BACKER WOLFF

Electric Switch Point Heating Systems

Competence in points heating systems

. . . a n d w i n t e r m a y c o m e !

BACKER WOLFF GmbH - Weichenheizungen

Zum Lonnenhohl 11 D - 44 319 Dortmund

Tel. +49 231 56557840 Fax +49 231 56557847

e-mail: info@weichenheizung.de

Internet: www.weichenheizung.de

Our heating elements are exclusively made by:

BACKER ELC

former Electrolux Professional AG Unternehmensbereich Heizelemente

Foreign representatives:

Czech Republic

ELEKTROLINE a.s.
K Ládvi 1805/20
CZ - 18400 Praha 8 – Kobylisy
www.elektroline.cz

Spain

PASCH Y CIA., S.A.
Capitán Haya, 9
E - 28020 Madrid
www.pasch.es

Belgium

Buhlmann N.V.
Hermesstraat 2C
B-1930 Zaventem
www.buhlmann.be

Netherlands

DHW Track B.V.
De Droogmakerij 70f
NL-1851 LX Heiloo
www.dhwtrack.nl

Poland

ELEKTROLINE S.A.
Oddzial w Polsce
ul. Witosa 4/65
PL-42-224 Czestochowa
www.elektroline.cz

Norway **Estonia**
Sweden **Latvia**
Finland **Lithuania**

Malthe Winje Automasjon AS
Haukeliveien 48
N - 1415 Oppegård
www.mwg.no

Greece

NT Power Electrification IKE
Flaggina Street, 16
GR – 11145 Athens
www.ntpower.gr

QM-System

We are known as small and flexible company for high qualitative switch point heating systems. Last years we had been certified together with our former mother company. That kind of co-certification was available for reasonable costs. That is no option anymore with the new company structure. But we did not changed our production nor quality behavior, because quality is still the base of our business, much more than a low price.
So we dispense on a own certification, because is much too expensive for our company size. The cost benefit is on customer side. Naturally we ensure that our partner has a certified QM-system where ever it is possible. The certificate of the heating element production at our sister company is attached following :

This is a translation of the certificate CH18/0172

The management system of

Backer ELC AG

Wynentalstrasse 1, 5723 Teufenthal, Switzerland

has been assessed and certified as meeting the requirements of

ISO 9001:2015

For the following activities
Manufacture and Distribution of Heating Elements and Control Systems

This certificate is valid from 27 January 2024 until 26 January 2027 and remains valid subject to satisfactory surveillance audits.
Issue 3. Certified since 27 January 2018

Authorised by
Daniel Willemin

Authorised by
Jan Meemken

SGS Société Générale de Surveillance SA
Technoparkstrasse 1, 8005, Zurich, Switzerland
t +41 (0)44 445-16-80 - www.sgs.com

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POINTS HEATING SYTEMS

The history:

1973 - 2003 **30 years of supply** of electronical points heating systems
1978 - 2003 **25 years** of skeleton contracts with DBAG and its predecessors
1983 – 2003 **20 years** of own switch cabinet manufacture in the branch at Essen

The transition:

01.04.2002
Mr. Dieter Wolff retired and handed over the company to the Capito & Assenmacher GmbH & Co.KG in Dortmund. The new managing director is Dr. Ulrich Assmann. **Dieter Wolff GmbH Germering / Essen** becomes **Wolff Weichenheizungen & Oberbau GmbH** domiciled in **Dortmund**

The move:

01.10.2002
Shifting of all activities from Germering and Essen to Dortmund in the neighbourhood of the mother company. Extension and improvement of production and storage capacities

The aim:

Consolidation of market position as reliable supplier of high-quality points heating systems. Customer satisfaction based on competent advice and perfect service

The precondition:

A quality from which one benefits long after one has forgotten the price

Your advantage:

Our experience, supported by a lively Quality Management System acc. to DIN EN ISO 9001:2008 with regular monitoring audits held by TÜV Nord

The highlight:

2006
Installation of Wolff points heating systems at the complete track (more than 30 stations !) of the highest railway in the world from Golmud to Lhasa.
2006-2007
The first heating period of our systems in Tibet highland is running without any problems. Officials of the operator Qingzang Railways and the Chinese Ministry of Railway have clearly expressed their satisfaction to this project

The emulation:

2012
After more of 10 pretty successful years Dr.Assmann retires and handle over the company to the new owner and managing director Dr.-Ing. Jürgen Gerhardt. Company structure is not changing at all.

