

# TKF Marine Cables




Specific





- International standards
- Complete range
- Highly flexible cables




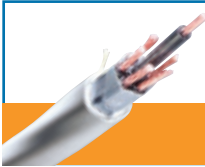
# High-end solutions for all marine cable applications





**Twenkaship**  
Non braided power cables  
YZp 0.6/1 kV



**Twenkaship-O**  
Copper wire braided power  
cables YOZp 0.6/1 kV



**Twenkaship-signal**  
Non braided signal and  
control cables YZs 250 V



**Twenkaship-O-signal**  
Copper wire braided signal  
and control cables YOZs 250 V



**EMC motor cables**  
Shielded and braided motor  
cables 0.6/1 kV


**Twenkaship-com**  
Copper wire braided  
communication cables YOZc 250 V

**Twenkaship-O-medium voltage**  
Copper wire braided medium voltage  
power cables 6/10 – 8.7/15 kV

**Twenkaship**  
Non braided power cables with flexible  
class 5 conductors YZp 0.6/1 kV




Power



Flexible &  
easy to install



Small  
diameter



Copper  
braiding



Signal



Reduced  
EMI effect



Motor



Telecom



# Marine Cables

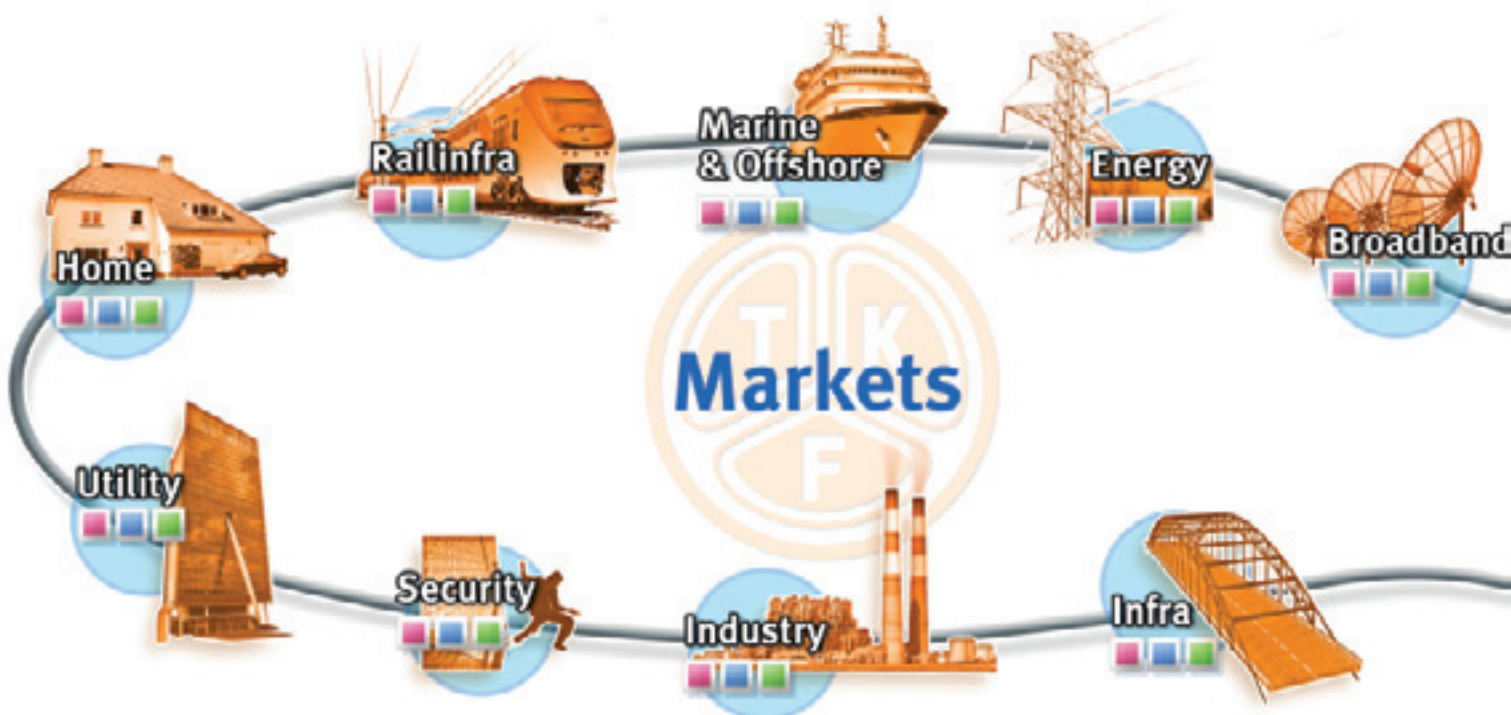
The Twentsche Kabelfabriek company (TKF) was founded in 1930 and has developed from a local Dutch cable producer to a cable technology leader servicing customers all over the world.

