

RAIL

SOLUTIONS FOR RAILWAYS AND TRACK CONSTRUCTION

- Heating technology
- Ventilation
- Air cleaning
- Air conditioning systems
- Measuring instruments
- Drying
- Track construction work tents

SOLUTIONS FOR MAINTENANCE WORK AND TRACK CONSTRUCTION

OUR STRENGTHS:



HEATING TECHNOLOGY
for defrosting
bogie wheel bearings



VENTILATION
of large halls, tunnels
and wagons



DEHUMIDIFICATION
for conditioning
rooms and machines



AIR CLEANING
of contaminated
workspaces



AIR CONDITIONING SYSTEMS
for cooling electrical
installations and switch towers



MEASURING INSTRUMENTS
for material testing
of wheelset bearings



DRYING
Insulation drying of wagon
sandwich floors



**TRACK CONSTRUCTION
WORK TENTS**
for welding work

We know what you as trainman need.
Just name your specific requirements and
we will compose your solution.
Please contact our service team directly:

Phone +49 2452 962-400

Fax +49 2452 962-200

info@trotec.com

www.trotec.com



SAFE JOURNEYS FOR THE RAIL

The Trotec Group offers professional solutions for the railway industry and track construction sector:

In 2013, for instance, we developed a series of innovative tents especially for track construction works bearing the attribute "R" as in "RAIL".

Our large heating devices are often deployed for and certainly do not derail during defrosting and maintenance tasks.

Furthermore, in summertime mobile air conditioners serve to cool the electronic system in switch towers.

Our measurement technology also supports you in all monitoring matters pertaining to railways.

Trotec provides the solutions to increase efficiency!



HEATING MACHINES FOR DEFROSTING TRAINS

Heating devices and central heating units

Heating devices for defrosting bogies have to provide highly effective heating in order to keep the idle time of trains and carriages at a minimum.

Suited for this task are the mobile high-performance electric heating units of the TEH series with up to 120 kW. Due to their high level of efficiency focused hot air can flow toward the bogies to remove blocks of ice via hose distances of up to 100 metres.

Should yet higher capacities be required, we recommend using central oil heating units of the ID series. They yield the required heating capacity even at sub-zero temperatures of as low as -20°C .

With their stainless steel construction ID central heating units are extremely robust and enable the distribution of warm air even over widely ramified air hose distances. Moreover, they feature convenient control options for fully automatic long-term heating.

Therefore, the ID 1200 and ID 2000 provide ideal conditions for all temporary and large-scale heating requirements, e.g. for emergency heating of industrial buildings in case of a heating failure, for construction site heating during new or reconstruction or renovation and for the temperature control in large halls or marquees.



TEH high-performance electric heating units

Quality "made in Germany": The powerful radial fans circulate up to $9,000\text{ m}^3$ of hot air per hour with an air pressure of up to 600 Pa. Therefore, the TEH high-performance heating devices, which can also be used in batch mode, are suited for the connection of air transport hoses of a length of up to 100 m.



Central oil heating unit ID 2000

The ardently sought-after professional solution for mobile large-scale heating applications even in material-straining conditions.

The branded burner with a high efficiency of 92 % at 345 kW heating capacity provides impressive 1,000 Pa of compression for warm air distribution even over widely ramified air hose distances.

ELECTRIC HEATING UNITS



Maximum heating capacity for continuous operation

ELECTRIC HEATING DEVICES



Extremely robust, compact and portable

OIL HEATING UNITS



Branded burner with high efficiency

CENTRAL OIL HEATING UNITS



The industrial solution for frequently changing locations



VENTILATION / AIR CLEANING IN WAGONS, TUNNELS AND LARGE HALLS

Professional air circulation and air purification

The proper ventilation not only matters for a pleasant working climate but is also imperative in many areas for reasons of occupational safety and based on statutory provisions.