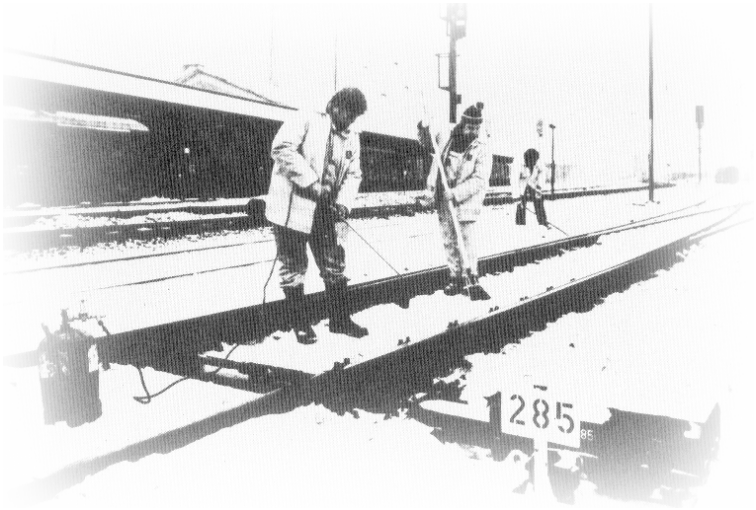
To NIBE group:

2014
The NIBE group take over the switch point heating business branch and put it into the new founded BACKER WOLFF GmbH. The business, the location, the staff and the production equipment does not change. Also the close partnership to Backer ELC AG in Switzerland (former Electrolux Professional AG) is not changed and will continue as known.

The move:

2015
The new foundation during 2014 coming along with the separation from former mother company Capito & Assenmacher causes also a separation of the company bases.
In March 2015 we moved in the same business area at Dortmund-Wickede into clearly bigger and better storage-, production- and office-spaces. With that move the reorientation of the company is completed.

Why to choose Wolff Points Heating Systems ?



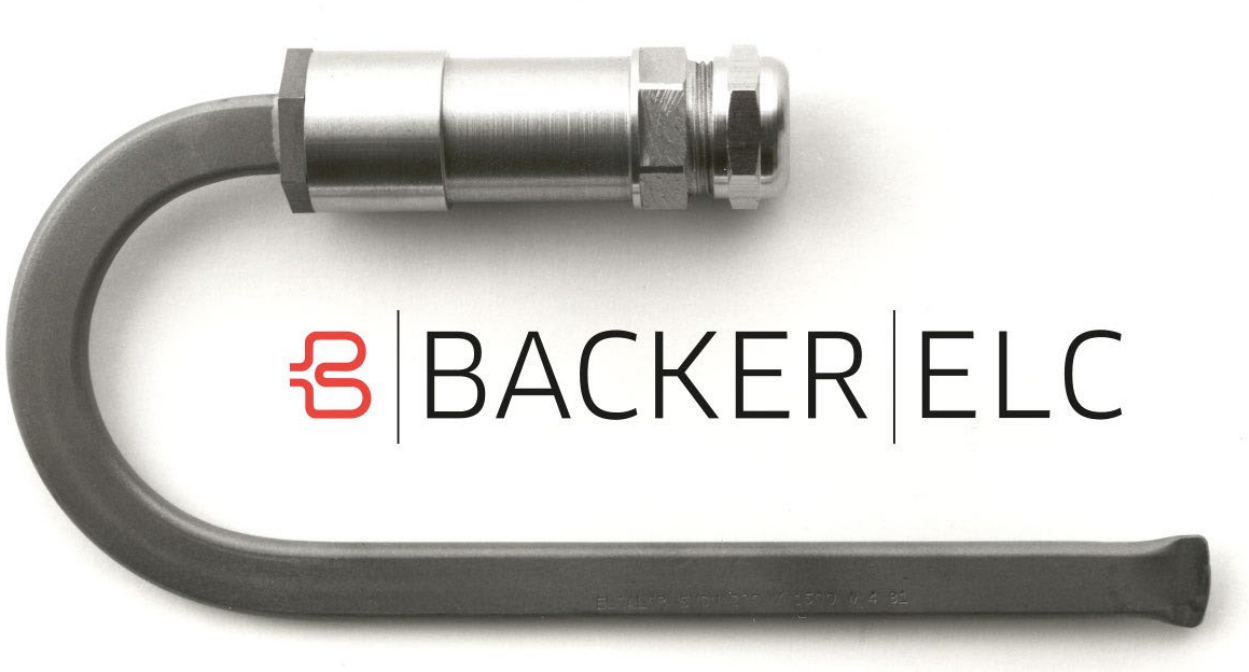
During the cold season of the year, even without great deals of snow, it is not unusual that switch blades of an un-heated point switch freeze on the stock rails or even on the slide chairs. This effect occurs at unfavourable places already at outside tempera-tures of less than +3° C, favoured by cold due to evaporation.
In that way the point switch is no longer adjustable and a disruption of operations will be the consequence. Staff is needed to clear the point switch, but not sufficiently available at all times not to mention the financial extra expenses.

