

# 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) |
|----------------------|----------------------|------------------|
| <b>MVCECH 3,6/6</b>  | <b>3,6/6 (7,2)</b>   | <b>90</b>        |
| <b>MVCECH 6/10</b>   | <b>6/10 (12)</b>     | <b>90</b>        |
| <b>MVCECH 8,7/15</b> | <b>8,7/15 (17,5)</b> | <b>90</b>        |
| <b>MVCECH 12/20</b>  | <b>12/20 (24)</b>    | <b>90</b>        |

Issued at **Høvik** on **2017-10-20**This Certificate is valid until **2022-10-19**.for **DNV GL**DNV GL local station: **Istanbul**Approval Engineer: **Marta Alonso Pontes**

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**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 <sup>2</sup> ]                 |
|-----------------|-------------------------------------------------------------|
| 1, 3            | 10*, 16*, 25*, 35, 50, 70, 95, 120, 150, 185, 240, 300, 400 |

10 mm<sup>2</sup> only for MVCECH 3,6/6kV

16 mm<sup>2</sup> only for MVCECH 3,6/6kV and 6/10kV

25 mm<sup>2</sup> 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 Bundles of Cables or Wires) are fulfilled without any additional measures.

## Type Approval documentation

### 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<br>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:<br><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:<br>pH > 4,3<br>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%                         |

Job Id: **262.1-018741-1**  
Certificate No: **TAE00002AY**

| Standard                   | Release | General description                                          | Limitation                                                                                                                             |
|----------------------------|---------|--------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|
| IEC 60092-350<br>(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