

NSW



NSW Winding Wires

for Submersible Motors



A brand of the

Prysmian
Group

GreenWire

– State of the Art Winding Wires

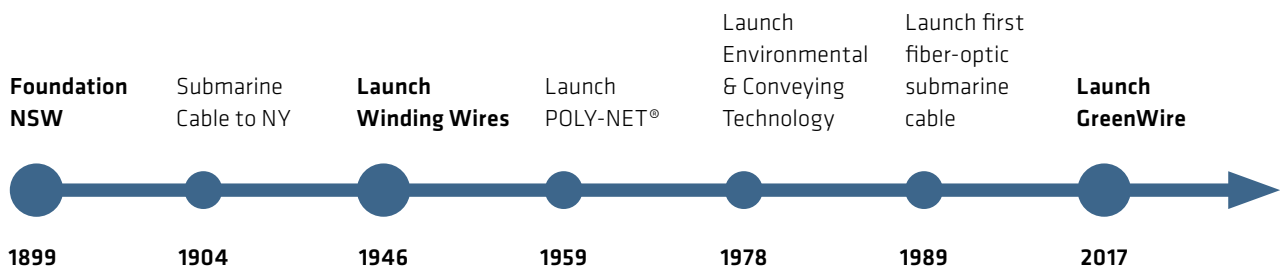
Background

Norddeutsche Seekabelwerke GmbH (NSW) is a leading manufacturer of communications, submarine, overhead, power and offshore cables as well as engineering plastics and environmental products. For more than 115 years, NSW has been committed to the expansion and improvement of communications.

On the basis of this extensive experience, NSW began developing and producing plastic insulated Winding Wires for Submersible Motors “Made in Germany” in 1946. Submersible motors are made to operate under water or other fluids and are well known for their advantages in many industries.

The Winding Wires used in these motors accordingly require high quality insulation which is impervious to liquids. Over the course of many years the materials chosen for NSW’s winding wires insulation have proved their worth and reliability to meet the requirement of this application.

Since 2018, NSW is part of the world’s largest cable manufacturer. As such, we are not only able to provide you with state-of-the-art winding wires, we are also able to offer you power cables especially made for Submersible Motors.



**ISO
9001**



**ISO
14001**



**OHSAS
18001**



**Made in
Germany**

Regardless of whether standard or customer specific requirements, we advise and support our customers worldwide and ensure the quality of our products according to the common industry standards ISO 9001, ISO 14001 and OHSAS 18001 based on regular audits.

Product overview

The GreenWire product range consists of an environment-friendly polyethylene. The insulation material of GreenWire is free of lead and chlorine and provides the perfect solution for all customer requirements.

GreenWire PE with its hard coated surface is the most suitable product for automatic winding processes and is deliverable from stock.

GreenWire VPE stands out for a high temperature resistance.

GreenWire PE2 guarantees the highest application requirements of temperature resistance and electrical properties as well as availability in almost all dimensions. The high mechanical strength is ensured by a thin outer layer of polyamide (PA).



Conductor Design

Solid Conductor

- Diameter 0,8 to 4,6 mm
- Cross section 0,5 to 16,60 mm²

Stranded Conductor

- Diameter 3,6 to 17,1 mm
- Cross section 8,00 to 150,00 mm²

Insulation

- Environment-friendly polyethylene
- Free of lead and chlorine*
- Excellent electrical properties
- Wall thickness depends on operating voltage 0.3 to 3.5 mm

PA-Sheathing for PE2 and for VPE Insulated Wires

- Additional sheath made of polyamide for surface protection
- Thickness 0,1 to 0,3 mm

Semiconducting Layer (HL)

- Between copper conductor and PE2 insulation
- For high voltage applications
- Thickness 0,1 to 0,3 mm