All these problems are solved with a Wolff Point Heating System standing for longevity and no maintenance.
It's terminal head, either sealed or detachable, is fully waterproof **(IP 68)**.

A Wolff point heating system cares auto-matically and reliably for freedom from snow and ice between stock rail and switch blade as well as in locking boxes and crossings with movable frogs.

Our scope of supply

Our heating elements are of Swiss precision manufacture made by our longtime partner :

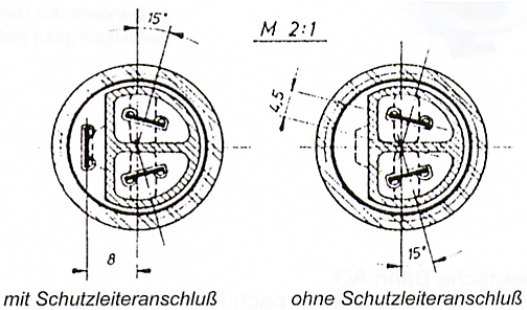


We supply:

- all heating elements used within the network of the DB AG, with and without cabels, DB-skeleton contract No.: 1000 / 564 / 92196238 cred.-No.: 699024

- all types of points heating systems:
  - stock rail-heating systems,
  - switch blade-heating systems,
  - locking box-heating systems,
  - crossing-heating systems

- 2-pole heating elements without protective conductor,
  3-pole heating elements with protective conductor and, on request, heating elements with additional outside located earthing screw



mit Schutzleiteranschluß ohne Schutzleiteranschluß

- **SPECIAL FORMS** and **SPECIAL LENGTHS**
  up to ca. 6000 mms of length

Our scope of supply (cont.)

- All voltages as AC and DC , i.e.

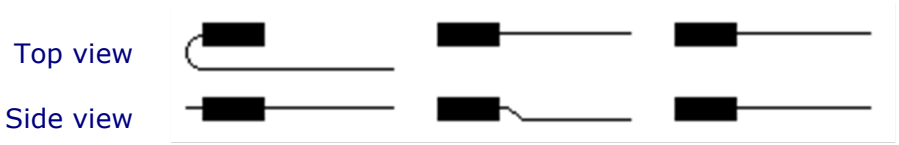
16 2/3 Hz	231 V
50 Hz	230 V / 400 V
DC	600 V / 650 V / 750 V

  as well as all possible interim voltage values

- various specific powers from approx. 200 W/m up to 450 W/m,
  in exceptional cases higher and lower powers are available.
  On application of heating elements in grooved rail areas, power of more than 250 W/m are not recommended due to the reason that the poor heat transmission within the protection pipe or the heating chamber of the grooved rail point switch will lead into an overheating of the heating element

- material qualities designed to user specification
  1. CN 18/8 — the rugged and economically priced standard quality for rough application in the area of Vignole rails
  2. MONEL 400 — the salt and acid resistant quality for those areas where grit and de-icing agents are used, especially if channel rails are concerned

- different forms of heating elements:
  1. Flat heating elements F12, cross-section flat-oval, 13,2 mms x 5,3 mms, bent, cranked by half the head diameter or straight,



  2. Round heating element R8, cross-section round, 8,2 mms, straight, with or without outer earth screw

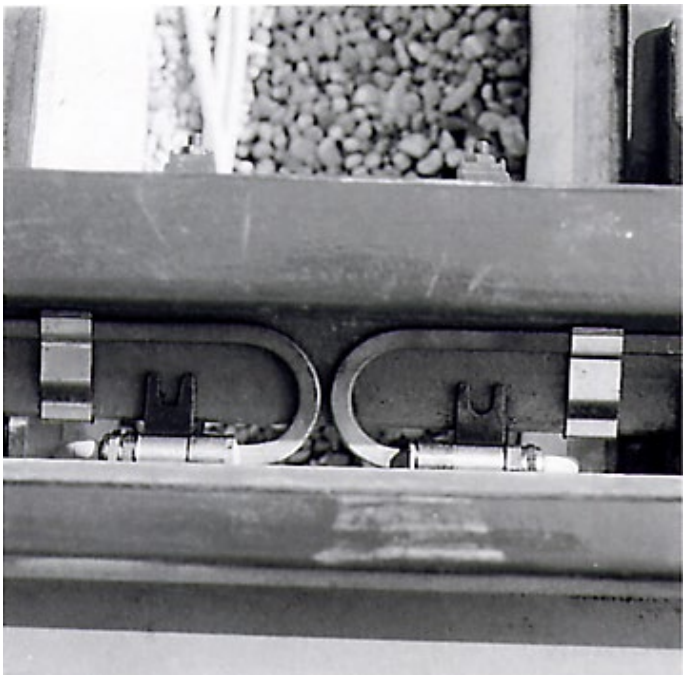
we also supply:

- all mounting material, i.e. clamping yokes, connecting head fasteners, clamps, screws, etc.
- accessories, i.e. terminal boxes, cables, cable protecting tubes, cable hoses, etc.
- electronic components, i.e. moisture and temperature control, temperature monitor, snow detector, tension control, power relais, transformer-switching relais, etc.
- spare parts and repairs for FRABA-equipment

and moreover

- **clamping yokes for automatic operation cables at the rail**
- **universal-flange-groove rails**
- **rail drainage boxes**

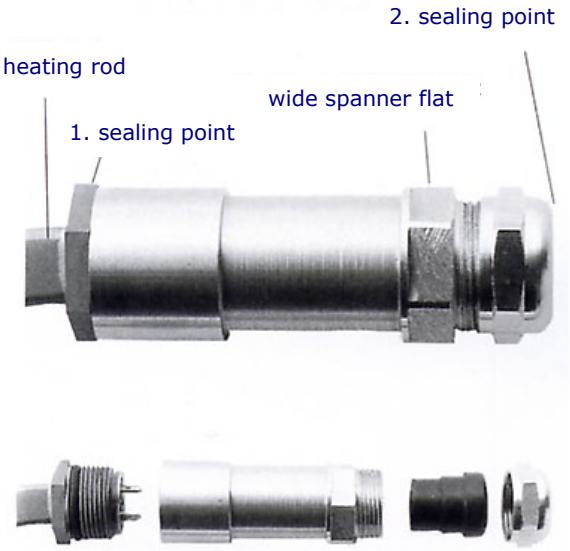
The system



The Backer ELC heating elements are mounted on the base of the rail by means of special clamp straps made of corrosion-resistant chrome-nickel steel. The chosen surface pressure guarantees an optimum in heat transfer.
Beyond that it allows an unavoidable linear extension of the heating elements without limitation.
The strong fixing of the connecting heads prevents the heating elements from creeping (see description below).

Preferred types of heating elements:

2200 mm	230 V /	900 W	2pol.	gebogen
2870 mm	230 V /	900 W	2pol.	gebogen
3720 mm	230 V /	1200 W	2pol.	gebogen
4700 mm	230 V /	1500 W	2pol.	gebogen
1100 mm	230 V /	250 W	2pol.	gekröpft
1100 mm	230 V /	450 W	2pol.	gekröpft



The absolute watertightness (IP 68) of the connecting heads made of chrome-nickel steel does not allow humidity or dirt to penetrate.
The connecting head sleeve is inside plasticized for electric insulation.
A wide spanner flat and **only two sealing points** are two more advantages of the Backer ELC-heating elements.