Harmful substances such as paint and welding fumes, dust particles, carbon monoxide, nitric oxide, carbon dioxide and water vapour are discharged by means of room/hall ventilation.

The radial fans of the TFV series are designed in an extremely stable manner for rough operating environments and integrated in a robust, powder-coated steel housing with highly resistant two-component finish and also insensitive to polluted air with a high dust content. With an infinitely variable conveying/suction capacity of up to 45,000 m³/h the TFV 1200 is in a class of its own. Across the globe there is no other mobile high-pressure radial fan of its kind! Even in case of long air transport routes with multiple arcs and high counter-pressure (covering hose distances of up to 100 m) the TFV 1200 impresses with an extremely high air transport capacity.

In the matter of "air purification" Trotec has professional solutions to offer as well. TAC air cleaners are the optimum solution for construction and maintenance work in indoor environments contaminated with dust, mineral fibres, mould spores or allergens. Trotec air cleaners "made in Germany" meet all legal requirements, are extremely robust and can be effectively adjusted for all filter situations.



Radial fan TFV 1200

The perfect ventilation solution for all fields of application where air is transported over long distances. The devices of the TFV series belong to the most powerful, mobile high-pressure radial fans on the market.



TAC air cleaners

With dust class H our most efficient air cleaner of the TAC series is the perfect solution for air extraction and cleaning of manifold large-volume work spaces with contaminated air.

AIR CLEANERS



Portable air cleaners
"made in Germany"

AXIAL / CONVEYING FANS



Turning air into power

WIND MACHINES

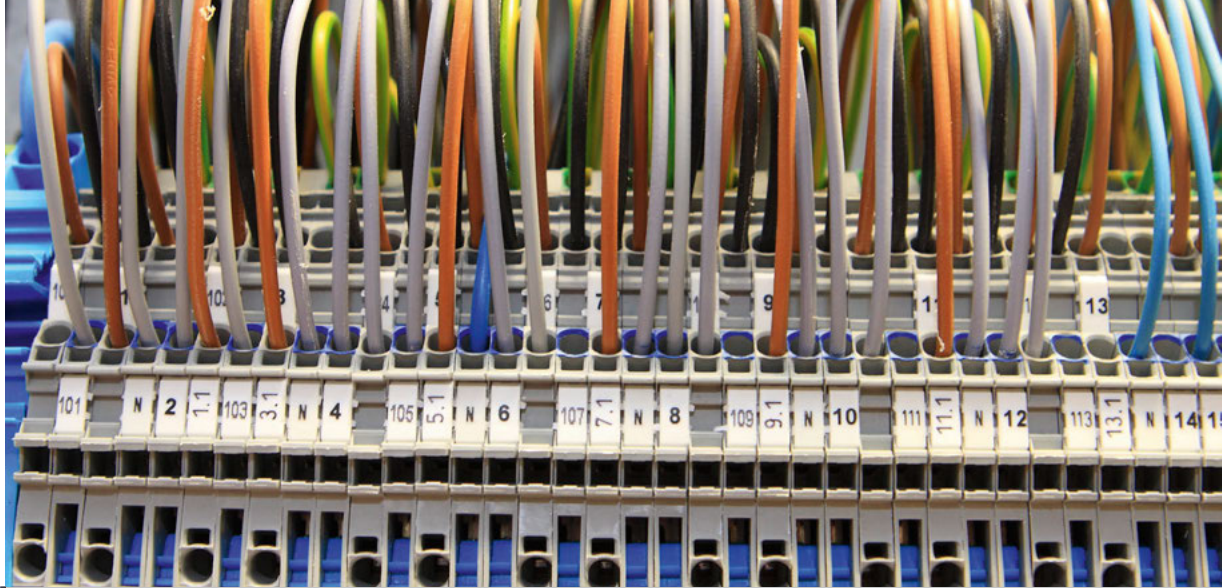


Air circulation:
professional and mobile

RADIAL FANS



Mobile high-pressure
radial fans



AIR CONDITIONING SOLUTIONS FOR OVERHEATING PROTECTION

Air conditioners

In summertime many switch towers are cooled using mobile air conditioners of the PT series to avoid failure of the electronic system due to overheating.

