

**TKF**

# Industrial Cables



**Industry**

- Complete portfolio
- Extreme conditions
- High performance
- International standards



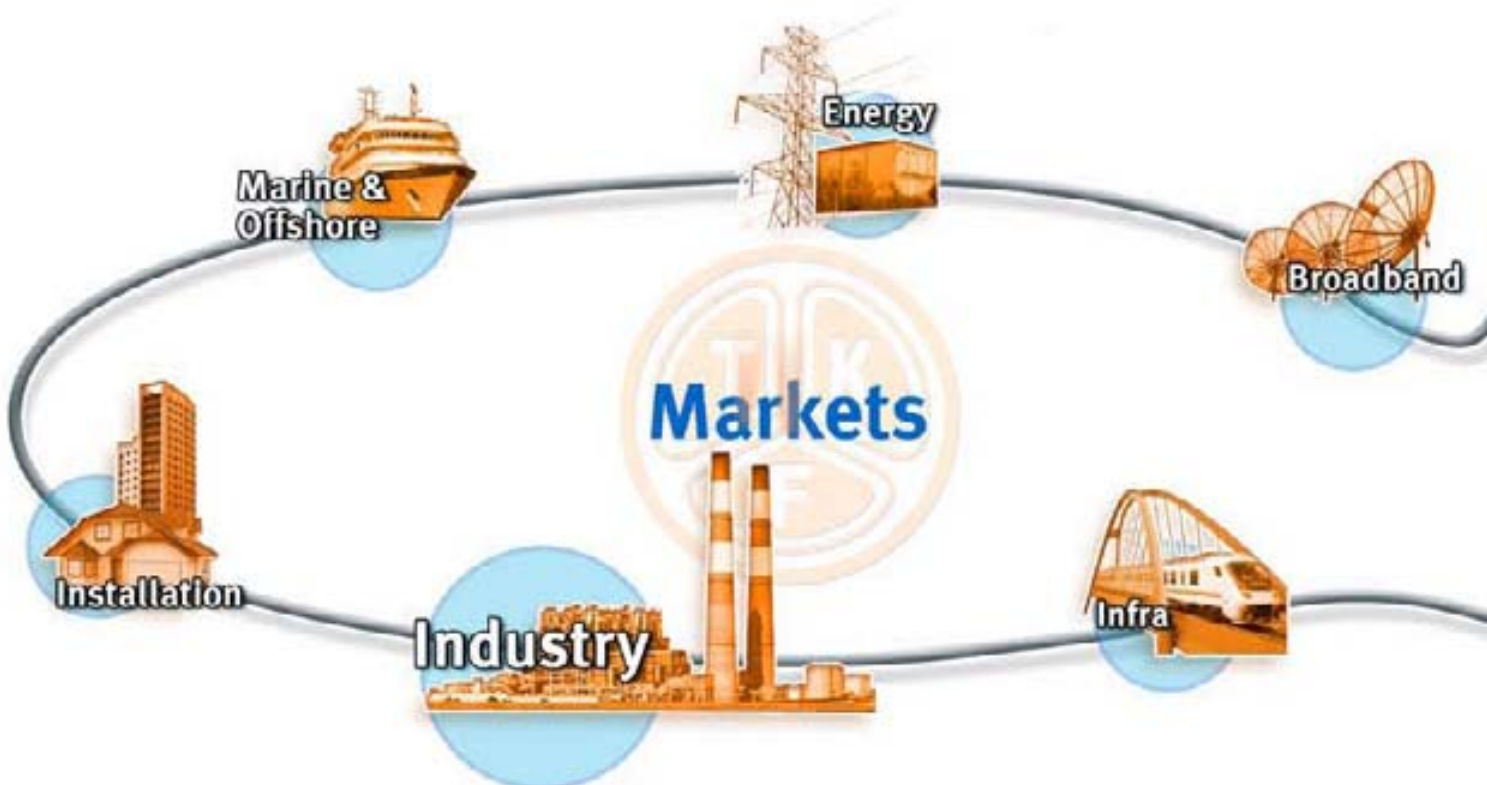
# Reliable in connections

TKF (BV Twentsche Kabelfabriek) 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 innovative Telecom, Building and Industrial Solutions that match specific customer needs. Obviously a good strategy, 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. Our industrial cable portfolio covers a full range of industrial cable solutions from low, medium and high voltage to installation, instrumentation, thermocouple, data (fieldbus) and telecommunication (fibre optic) cables complying with all major international standards and customers' requirements. This new generation industrial cables offers reliable performance in most severe and aggressive conditions and influences like oil, salt water and strongly fluctuating temperatures. Industrial installation design will become easier and more reliable with our dedicated solutions. Production plant owners, contractors, installers and distributors are therefore gradually teaming up with TKF as a specialized, innovative and flexible industrial cable supplier, saving time and money.



Please visit [www.tkf.nl](http://www.tkf.nl) for up-to-date information about our range of products

# Today's industrial projects

Today, onshore and offshore production plants demand sophisticated control, energy and communication infrastructures guaranteed in all given conditions.

## A specialized supplier

Our many years of international experience in industrial projects makes TKF a highly flexible cable solutions provider. Our customers benefit from proven standardized cables as well as customized solutions for specific indoor and outdoor applications. Our logistic system is based on continuous delivery time improvement, combined with an electronic smart ordering and stock process. We aim to fit specific conditions and requirements, assuring high reliability and low maintenance for continuous production.

## Customized constructions

Although most industrial cables are designed and produced according to well-known international standards, TKF also offers customized solutions meeting specific requirements of plant owners and contractors.

## Complete industrial portfolio

TKF offers industrial cable solutions for most extreme conditions and guarantees superior electrical and mechanical properties:

- insulation materials: PVC, PE, XLPE, HDPE, PA (nylon), FRNC / FRLS, silicon rubber
- armoring: SWA, SWB, BCu and TCu wire braids, corrugated steel (CS), Alu tapes, aramid and glass yarns
- chemical protection: extruded lead sheath and lead-free GuardSheath multilayer constructions
- screens: individual as well as overall foil, metal tape and / or braids
- conductors: single and triple Alu or copper (power) solid, stranded or flexible wires acc. to IEC 60228, class 1, 2 and 5
- thermocouple extension and compensating cores
- single mode G.652.D no waterpeak and multimode 50/125 OM2/3 or 62.5/125 fibres
- cabling elements: cores, pairs, triples and quads



## A new generation INDUCOM® instrumentation cables

INDUCOM cables are designed, manufactured, tested and approved for use in onshore and offshore production plants.

## Choice of material

TKF's XLPE insulation has been tailored for INDUCOM industrial instrumentation cables and its unique formula has been developed and manufactured on our own highly sophisticated co-kneader machines.



## INDUCOM® instrumentation cables

**TKF's INDUCOM range of instrumentation cables has been designed in accordance with the highly appreciated European Standard EN 50288-7 and BS 5308 and is used for connecting instruments and control systems for various analogue and / or digital signal transmission applications.**

Our new instrumentation cables are fully adapted to the robust environmental conditions as exposed to in the industry, best illustrated by TKF's choice for cross-linked polyethylene (XLPE) as standard insulation material and the use of reinforced sheathings, exceeding the dimensional limits imposed by EN 50288-7. INDUCOM's design above all allows transmission of high-frequency (HF) signals and offers a nominal voltage rating of 300 V.



This insulation is mechanically robust, permitting a continuous conductor temperature of 90 °C, allowing a temperature overload of 130 °C and a short-circuit temperature of even 250 °C.

Other advantages of XLPE insulation are:

- XLPE does not contain any hygroscopic elements such as fillers, resulting in extremely low moisture absorption
- XLPE is highly resistant to the most commonly used chemicals

Our PVC sheathing, also a TKF design, represents state-of-the-art compounding technology and material know-how, guaranteeing a continuous temperature use of 80 °C and improved fire retardancy compared to standard PVC sheathing formulas.