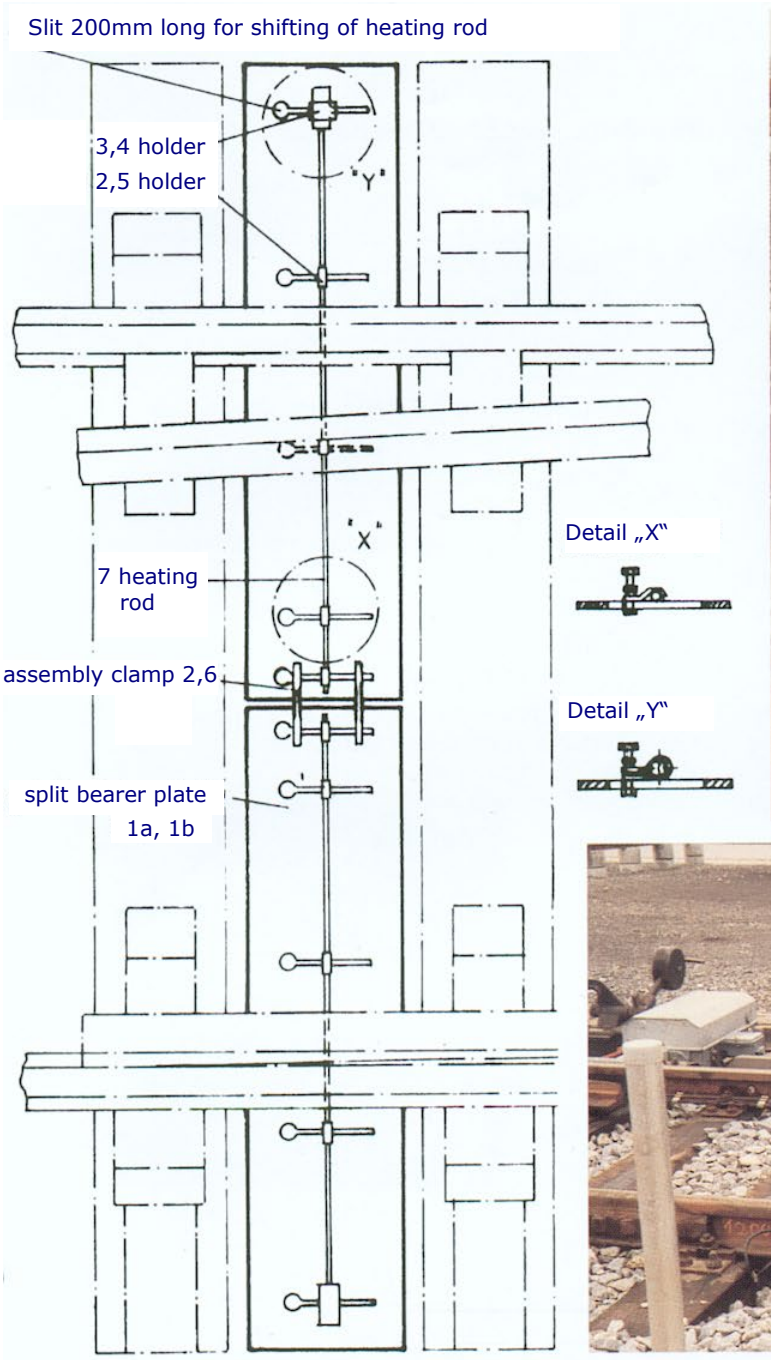
The end of the heating element is water-proof filled up with synthetic resin.

The conductor is connected with the heating element by means of plugs of 6,3 mms. This allows to change a broken cable or heating rod at any time.

① Connecting head fastener made of GGG 40, material no. 00219200,
② High strength screw M 10 x 210 mms, galvanized
③ Connecting head rest made of chrome-nickel steel 18/10 material no. 00219201
④ Nut M10, self-locking, DIN 980

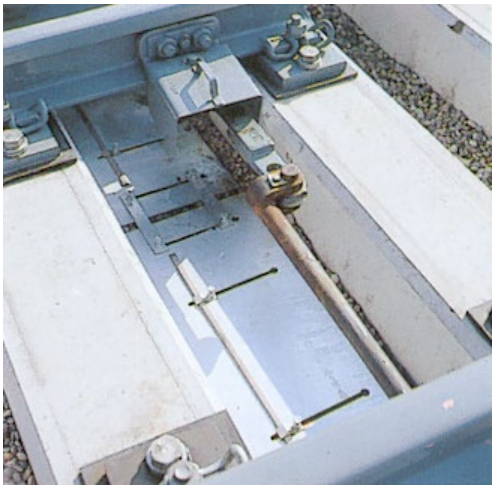
Creeping of heating elements caused by vibrations is not possible due to this special method of fastening.

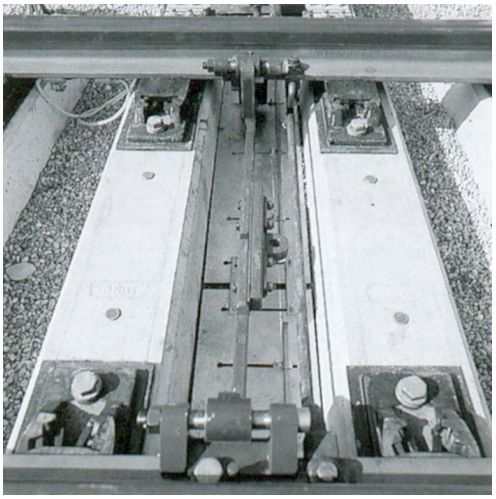
The system (cont.)