Design, functionality and performance characteristics of the PT cooling units are consistently geared to the use in frequently changing surroundings under rough conditions. Thanks to robust wheels, the devices can be easily transported and due to their compact dimensions fit through every door and into every elevator. All operator and control displays are easily accessible and mounted recessed for protection.

For an interruption-free cooling operation the commercial air conditioners of the PT series are provided with a gas-controlled defrost unit. After positioning in the final location the units are ready for operation in a matter of minutes. Especially advantageous for quick and uncomplicated installations is the unique water cooling circuit of the PT-W models. The connection sets for PT air conditioners come equipped with high-class quick-lock couplings to quickly install water and power lines between heat exchanger and air conditioner. That way, connections can be accomplished in a quick, clean and easy manner over a distance of up to 40 m.

Due to their high cooling capacity and air flow rate, the mobile air conditioning systems, once in operation, can cool down the temperatures even of large rooms to 10°C in next to no time depending on the operating conditions.



Heat accumulation

Summer heat can become a problem in many technical domains. Trotec makes sure that the professional cooling is always targeted at your demand.

COMFORT AIR CONDITIONERS

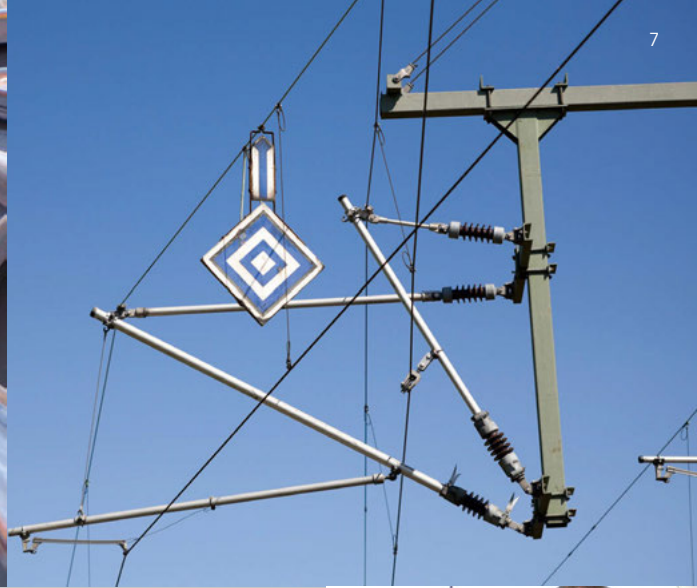


Small, compact and versatile

COMMERCIAL AIR CONDITIONERS



High cooling capacity in almost every location



MATERIAL TESTING

MEASURING DEVICES FOR RAILWAYS

The sound locating method for wheelset checks

The combination detector LD6000, developed for leak detection and acoustic pipe location, can well be used to detect material damage at wheelset bearings.

The frequency analysis takes advantage of the fact that sound waves render information about the condition of materials audible - material failure sounds different than a sealed surface. The LD6000's technical operating principle is based on the amplification of sound registered by the vibration sensor, the frequencies of which can be visualized on the high-resolution colour graphic display with touchscreen function. Particular attention is to be paid to the functions, e.g. filter, sound level value storage, minimum level, analysis and headphone overload protection. All filters and parameters can be freely configured in case of the LD6000. The procedure is simple: The noise levels of various measuring positions at the wheelset are compared and examined for differences. It's safe to assume that the "loudest" measuring position will indicate the material failure. Consequently, the sound locating method constitutes a safe and simple possibility of detecting damages at train wheels and for accident prevention.

