas Kristoffersen
Location: DNV GL Høvik, Norway

Andreas Kristoffersen
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.

Product description

Type: MVCECH; 3,6/6 kV, 6/10 kV, 8,7/15 kV, 12/20kV

Conductor:	Electrolytic, stranded, annealed copper wire IEC 60228 Class 2 (Class 5 and/or tinned on request)
Conductor screen:	Semi conductor layer
Insulation:	HF HEPR
Insulation screen:	Semi conductor layer
Core Screen:	Copper tape layer
Filler:	Halogen-free compound
Screen:	Copper braided screen
Outer sheath:	SHF1

Number of cores	Conductors cross-section [mm^2]
1, 3	10*, 16*, 25*, 35, 50, 70, 95, 120, 150, 185, 240, 300, 400

10 mm^2 only for MVCECH 3,6/6kV
16 mm^2 only for MVCECH 3,6/6kV and 6/10kV
25 mm^2 only for MVCECH 3,6/6kV, 6/10kV and 8,7/15kV

Application/Limitation

The requirements of SOLAS Amendments Chapter II-1, Part D, Reg. 45, 5.2 (provision to be taken to limit Fire Propagation along Bunches of Cables or Wires) are fulfilled without any additional measures.

Type Approval documentation

Documents referred to in approval letter MCANO381/PONT/262.1-018741-J-48

Tests carried out

Standard	Release	General description	Limitation
IEC 60092-350	2014-08	General construction and test methods of power, control and instrumentation cables for shipboard and offshore applications	
IEC 60092-354	2014-08	Single- and three-core power cables with extruded solid insulation for rated voltages 6 kV (U_m=7,2 kV) up to 30 kV (U_m=36 kV)	
IEC 60092-360	2014-04	Electrical installations in ships - Part 360: Insulating and sheathing materials for shipboard and offshore units, power, control, instrumentation and telecommunication cables.	
IEC 60332-3-22	2009-02	Tests on electric and optical fibre cables under fire conditions – Part 3-22: Test for vertical flame spread of vertically-mounted bunched wires or cables – Category A	Bunch test Category A
IEC 60754-1	2011-11	Test on gases evolved during combustion of materials from cables - Part 1: Determination of the halogen acid gas content	Low Halogen: <0,5% Halogen
IEC 60754-2	2011-11	Test on gases evolved during combustion of materials from cables - Part 2: Determination of acidity (by pH measurement) and conductivity	Halogen free: pH > 4,3 Conductivity<10µS/mm
IEC 61034-1/2	2013-06	Measurement of smoke density of cables burning under defined conditions – Test apparatus, procedure and requirements	Light transmittance > 60%

Standard	Release	General description	Limitation
IEC 60092-350 (Annex E)	2014-08	Cold bend test and impact test for low temperature behaviour	Tested for the smallest cross sections for each cable type (this testing does not guarantee its performance for bigger cross sections)

Marking of product

Untel Kablolari – MVCECH – voltage level – size – IEC 60332-3-22

Periodical assessment

The scope of the periodical assessment is to verify that the conditions stipulated for the Type approval are complied with and that no alterations are made to the product design or choice of materials.

The main elements of the assessment are:

- Inspection on factory samples, selected at random from the production line (where practicable)
- Results from Routine tests (RT) and selected type tests (ref. to applicable class programs) checked (if not available these tests shall be carried out)
- Review of type approval documentation
- Review of possible change in design, materials and performance
- Ensuring traceability between manufacturer's product type marking and Type Approval Certificate.

Periodical assessment is to be performed after 2 years and after 3.5 years. A renewal assessment will be performed at renewal of the certificate.

END OF CERTIFICATE