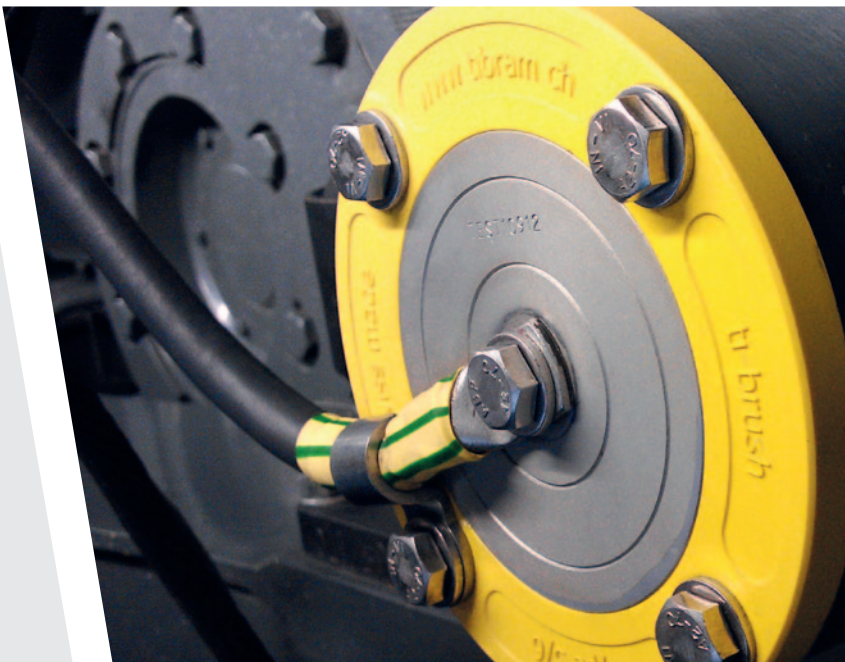


## **INNOVATIVE EARTHING CONTACTS FROM UETENDORF**

*The new earthing contact type 3/6 perfectly consolidates Tibram's technological market lead.*



Sliding contacts for earthing electric rail vehicles transmit currents that can reach up to 1000 amperes. Transmission via low-resistance bridging thereby prevents current from flowing through the wheel bearings. These can otherwise be damaged, even by very low currents, thus entailing enormous costs and serious safety hazards for rail operators. That is why our railway industry customers place so much emphasis on the highest possible product quality – such as that of Tibram earthing contacts.

Tibram has become a specialist in the production of first-class earthing contacts. Thanks to well-proven Swiss quality and systematic innovation management, the new earthing contact type 3/6 developed by our specialists in Uetendorf is well in keeping with Tibram's technological market lead.



**Dear Readers,**

I am pleased to know you are already enjoying the new Tibram Contact magazine! It gives you the latest news about our business developments and innovations.

**Innovations for our railway industry customers.** We always develop our new products according to the ongoing – and ever increasing – demands of our customers for innovation, efficiency, quality, safety and security. Thanks to Swiss engineering and work process efficiency, Tibram customers benefit again from innovative new products – such as our new earthing contact type 3/6.

**Customized metal processing for the railway industry.** More and more of our railway industry customers depend for their components on our extensive expertise and know-how, our widely varied offering, and our high degree of flexibility. Whether for bogies and axles, wheels or spare parts: we manufacture everything to perfection whenever and however you need us. Give us a try, and make the most of our efficiency and cost-transparency!

