
Wolf Newsletter

Reusable sealing cushions for photovoltaic systems



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- **EUROSOL GmbH (Ludwigshafen)** has planned, designed and installed one of the biggest solar parks in Thüringen, on the site of the Altenburg-Nobitz airfield. EUROSOL GmbH is a general contractor, setting up photovoltaic power plants on a worldwide basis (with Pfalzsolar GmbH, among others).
- **TITTEL Group (Schmölln/ Thüringen)** carried out the photovoltaic installation.
- **Fibre Optics CT GmbH Consulting & Testing (Stuttgart)** was commissioned, in the framework of the Altenburg-Nobitz solar park redevelopment scheme, with an on-site product presentation of the UA/V L150 sealing cushion and subsequent cable sealing inside the power stations-
- **Wolf Kabeltechnik GmbH (Stuttgart)** has been producing and supplying the patented reusable universal UA/V, which complies with the TS 0306/96 Deutsche Telekom specification, since 2006.

Pilot project: reusable sealing elements in the Altenburg-Nobitz solar park

General

In the first half of 2012, PFALZSOLAR GmbH (Ludwigshafen) set up one of the biggest solar parks in Thüringen. The photovoltaic plant, which has a power rating of 12 MW, is situated in the 16-hectare conversion area of the Altenburg-Nobitz airfield. The solar park will eventually reach an output of about 11 million kWh, enough to cover the needs of 3,000 average households.

The planning and designing of the solar plant was done by EUROSOL GmbH (Ludwigshafen), a company which, with over 16 years' experience, belongs to the pioneers of the solar industry and offers a high-quality spectrum of photovoltaic modules, inverters and other photovoltaic components. The next target, in joint research with the University of Mannheim, is to achieve an optimised synthesis between economics and ecology, thus providing solutions to meet the increasing demand for regenerative forms of energy.

EUROSOL GmbH is active throughout Europe as a wholesaler for modules, inverters and solar components. They support investors in the planning, choice and design of components, as well as in questions concerning the construction and assembly of photovoltaic installations. With a total of over 2000 completed photovoltaic facilities, EUROSOL is one of the most important general contractors in southern Germany. Their project business has risen by over 50 per cent over the past few years, and in 2011 the company was awarded the RAL quality mark for solar energy plants (RAL GZ 966), issued by the German Institute for Quality Assurance and Certification e. V.



Foto Solarpark Altenburg-Nobitz © Copyright EUROSOL GmbH

TITTEL-GROUP GmbH (Schmölln/ Thüringen) carried out the actual assembly of the photovoltaic plant, including the substructure of the solar module, cabling and electrical installation for modules and inverters, electrical commissioning and a sustainable concept for maintenance and assembly. The current total power capacity of the solar electricity plants set up by the Tittel Group is 282.35 MW, from 249 sites.

Drones and heat-sensitive cameras facilitate the detection of problem areas and defective modules. Thermographic pictures provide a clear colour contrast between defective and intact modules, so it is easy to plan replacements.



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Solutions from Wolf Kabeltechnik

WOLF KABELTECHNIK GmbH was commissioned by EUROSOL GmbH with the provision of sealing elements for the transformer station cables. As the cable was brought through from outside using cable glands, there was damage, resulting in water ingress. This was due either to the way the cable-shaping process was carried out in the power station or to over-compression of the cables as they were brought through, or both. Water in a transformer station means that the structural stability and electrical safety of modules and inverters are endangered.

Wolf Kabeltechnik GmbH supplied the project with the components required for sealing the 10 power stations.