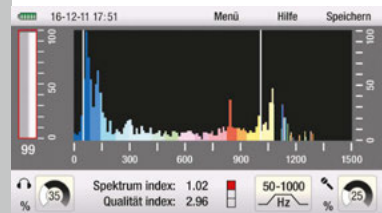
Pipe detectors

The pipe detector SR24 is suited for the inspection of above-ground and underground supply lines along the railway line. The FFT high-performance correlator LD20HC for the analysis of water pipes. Furthermore, Trotec offers XC300 thermal imaging cameras for the inspection of electrical components and lines.



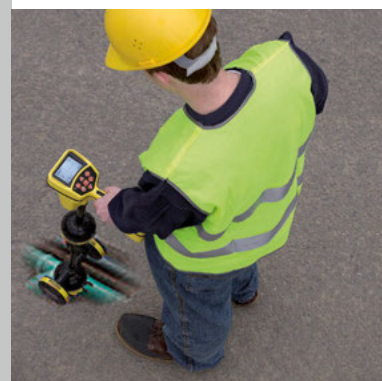
LD6000 combination detector

Using the LD6000 a bearing failure at a wheelset of the ICE 3 can be examined.



Measurement image
"Running noise wear"

Graphic display of the LD6000: Diagnostic analysis of running noises typically coming from a worn wheel bearing.



Pipe detector SR24

Simple and reliable detection of supply lines.

THERMAL IMAGING CAMERAS

Precise thermographic real-time measurements

PIPE DETECTORS

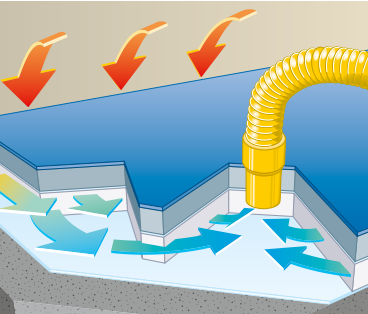
Quick, easy and precise pipe location

COMBINATION DETECTOR

Material inspection of wheel bearings

CORRELATOR

For leak detection at pressure pipe lines



Low-pressure procedure

Schematic representation of drying process using the low-pressure procedure.



A piece of German engineering art – 100 % Trotec:

The Qube+ is the innovative all-in-one solution for modern, economical insulation drying.

INSULATION DRYING OF WAGON SANDWICH FLOORS

Reliable drying

Trotec also provides railway employees with the appropriate technology for water damage restoration: The insulation dryer Qube+ is the best choice for drying wagon sandwich floors.

Trotec is the innovation leader on the drying market and a pioneer in terms of system solutions for low-pressure drying, which we as the first producer have consequently been launching on the market already since the mid-nineties.

Applying the low-pressure procedure, humid air is extracted from the insulation layer using vacuum turbines. This way, a vacuum is created in and around the insulation layers, which balanced itself out due to trailing room air dried by dehumidification devices through open border joints or other discharge openings.

With the Qube+ Trotec has developed an innovative combination insulation dryer that comes ready for connection with all integrated parts: a powerful VX 5 turbine insulation dryer, a water separator, a 4-stage filter system and an efficient silencer - ultra-compact, united in a robust, stackable aluminium construction, offering notable advantages and at the same time causing considerably less costs than multi-device solutions.

Surface drying can be controlled and thus accomplished in a more reliable, fast, even and efficient manner by connecting the smart drying control unit DA 4 Qube. To further speed up the drying process after water damages we recommend the application of Trotec high-performance blowers such as the TFV Pro 1.

Insulation drying:

QUBE+



Flexibly applicable integral solution

DA 4 QUBE



Drying control unit for remote monitoring

Radial fan:

TFV PRO 1



For speeding up the drying process



SEASONAL DEMAND? ALL DEVICES CAN ALSO BE RENTED!

Benefit from top conditions - all over Europe

Since 1994 the company TKL has specialized in leasing equipment for climate conditioning, heating, air treatment, ventilation and measurement engineering tasks. As one of the European market leaders with subsidiaries in Germany, Turkey, France and Italy we provide a comprehensive range of services as well as access to more than 10,000 rental appliances.