Verwendbar für: elektrische Weichenheizung electric points heating system	DB BZA München den 23.6.1986 (26) Simonszent		4 Elh 00.09.05
		Ausg. 01 / Datum 20.6.86	Maßstab
	Maße ohne Toleranzangabe:	Datum / Name Bearb. 20.6.86 Seidel Gepr. Norm.	Elektrische Beheizung der Spitzen--Mittelverschlußfächer electrical heating of point-interlocking
A Ausgabe 01 06.86 2616 Zust. Änderung Datum Name	Dieter Wolff GmbH Waldstraße 22 82110 Germering	Ursprr.	002263 Blatt 01 01 Bl. Ers. f. / Ers. d.

Electrical heating of the point-interlocking and central interlocking spaces





The German Federal Railways Central Office at Munich (work division 2616) has granted technical authorisation for our proposal of supply, in accordance with drawing Elh 00.09.05 and has released it for installation.

Two heating elements of 1.100 mms length, each with 250 respect. 450 W, without protective earth, with straight, separable junction head, are mounted on two divided base plates, which are laid on the ballast bed in the space between sleepers under rods and locking pieces. Owing to the weight of the plates additional fastening to the wooden or concrete sleepers is not necessary.

The base plates are provided with 200 mms long slots. The heating elements are fastened with clamps and screws to the base plate. Screws are fitted with their heads upwards. The two stop and locking nuts have the effect that even with already installed base plates the carrier can still be shifted. The base plates are connected with two mounting links.

Melt and rain water can flow away immediately into the ballast bed. In this way sufficient drainage is achieved which is of considerable benefit owing to the narrowness of the space between sleepers.

Advantages :

- continuous heating for rods and closing device
- precise arrangement of heating elements
- steady warming of the ballast bed, thereby:
  no renewed glaci-ation of defrosting water
- no fastening at the sleepers
- no change of space between the sleepers
- easy change of heating elements without loss of screws

Reference list

I) Qingzang Railway (P.R.CHINA) delivery of the complete point-heating equipment of Golmud – Lhasa section (1.150km, 32 point-heating stations), highest and technically most challenging railway track in the world.

II) The DB Netz AG, the DBG Deutsche Bahn Gleisbau GmbH, the DB AG Anlagen und Haus Service (AHS) with their branches and operational locations, the DB Projekt Knoten Berlin GmbH, the PBDE Berlin and Nuremberg, the Swiss Federal Railways (through the agency of Backer ELC AG, CH-5723 Teufenthal), the state railways of Spain, Czech Republic, Belgium, Luxembourg, Norway.

III) The transportation authorities in Amsterdam, Antwerpen, Augsburg, Berlin, Bielefeld, Bochum, Bonn, Braunschweig, Bremen, Bursa (Turkey) through Siemens, Chemnitz, Cottbus, Dresden, Düsseldorf, Erfurt, Frankfurt/Main, Frankfurt/Oder, Görlitz, Halberstadt, Halle/Saale, Hannover, Karlsruhe, Kassel, Köln, Krefeld, Leipzig, Ludwigshafen, Magdeburg, Mannheim, Minden, Mülheim, München, Nürnberg, Oslo, Potsdam, Riga, Rostock, Saarbrücken, Stuttgart, Würzburg, Zwickau.

IV) The manufacturers of switches BWG Butzbacher Weichenbau, Butzbach; Schreck-Mieves, Dortmund; VWG Vereinigte Weichenbau, Bochum; WBG Weichenwerk Brandenburg und Gotha; VAE Eisenbahnsysteme, Zeltweg; and others more.

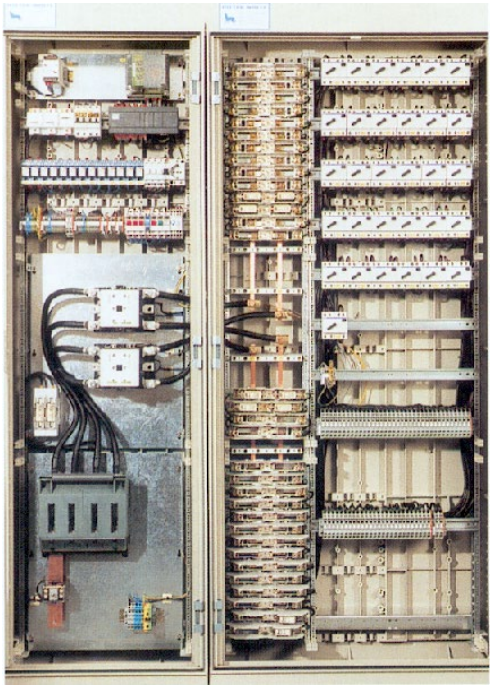
V) Association of German Transport Companies, industrial and iron and steel works, permanent-way assembler, the electrical industry, track construction companies, the permanent-way companies and specialised traders.

