DNV·GL

Certificate No:
TAE000046X

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Electric Power Cable

with type designation(s)
GAALSHIP HF 1000 A FR, GAALSHIP HF 1000 A FR EMC

Issued to
ELETTROTEK KABEL S.p.A
Bagnolo in Piano RE, Italy

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)
GAALSHIP HF 1000 A FR	**0,6/1**	**90**
GAALSHIP HF 1000 A FR EMC	**0,6/1**	**90**

Issued at **Høvik** on **2020-11-27**
This Certificate is valid until **2025-11-26**.
DNV GL local station: **Italy/Malta CMC**

Approval Engineer: **Georgy Abramenko**

for **DNV GL**

Marta Alonso Pontes
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.

Job Id: **262.1-034830-1**
Certificate No: **TAE000046X**

Product description

Type: GAALSHIP HF 1000 A FR, GAALSHIP HF 1000 A FR EMC
Construction:

Conductors:	Plain or tinned annealed flexible copper, class 2 or 5
Separator:	Mica tape on conductor
Core insulation:	XLPE
Separator:	Mylar tape between cores and armour
Armour:	Plain or tinned copper wire braid
Tape:	Copper backed polyester tape (EMC version only)
Outer sheath:	SHF1

HF 1000 A FR & HF 1000 A FR EMC:

Number of cores	Conductor cross-section
1 2 3 4 5	1 1,5 2,5 4 6 10 16 25 35 50 70 95
1 3 4	120 150 185 240
1 3	300
7 10 12 14 16 19 24 27 30 37	1 1,5 2,5

HF 1000 A FR EMC cables:

3 x phases conductor cross sections	3 x ground conductor cross-sections
16 25 35	6
50	10
70 95	16
120 150	25
185	35
240 300	50

Application/Limitation

General power and lighting. VFD application (EMC only). Halogen free. Low smoke.

This cable is fire resistant according to IEC 60331.

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

Tests carried out

Standard	Issued	General description	Limitation
IEC 60092-350	2020-01	General construction and test methods of power, control and instrumentation cables for shipboard and offshore applications	
IEC 60092-353	2016-09	Electrical installations in ships - Part 353: Power cables for rated voltages 1 kV and 3 kV	
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

Standard	Issued	General description	Limitation
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	Low smoke Light transmittance >60%
IEC 60331-1/2	2018-03	Fire resistance / Circuit integrity – Test for method for fire with shock at temperature of at least 830ºC for cables rated up to and including 0,6/1 kV	Minimum 120 min+15 min cooling down time
IEC 60332-1-2	2015-07	Tests on electric cables under fire conditions. Test for vertical flame propagation for a single insulated wire or cable.	
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.

Marking of product

ELETTROTEK KABEL GAALSHIP® - cable type- nominal cross section - voltage - item code n° - IEC 60092-353 IEC 60332-3-22 IEC 60331 - production plant* - batch no - production date - meter marking

*- A47 – DNV-GL ID 10675124

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) checked (if not available tests according to RT to 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