TYPE APPROVAL CERTIFICATE

Certificate No:
TAE00002AY
Revision No:
1

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.
Dilovası, **Türkiye**

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

Application :

High voltage cable.
Products approved by this certificate are accepted for installation on all vessels classed by DNV.

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 **2022-12-18**

for **DNV**

This Certificate is valid until **2027-10-18**.
DNV local unit: **Istanbul**

Approval Engineer: **Ivar Bull**

Frederik Tore Elter
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:	Plain or tinned stranded copper class 2 or class5
Conductor screen:	Semiconducting layer
Insulation:	HF HEPR
Insulation screen:	Semiconducting layer
Core Screen:	Copper tape layer
Filler:	Halogen-free compound
Armour:	Copper braid
Outer sheath:	SHF1

1 and 3-core cables:

Voltage U0 / U [kV]				
3,6/6	6/10	8,7/15	12/20	18/30
1 x 10	-	-	-	-
1 x 16	1 x 16	-	-	-
1 x 25	1 x 25	1 x 25	-	-
1 x 35	1 x 35	1 x 35	1 x 35	-
1 x 50	1 x 50	1 x 50	1 x 50	-
1 x 70	1 x 70	1 x 70	1 x 70	-
1 x 95	1 x 95	1 x 95	1 x 95	-
1 x 120	1 x 120	1 x 120	1 x 120	-
1 x 150	1 x 150	1 x 150	1 x 150	-
1 x 185	1 x 185	1 x 185	1 x 185	-
1 x 240	1 x 240	1 x 240	1 x 240	-
1 x 300	1 x 300	1 x 300	1 x 300	-
1 x 400	1 x 400	1 x 400	1 x 400	-

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
DNV CP-0401	2021-08	Electric high voltage cables	
IEC 60092-350	2020-01	Electrical installations in ships - Part 350: General construction and test methods of power, control and instrumentation cables for shipboard and offshore applications	
IEC 60092-360	2021-01	Electrical installations in ships - Part 360: Insulating and sheathing materials for shipboard and offshore units, power, control, instrumentation and telecommunication cables	
IEC 60092-354	2020-02	Electrical installations in ships – Part 354: Single- and three-core power cables with extruded solid insulation for rated voltages 6 kV up to 30 kV.	
IEC 60332-3-22	2018-07	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	Charred portion of sample does not exceed 2,5m above bottom edge of burner.
IEC 60754-1	2019-11	Test on gases evolved during combustion of materials from cables - Part 1: Determination of the halogen acid gas content	Low Halogen: <0,5% Halogen

Standard	Release	General description	Limitation
DNV CP-0401	2021-08	Electric high voltage cables	
IEC 60754-2	2019-11	Test on gases evolved during combustion of materials from cables - Part 1: Determination of the halogen acid gas content	Halogen free: pH > 4,3 Conductivity < 10µS/mm
IEC 61034-1/2	2019-11	Measurement of smoke density of cables burning under defined conditions – Part 1: Test apparatus Part 2: Test procedure and requirements	Low smoke Light transmittance >60%
IEC 60092-350	2014-08	Annex E: Cold bend test and impact test for low temperature behaviour	Cold bend: -40°C Cold impact: -35°C Tested for the smallest cross sections for each cable type (this testing does not guarantee its performance for bigger cross sections)

Marking of product

ÜNTEL voltage level MVCECH size 90C IEC 60092/354, IEC 60332-1&3 A CE– lot no

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