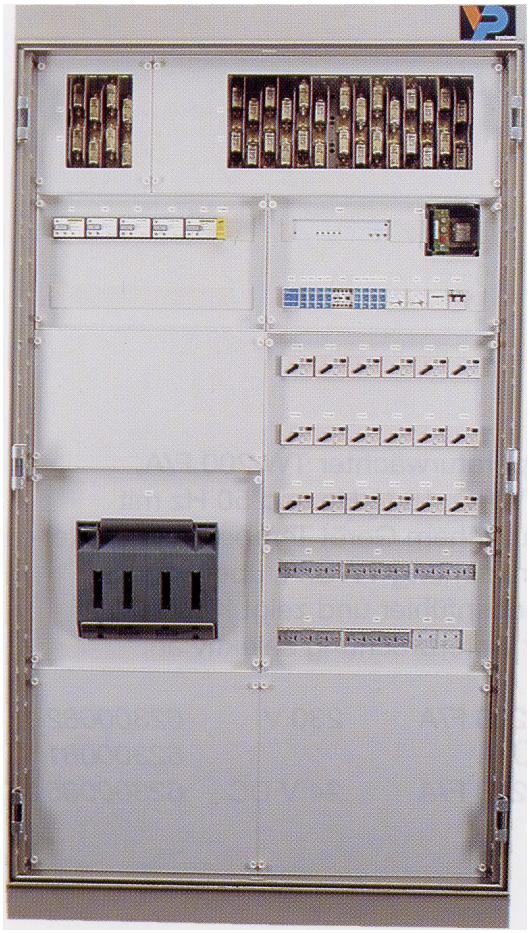
Long lasting business relations with satisfied customers all over Europe evidence the quality of our products. It is not our aim to be the cheapest bidder at all costs. In fact, we want to supply our customers with most economical products for the lifetime of their systems.

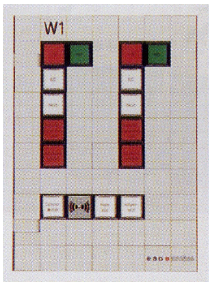
Our motto : The reminiscence of our product´s quality has a more lasting effect than the joy at a low price!

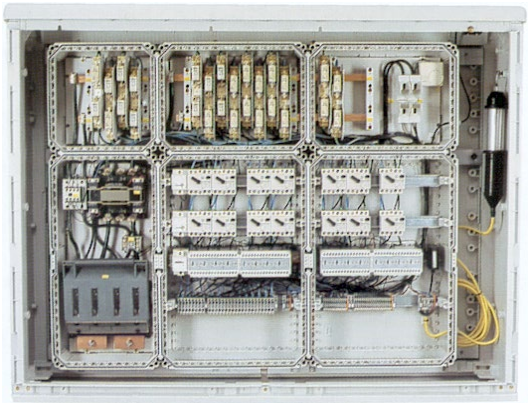
Wolff point heating system at Eibsee station submontane of germany´s highest mountain the Zugspitze
Picture with kind permission of Bayrische Zugspitzbahn

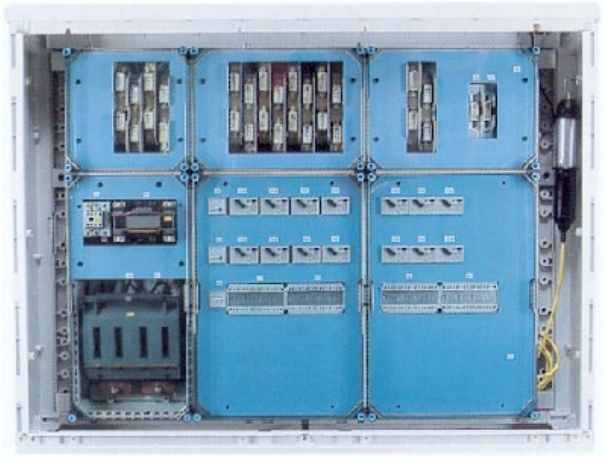
Our experience ...

