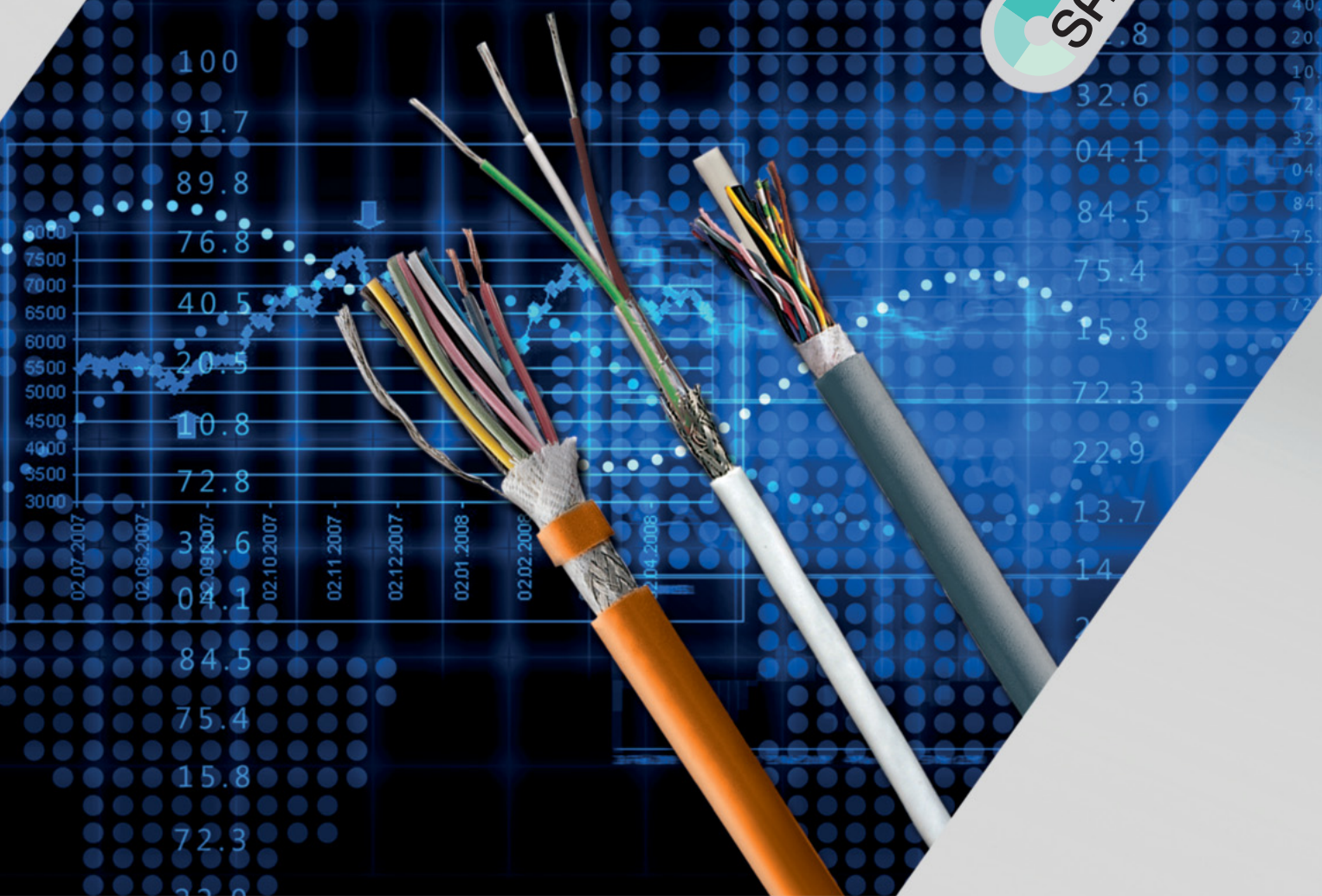


CABLES FOR SENSORS



Family business in the third generation

75 years of experience in cable and wire manufacturing as well as in temperature measurement technology turned a one-man business into a company with more than 550 employees. We prove our strength every year with more than 1500 special products according to customers' requirements. Each product is a new challenge for our creative technical team. We at **SAB** see ourselves as a manufacturer and a service provider – in the sense of true partnership and the greatest possible customer orientation.