You need heating devices, central heating units, air conditioners, insulation dryers or fans for temporary application relating to railways at short notice? Just rent them, then. In our TKL rental portal you can find devices of all performance classes at a favourable price!

www.tkl-rent.net

TKL TROTEC
RENTAL DIVISION



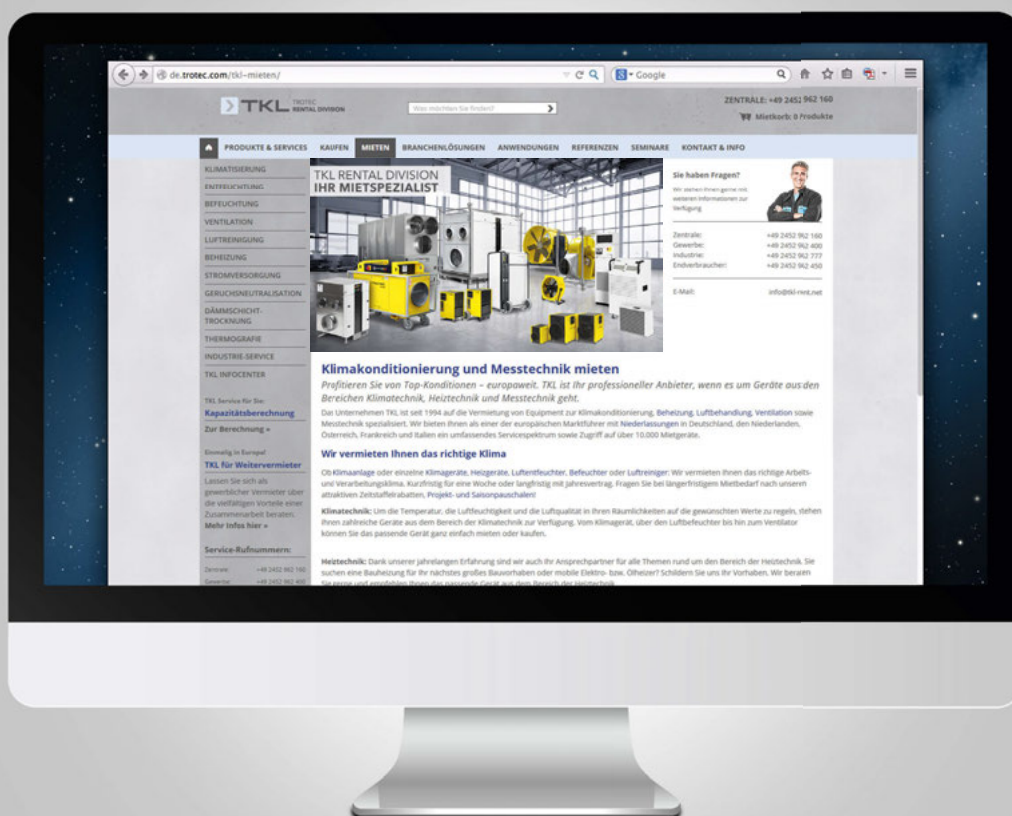
Throughout Europe in stores nearby!

Europe's prime address for failure intervention and temporary demand. For 20 years now we have specialized in hiring out devices for climate conditioning.



More than 10,000 rental appliances for every requirement

Your demand for professional equipment for climate conditioning, air treatment or ventilation is only temporary? And at short notice? Then your request for a rental appliance from the TKL division is spot-on.





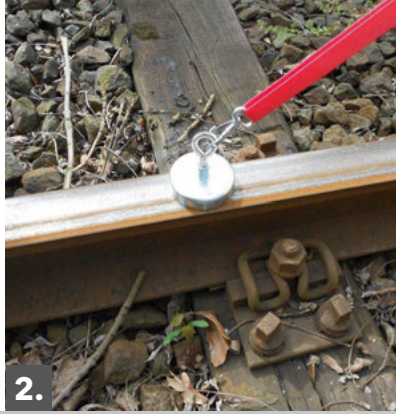
TRACK CONSTRUCTION WORK TENTS WITH RAIL FIXATION.