#### INDUCOM® instrumentation cables comply with the following standards:

Construction	EN 50288-7
Flame propagation (test on single cable)	IEC 60332-1
Flame propagation (test on bunched cable)	IEC 60332-3-w (Cat. C)
Flame resistance	IEC 60331-21
Halogen free	EN 50267-2-2 IEC 60754-1
Low smoke	EN 50268-2 IEC 61034-2
Acidity waste gas	IEC 60754-2
Sunlight resistance	UL 1581 section 1200
Oil resistance	ICEA S-82-552

#### Excellent cable design

The INDUCOM design is highly appreciated by customers due to its electrical transmission properties. The lay lengths used for pair stranding guarantee an excellent cross-talk performance, whereas the screening properties allow application in environments with high levels of electromagnetic noise.

Obviously we have several armoured versions, guaranteeing mechanical protection against damage during installation and operation. Cables can be armoured either with galvanized round or flat steel wires or with a galvanized steel wire braid.

## Summary of abbreviations for instrumentation cables

TKF's INDUCOM instrumentation cables meet various international standards. Our constructions comply with the following international abbreviation codes, as listed in the table below:

### Abbreviations

#### Insulation materials

2Y	Polyethylene (PE)
2X	Cross-linked Polyethylene (XLPE)
Y	Polyvinylchloride (PVC)
Yv	Polyvinylchloride (PVC) sheath, increased thickness
Yfl	Polyvinylchloride (PVC) sheath, flame-retardant
H	Halogen-free sheath, flame-retardant
HX	Cross-linked halogen-free sheath, flame-retardant

### Construction elements

#### Individual screens

PIMF	Pair in metal foil
TIMF	Triple in metal foil
QIMF	Quad in metal foil

#### Overall screens

(St)	Plastic laminated aluminium foil
(C)	Copper wire braid
(StC)	Plastic laminated aluminium foil and copper wire braid
(CuB)	Copper tape

#### Metallic barriers

M	Lead sheath (extruded)
(L)2Y4Y	GuardSheath multilayer aluminium coated composite sheath

#### Metallic armourings


B	Double steel tape armour
Q	Galvanized steel wire braid
R	Galvanized round steel wires
SWA	Galvanized round steel wires according to British Standard
SWB	Galvanized steel wire braid

For heavy chemical protection, TKF offers a unique ability to apply lead sheaths. This is without doubt the most safe protection against aggressive chemicals, such as (aromatic) hydrocarbons and acids.



Of course for environment-friendly applications TKF also offers lead-free solutions which are almost as effective, called GuardSheath. This unique solution features a multilayer aluminium, polyethylene and polyamide construction, in which each component has its own dedicated chemical resistance.




# A complete range of high-end industrial cables








**Indupower**  
Copper or aluminium MV / HV power cables up to 150 kV max







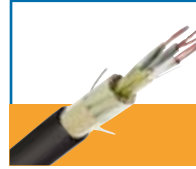
**Induline**  
LV installation cables with chemical protection 0,6/1 kV







**Installine - Installine+**  
LV and LV halogen-free installation cables 0,6/1 kV







**Inducom**  
Non-armoured instrumentation cables 300 V







**Inducom**  
SWA / SWB armoured instrumentation cables 300 V







**Inducom**  
Instrumentation cables with chemical protection 300 V






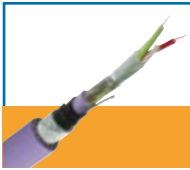
**Inducom**  
Instrumentation control and signal cables 300 V and 0,6/1 kV







**Indutherm**  
Thermocouple extension and compensating cables






**Indubus**  
Fieldbus cables for industrial automation



**Indufibre**  
Single mode and multimode fibre optic cables



Power



Instrumentation



Control/signal



Data



Temperature range



Flame-retardant



Low smoke halogen-free



Chemical resistance





**Choose TKF - Choose quality!**



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