Today, the quality of our products is known and appreciated in more than 100 countries around the world. In all product ranges, we are certified according to DIN EN ISO 9001. Furthermore, we have implemented an environmental management system for our company according to DIN EN ISO 14001, an occupational health and safety management system according to NLF/ILO-OSH and DIN ISO 45001, and an energy management system according to DIN EN ISO 50001.

And also for the future, our slogan is: **"WE GO FORWARD!"**

FOUNDED:	1947 by Peter Bröckskes sen. an independent, medium-sized company.
CEO:	Peter Bröckskes and Sabine Bröckskes-Wetten
PLANT/LOCATION:	In Viersen (Lower Rhine) 110.000 m ² company site. Own manufacturing from copper conductor to outer sheath. VDE approved burnchamber and laboratory within the company.
EMPLOYEES/WORKERS:	approx. 430 at the plant in Viersen, 550 worldwide
YEARLY SALES:	over 134 Mio. € worldwide
PRODUCTS:	Special Cables Measurement Technology Cable Harnessing
CERTIFICATES AND APPROVALS:	<div style="display: flex; align-items: flex-start;"> <div style="flex: 1;">  </div> <div style="flex: 2;"> <p>Quality management system acc. to DIN EN ISO 9001 for every manufacturing field</p> <p>Environmental management system acc. to DIN EN ISO 14001</p> <p>Occupational health and safety management acc. to NLF/ILO-OSH and DIN ISO 45001</p> <p>Energy management system acc. to DIN EN ISO 50001</p> </div> </div>



In almost all industrial sectors an electronic measurement, control and automation are of greatest importance. Sensors and measuring technique are closely connected with each other and in many fields you can't do without. The application range of sensor technology is far reaching from the collection of factors in process technology via the analysis of product characteristics in the manufacturing industry as well as in the automated production to the control of products.

Herewith, the exact measurement of physical values like

- pressure
- filling level
- vibration
- power
- speed
- infrared
- temperature, humidity
- positioning
- flow rate
- turning moment
- ultrasound
- composition and concentration of gases and liquids

as well as the adherence of measuring tolerances and production control are of greatest importance.

With more than 60 years of experience in cable manufacturing we are a competent partner for the development and production of high quality sensor cables. The requirements of our customers are our main concern. We implement the tasks committed to us with creativity and competence and support the practical realization. It doesn't matter if a cable out of our production range has to be modified or if a completely new design is necessary. We guarantee solutions of highest quality with the help of innovation, flexibility, know-how and a quick realization.

Cables for sensors

Different industrial applications



Railway technology



Aerospace



Automotive manufacturers and suppliers



Machinery and plant engineering



Metal processing industry



Mining



Drive, control and automation technology



Electrical and Power Engineering



Paper industry



Shipbuilding and offshore industry



Chemical, petrochemical, oil and gas industry



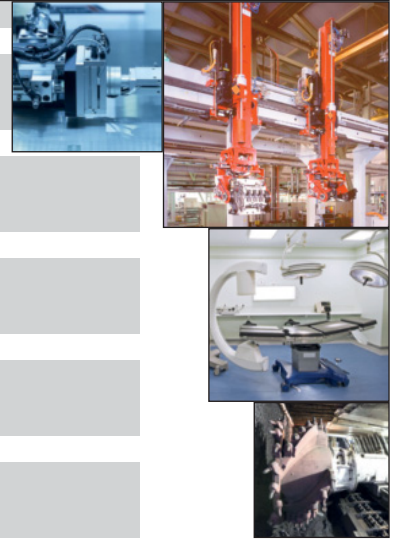
Food and beverage industry



Plastics industry



Medical, pharmacy, sports and biomechanics



Applications:

Outstanding features:

■ Reeling sensor cables

e.g. in the seismic technology:
borehole probes for the detection
of hazardous substances in soil and water

methane studies with methane probe for
offshore risk management or
for climate change studies



- ✓ high tensile strength, abrasion and notch resistance
- ✓ extremely high winding and unwinding strength
- ✓ good oil resistance
- ✓ good chemical resistance
- ✓ supporting screen of high-tech yarn

■ Besilen® (silicone) sensor cables

e.g. in furnace construction:
sensor cable for position sensors
at oven doors
in low pressure carburizing



- ✓ heat resistant
- ✓ temperature range up to +180°C, short-time use up to +250°C
- ✓ flexible at low temperatures
- ✓ flame retardant and self-extinguishing
- ✓ no development of corrosive conflagration gases
- ✓ very good weather resistance