Example: 1 power station has 7 cable entries, inner Ø 150 mm

Cable installation	Outer Ø [mm]	Number of cables
DC cables	25	18 – 24
MS-20 kV cables	40	6 – 9
Optical cables	8.5	2 – 7
Bus cables	15	4
Control cables	12.5 - 16	3 - 5



Components:

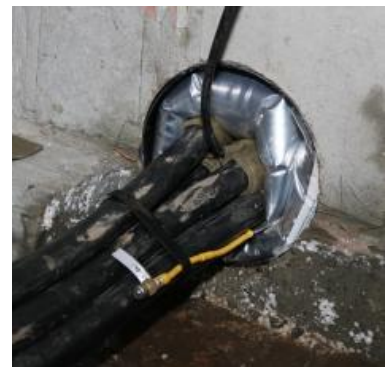
Sealing element, Art. No. 17.1 UA/V L 150

Accessory:

Elastic petrolatum sealing tape, Art. No. 23.1 D1/100-10
(Thickness 1 mm, width 100 mm, length 10 m),
Amount needed: approx. 15 x cable Ø



Photo:
Water ingress in a power station at
the Altenburg-Nobitz solar park



Beispiel:
abgedichtete Kabeleinführung
im Solarpark Altenburg-Nobitz

Assembly method: Sealing elements (valve)



The sealing cushion is laid round the cable or tube and pushed into the cable channel.



For multi-configured cable channels only:
The cables are spread apart (e.g. by wedging a piece of cable between them). A length of sealing tape is wrapped round each cable separately. Any gaps are filled with small balls of sealing tape.



The sealing element is inflated via the tyre valve and the valve extension is fixed in position along the cable bundle.

Solutions by Fibre Optics CT GmbH

FIBRE OPTICS CT GmbH (Stuttgart) develops and tests cable sealing systems in accordance with customer requirements and operational conditions. Fibre Optics CT GmbH was commissioned to carry out an on-site demonstration of cable sealing for the pilot project. This is a difficult job, as the space available in wind and solar power plants is usually very confined.

The technician is often in a lying position when he seals the cables, which involves having to spread apart the individual cables in the bundle while lifting them. The demonstration enabled the Tittel-Group technicians to carry out installation to a professional standard themselves. Fibre Optics CT GmbH have now set themselves a new target: the development of an inflatable hoisting pad (similar in design to the sealing cushion), on order to simplify installation under difficult circumstances.



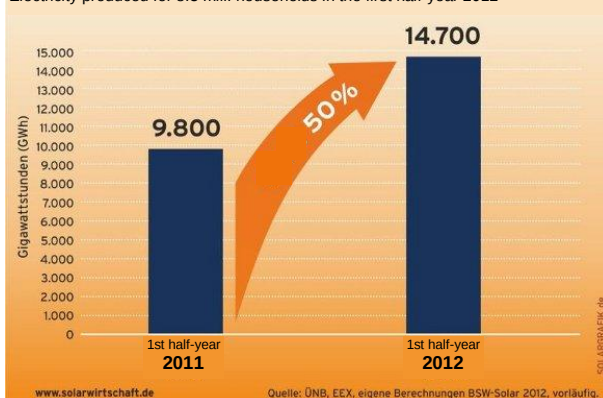
Assembly conditions in the solar park

The expansion of solar power production

Approximately 28 billion kilowatt hours of solar electricity were produced by 1.3 million photovoltaic plants in Germany in the first six months of 2012. That is 45 per cent more than in 2011. According to the figures issued by the Federal Solar Industry Association (BSW), this electricity met the annual needs of 8 million households. The cost of setting up solar plants has gone down, which is the one of the most important factors for the further expansion of solar power plants in the future.

Solar power production 2012

Electricity produced for 8.3 mill. households in the first half-year 2012



Costs and promotion of solar power plants sink rapidly



¹EEG-Vergütung: Die Vergütungskategorie wurde ab dem zweiten Quartal 2012 auf Grund von Gesetzesänderungen im Erneuerbare-Energien-Gesetz (EEG) angepasst. Daher bezieht sich die EEG-Vergütung bis zum ersten Quartal 2012 auf PV-Anlagen der Größe 30-100kWp und ab dem zweiten Quartal 2012 auf Anlagen der Größe 40-100kWp

²Systempreise: Durchschnittliche Endkundenpreise fertig installierter Aufdach-Anlagen ohne USt.

Quelle: BSW-Solar, Bundesnetzagentur www.solarwirtschaft.de

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