TKF has dedicated itself to delivering efficient and reliable cable solutions that match specific customer needs. Obviously a good philosophy, looking at the long-term relationships between TKF and a growing number of companies. Professionals who value the continuous pursuit of better understanding between suppliers, customers, contractors, installers and end-users.



TKF chooses to focus its attention and technical resources on a selection of application areas. Given this segmentation, TKF is able to stay close to its customers and truly understand their needs.

We are therefore proud to present our new generation of marine cables that complies with all major international standards and also meets our customers' requirements. Our marine cables are halogen-free, light in weight, highly flexible and flame-retardant. Installation of a ship or offshore platform with our modern cables will be quicker and easier compared to most alternatives, saving contractors and end-users time and money.



# Modern shipbuilding

Modern shipbuilding is based on efficiency and cost reduction, and complies with international standards and regulations. Given this, the need to team-up with specialised, modern, flexible suppliers is greater than ever.

## A flexible provider

Our long-term experience with shipbuilding and other international markets has shaped our organisation into a flexible cable solutions provider. TKF customers will benefit from short delivery times achieved by our smart ordering and stock processes. Besides, we offer other services like cables already cut and labelled to specific customer requirements - the right cables, at the right place, at the right time.

## The new generation

The new generation TKF marine cables is designed, manufactured, tested and approved for use in fixed applications on ships and offshore platforms. The construction of the different types are halogen-free, light in weight, highly flexible and flame-retardant.



## Characteristics

TKF marine cables feature special characteristics that make reliable, fast and easy installation possible, guaranteeing proper cable functionality for long periods of time:

- the different sheaths and layers

will not stick to each other, enabling easy stripping and termination of the cable

- handling and installation is easier due to the cable's light weight and small diameter



## International standards

**Cables on board ships and oilrigs are often exposed to extreme conditions. The construction and materials used for our marine cables are specifically designed for these demanding environments. The characteristics of cables are the result of the materials used and the way materials are processed. TKF has invested in advanced compound research and testing facilities as well as ultra-modern production systems.**

## Insulation

All marine cables are insulated with cross-linked polyethylene (XLPE). This material permits a continuous conductor temperature of 85 °C and withstands a temporary overload temperature of 130 °C and a short-circuit temperature of 250 °C. This insulation material also offers good low-temperature properties with a brittleness

- by using rip-cords underneath the outer sheath, the cable can be stripped faster, over longer lengths without damaging the insulation

### International standards

All marine cables are designed and produced according to international standards. Our choice of materials and constructions ensure that the cables are resistant to vibration and most chemicals and hydrocarbons which are commonly used on board ships. All marine cables fully comply with the requirements specified in the IEC 60092 series of standards.

### Approvals

- American Bureau of Shipping (ABS)
- Bureau Veritas (BV)
- China Classification Society (CCS)

- Det Norske Veritas (DNV)
- Germanischer Lloyd (GL)
- Lloyd Register of Shipping (LRS)

### Specials

TKF also offers specific cables for marine applications such as:

- Flexible cables class 5
- Fibre optic cables
- Coaxial cables
- Industrial cables



temperature of approximately -50 °C. The XLPE material has electrical properties equal to that of polyethylene (PE), which results in very low dielectric losses for the power cables and excellent transmission properties for the instrumentation and communication cables. The XLPE material does not contain any hygroscopic elements such as fillers, which results in extremely low moisture absorption. Furthermore the material has a high resistance to most chemicals. The insulation material used by TKF for its marine cables meets the requirements as specified in the IEC 60092-351, type XLPE. When fire-resistant cables are requested in accordance with IEC 60331, the copper conductors of the cables are fully wrapped with mica glass tape before being insulated with XLPE material.

### Sheathing

The halogen-free compound used as our sheathing material does not contain halogens or any heavy metals to achieve the flame-retardancy. Extensive research has enabled TKF to supply all these materials with excellent characteristics, good mechanical properties, low moisture absorption and high resistance to most chemicals. The materials meet the requirements as specified in the IEC 60811-2-1 for oil resistance (ASTM oil, 24 hours, 70 °C) as well as the requirements as specified in IEC 6092-359 under type SHF-1 for mechanical properties. Due to the selected sheath materials, TKF marine cables are very suitable for installation and use in areas with low temperatures.

## International standards

With regard to the relevant international standards, TKF marine cables comply with the standards listed below.

### Fire performance

- IEC 60332-1
- IEC 60332-3 Class A
- IEC 60754-1
- IEC 61034-2

### Fire resistant cables

- IEC 60331

### General standards

- IEC 60092-350
- IEC 60092-351
- IEC 60092-353
- IEC 60092-354
- IEC 60092-359
- IEC 60092-375
- IEC 60092-376
- IEC 60332-1
- IEC 60332-3-22
- IEC 60754-1
- IEC 61034-1
- IEC 60811
- IEC 60228
- IEC 60331-11
- IEC 60331-21

For more information about these standards, please visit our website [www.tkf.nl](http://www.tkf.nl).