■ Servo sensor cables

e.g. in automation:
encoders for position and
speed determination

for collision protection at construction cranes,
speed measurement and adjustment
of the rotor position in wind power plants

Determination of the exact loading position
of container bridges



- ✓ very high flexibility
- ✓ very long service life
- ✓ oil resistant
- ✓ PWIS uncritical (PWIS = paint-wetting impairment substances)
- ✓ flexible at low temperatures
- ✓ DESINA® colours

Applications:

Outstanding features:

■ Cable track sensor cables

e.g. in railway technology:
sensor cable for door control

sensor cable for encoder
for contactless measurement
of revolution speed, angular and position
at high speed milling machines
or manufacturing centers
for the processing of metal, wood,
glass and aluminum

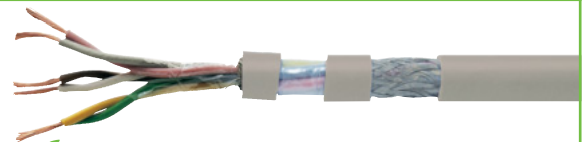


- ✓ continuously flexible
- ✓ flexible at low temperatures
- ✓ high abrasion resistance
- ✓ very good oil resistant
- ✓ good chemical resistance
- ✓ no flame propagation
- ✓ flame retardant and self-extinguishing

■ Halogen-free sensor cables

e.g. in railway technology:
ticketing, pinch protection, door protection

sensor cable for
capacitive plate electrode for the detection
of electrical conductive liquids



- ✓ no flame propagation
- ✓ flame retardant and self-extinguishing
- ✓ extended temperature range

■ ETFE, FEP, PFA sensor cables for higher temperature ranges

e.g. in shipbuilding:
sensor cable for temperature probe
in the stern tube



- ✓ very good chemical
and solvent resistance
- ✓ very good temperature resistance
and temperature flexibility
- ✓ very good
electrical insulating characteristics
- ✓ temperature range up to +180°C,
limited time of use up to +200°C
- ✓ flame retardant and self-extinguishing

Applications:

■ Special and hybrid sensor cables

e.g. for hydrostatic liquid level monitoring and liquid level measurement in drinking water, wastewater, process and river water

seismic investigations with a drilling hole geophone for soil investigations, monitoring of hydraulic fracturing

fiber optic cable system for marking of spare parts and for robot and portal applications



Outstanding features:



Version with integrated polyamide sleeve

- ✓ flame retardant and self-extinguishing
- ✓ oil resistant
- ✓ halogen-free



■ Ethernet and hybrid sensor cables

e.g. in railway technology:
sensor cable for a sensor for contactless measurement of speed, acceleration and braking distance



Version with integrated Industrial Ethernet CAT 5 cable

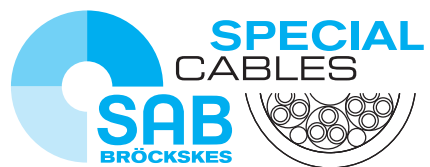
- ✓ halogen-free
- ✓ very good oil resistance
- ✓ very good fuel and acid resistance
- ✓ Compliance with the fire protection class 1-4 acc. to EN 45545-2

■ Absence of harmful substances acc. to RoHS II - directive 2011/65/EU and commission delegated directive (EU) 2015/863 amending annex II to directive 2011/65/EU as well as GefStoffV annex IV - no. 24



The components of the indicated items are free of harmful substances according to the above mentioned directives as well as hazardous material regulation annex IV no. 24 medium of flame protection. This means that for the following substances based on the guidelines as well as on the requirements of SAB Bröckskes GmbH & Co. KG, the following quantity and content limits were specified, below which a declaration can be dropped

▶ lead	< 0,1 %	▶ di(2-ethylhexyl)phthalate (DEHP)	< 0,1 %
▶ mercury	< 0,1 %	▶ benzyl butyl phthalate (BBP)	< 0,1 %
▶ cadmium	< 0,01 %	▶ dibutyl phthalate (DBP)	< 0,1 %
▶ hexavalent chromium	< 0,1 %	▶ diisobutyl phthalate (DIBP)	< 0,1 %
▶ polybrominated biphenyl (PBB)	< 0,1 %	▶ pentabrominated diphenyl ether	< 0,1 %
▶ polybrominated diphenyl ether (PBDE)	< 0,1 %	▶ octabrominated diphenyl ether	< 0,1 %
▶ decabromo diphenyl ether (DecaBDE)	< 0,1 %		



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