* <0,1 % by weight

Product Range/ Characteristic				
Type	Application temperature	Specific insulation resistance	Color	Method of cross linking
GreenWire PE	70 °C	10 ¹⁶ Ω×cm	white	none
GreenWire VPE, VPE/PA	80 °C	10 ¹⁶ Ω×cm	nature	chemical
GreenWire PE2/PA*	90 °C	10 ¹⁸ Ω×cm	nature	physical

* HL/PE2/PA for high voltage applications



Only the best is good enough

– We make sure of it

Measuring and Testing

NSW works in accordance with national and international test standards. In order to assure the quality, NSW conducts intensive, long term investigations on the products and materials. The continuous checking, monitoring and evaluation of the tests are just as much a part of the investigations as the subsequent documentation of the results by a well-experienced staff. In this way, customers benefit from ensured and trouble-free operations as well as from a long motor life.

Final Testing

Dimension and mechanical routine tests at room temperature include

- diameter,
- wall thickness,
- eccentricity,
- surface characteristics.

High voltage routine testing is performed in mains water bath, alternating voltage (50 Hz), ambient water temperature for 24 hours. This testing is in compliance with the NSW Quality Plan. Customized specification can be applied. A Test Certificate 3.1 is available on demand (DIN EN 10204).

Type Tests

At regular intervals, samples of wires are taken from the current production batch and subjected to type testing.

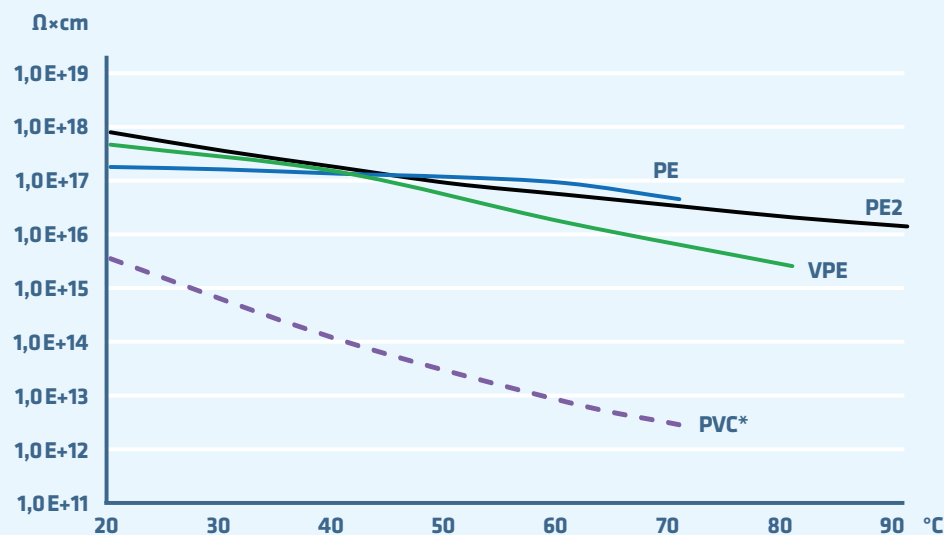
This includes a testing and validation of

- specific insulation resistance,
- instantaneous breakdown voltage,
- instantaneous breakdown field strength.

Electrical properties of NSW Winding Wires

Specific insulation resistance ρ ; $\Omega \times \text{cm}$

inter-/extrapolated indicative values – for information only



*PVC is substituted by GreenWire

Applications

- Agricultural irrigation systems
- Water supply
- Booster stations

Special Applications

- Firefighting systems for oil and gas platforms
- Dewatering of mines
- High voltage applications
- Deep sea applications
- Circulation pumps in power plants