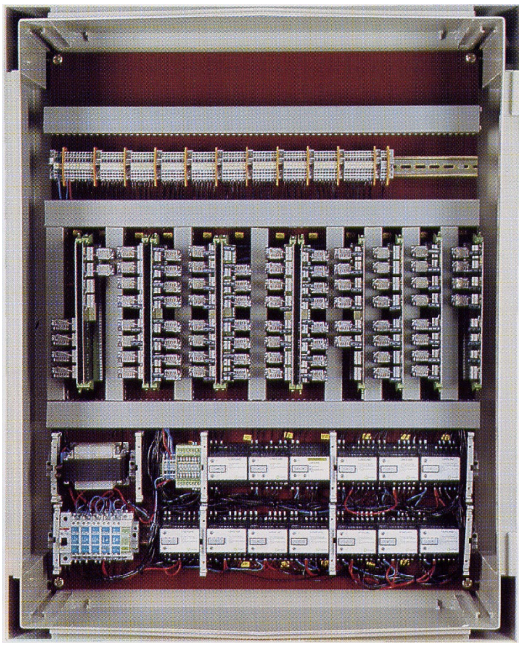












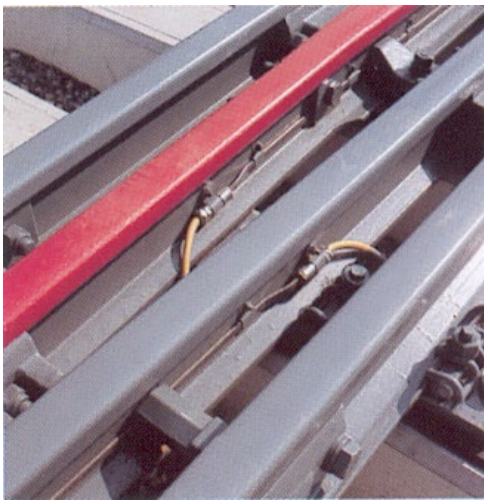
... in development and production of points heating control units, inverters and mosaic control-units....

… as well as our experience …

… in installation and assembly of complete points heating systems, even under rail traffic constitutes the solid basis of our advisory skills to the benefit of our customers.

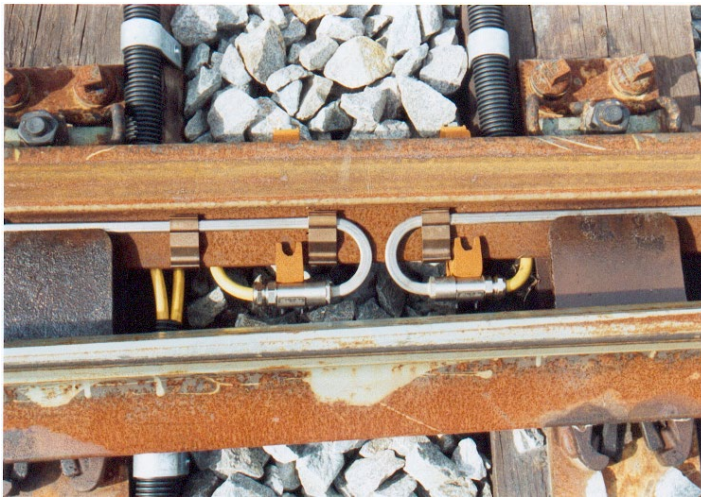
That’s why we are unique and inimitable!

Details of assembly and impressions



Heating element in springy moving frog UIC 60 – 10000/4000 – high-speed line

Position of heating element in free space between sliding seats and rail web



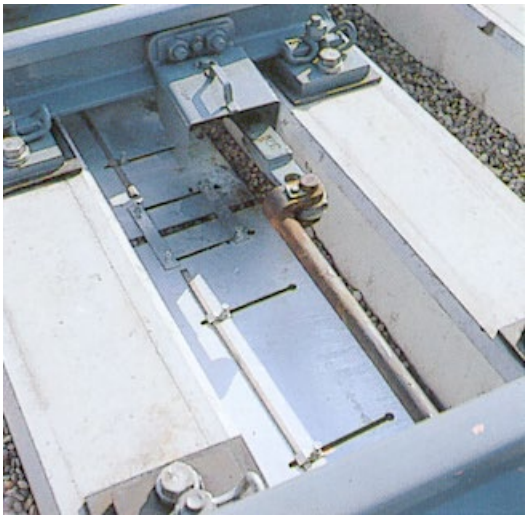
Stock rail heating in a vignole-rail point assembled with connecting head fasteners

Switch blade gliding over connecting head; bottom view

Related mounting guidelines on pages E1 and E2

Details of assembly and impressions (cont.)

Steam locomotive impressions at mount Arlberg between the cities of St. Anton and Innsbruck (Austria)



Point interlocking heating system on concrete sleepers

Switch blade heating and point interlocking heating system at wooden sleepers

Point interlocking heating system placed underneath the switch rodding and embedded on ballast

Details of assembly and impressions
(cont.)

Heating elements of Backer ELC at Oberalp-pass at the Matterhorn Gotthard Railway

Backer Wolff point heating system at Eibsee station at Germany´s highest mountain the Zugspitze