Unparalleled in the industry.

Track construction work tents are based on our tried and tested assembly work tent of type "KE" and were further developed specifically for the requirements of the railway industry. Unparalleled in the industry so far is the innovative magnetic fixing solution directly on the track. It has been tested by the Belgian railway company with trains passing on the siding. You can watch it on youtube.com by entering the search term "Gleisbauzelte" (the german word for "track construction work tents").

A few practical benefits:

- Designed for welding work in the track construction
- Flame-retardant special equipment
- Secure magnetic attachment directly on the track
- One-man assembly and disassembly in a matter of seconds
- Perfect protection from rain, wind and cold due to welded processing
- Suitable for high-pressure cleaning
- Self-supporting construction with fibre glass rods
- Lightfast material
- Optionally available as storm tent



1. One is enough

As quick-to-pitch tents our track construction work tents can be erected by just one person in a matter of seconds.

2. Innovative

The rail fixation is quickly done, secure and simple as well.

3. Stable

Optionally, the KE-R tents can be converted into stable storm tents.

4. Temperature-independent

Comfortable working owing to warm air supply by means of oil and electric heating units.

5. Well ventilated

Rear view with flame-retardant side windows and vents.

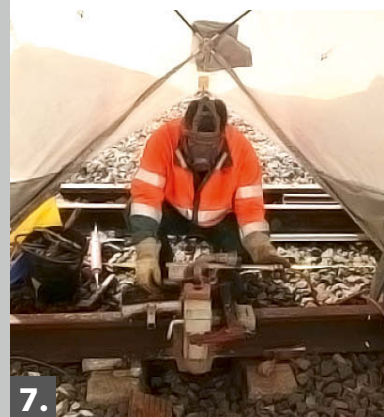
6. Flame-retardant

Reliable protection during welding work.

7. Protected

Safety thanks to focussing on the essentials – always sheltered from wind and weather when working.

Our KE-R track construction work tents are available in several formats with a floor area from 3.24 m² to 9 m². Feel free to contact us!



Heat-resistant material protects during welding work.

In order to afford protection during welding at railway tracks, a track construction tent needs to be heat-resistant and preferably fire-proof because of the flame of the burner. Therefore, all Trotec track construction tents come equipped with a tent roof that is flame-retardant to the point of 500 °C.

One-man erection via magnetic attachment.

The innovative fastening enables one-man assembly and tent fixation in a matter of seconds. Simple and functional. The magnetic fixation is placed on the rail and secures the track construction tent by use of tensioning straps. A substantial advantage as compared to conventional fastening methods using rods underneath the track and similar complex solutions! After being fixed to the rail, every KE-R tent can be erected as typical quick-to-pitch tent in next to no time.

Impressive features:

- Standard colours: white-yellow, special colours or individual corporate design possible
- Incl. tensioning straps and magnetic fixation
- Heat-resistant side walls and flame-retardant material (up to 500 °C)
- 3 concealed rain-proof zip fasteners up front
- Door and rear wall can be folded up completely or in part
- 6 ventilation openings with rain protection
- 4 carrying handles for repositioning
- Reflective strips
- 2 lockable air vents with grid and rain shelter cloth
- Incl. transport bag

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The Trotec Group is a producer of machines, measurement technology and assembly work tents. We are all about solutions for optimum climate conditioning of temporary and stationary workspaces and work processes. Our customers come from various sectors of the industry, crafts and trade.

We continuously introduce innovative solutions onto the market - most of them "made in Germany". In addition to our solutions for sale or rent we further offer complementary services and trainings.



TRT-BB-ESB-HS-004-EN

 **TROTEC**
AT WORK.