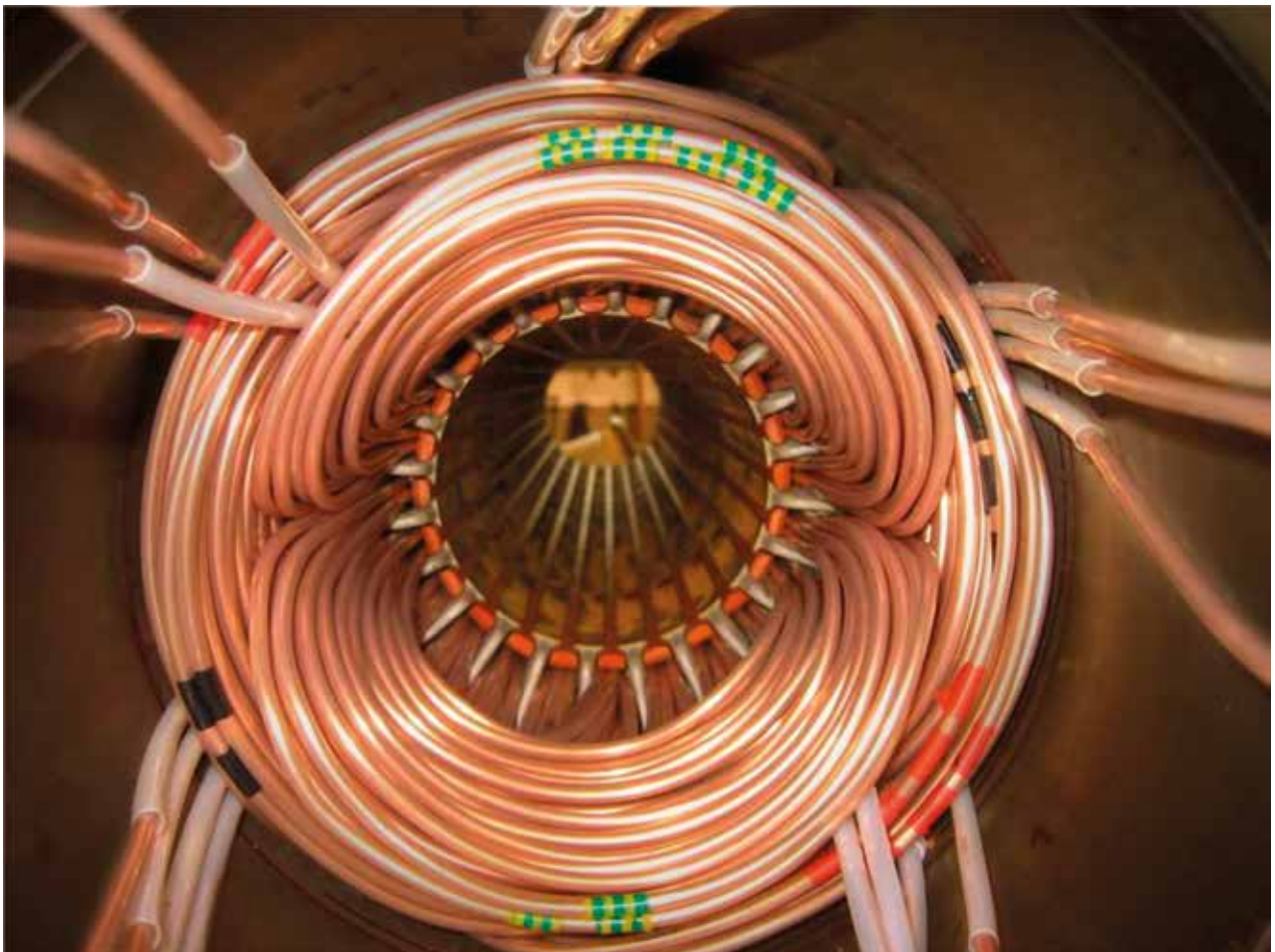
We go beyond standard solutions

With more than 115 years' experience we understand customer requirements and meet almost all expectations in customized lengths, dimensions, high quality materials and other special applications.



Automatic winding process for standard motors with PE-insulated winding wires.

Motors for special applications with PE2/PA insulated winding wires.





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