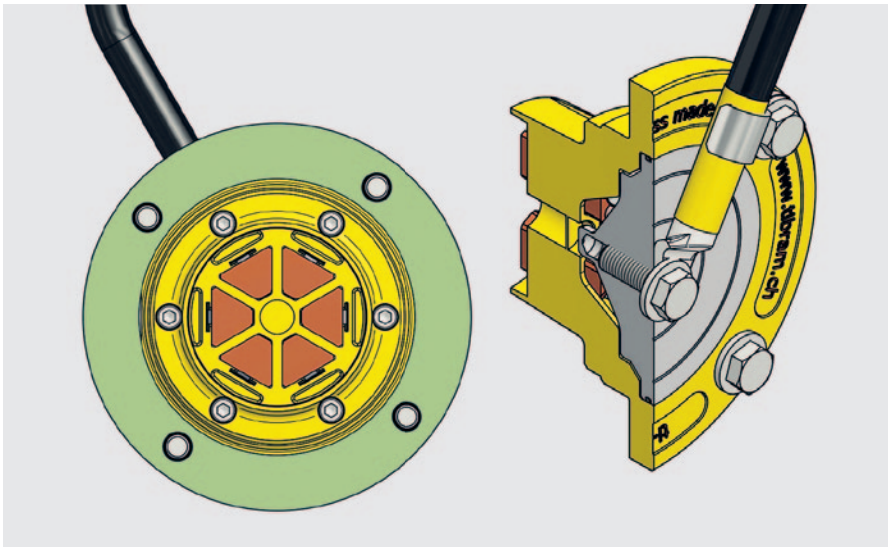
Wishing you good reading, and plenty of new ideas!

Yours sincerely

A handwritten signature in black ink, which appears to be 'Stefan Schürch'.

Stefan Schürch  
Proprietor Tibram AG

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**Tibram earthing contact type 3/6**

- Number of carbon brushes: 6
- Type designation: fully insulated
- Maximum current: 600 A
- Applications: locomotives, railcars, express trains, suburban and subway trains
- Weight: about 1.5 kg

**Also worth knowing**

Ever since their market launch, Tibram earthing contacts have always had wear-free contact disks.

Tibram is committed to developing, producing and supplying earthing contacts with the following advantages:

- Absolutely dependable operation over the entire lifecycle
- Assurance of safe and secure rail operations
- Rapid return on investment for rail operators (thanks to low lifecycle costs)

The outstanding quality of these new earthing contacts type 3/6 can be summarized in seven invaluable benefits as follows:

**1 Optimized maintenance.**

Earthing contacts are subjected to different forms of stress and wear, depending on the track profile, the distance travelled, and the predominant environmental conditions (temperature and humidity). Rail operators have to check these effects and

the resultant wear and tear at regular intervals, and take the necessary measures to replace wearing parts such as carbon brushes. Maintenance work involves considerable time and cost outlay for removing and dismantling the earthing contacts into all their individual components. On top of this comes the logistics outlay required for ensuring that all the spare parts are on hand in sufficient quantities. With the earthing contact type 3/6, Tibram has developed a product that needs no maintenance. Thanks to its design, visual inspection is enough to check these earthing contacts for wear and tear. And when the admissible wear limit has been reached, all that is necessary is to replace the earthing contact as a whole. This reduces maintenance and logistics outlay to a minimum, because only one single component is involved.

**2 Easy to install.** This new earthing contact is installed with only four bolts, and the cable holder is mounted directly on the housing. For this reason, no additional cable fasteners are required any longer.

**3 High electrical conductivity.**

To comply with modern standards, electrical resistance between the locomotive or car body and the rails must not exceed 50 mΩ. Furthermore, as little as possible of this resistance should be attributable to the earthing contacts. Tibram therefore sets a maximum limit of 2 mΩ for resistance between the contact disk and the carbon brushes. In collaboration with Berne University of Applied Sciences, Tibram carried out an extensive test series whose results proved that the electrical transition resistance is less when a greater number of carbon brushes

**Successful field trials**

Apart from all the standard tests and laboratory runs, Tibram also carried out thorough reliability trials with the new earthing contact type 3/6 on the Jungfraubahn, BLS and Swiss Federal Railways. These railways were specifically chosen because each of them places very different demands on the earthing contacts:

- The Jungfraubahn railways operate at extreme climatic and temperature differences
- The Berne Lötschberg Simplon (BLS) railway operates under local public transport conditions, with frequent stopping and starting accordingly
- The Swiss Federal Railways (SBB) operate high speed express trains

The earthing contact type 3/6 successfully mastered all these field trials prior to approval for series production. Only then was it ready for installation in locomotives and other rail vehicles. Tibram already booked the first projects and orders in spring 2013.

is used in the earthing contact. That is why Tibram increased the number of carbon brushes in the new earthing contact type 3/6 to six.

#### 4 Unexcelled dependability.

Tibram earthing contacts are reputedly the most reliable worldwide, because they are fitted with six separate springs and individually wired carbon brushes. This means that in the event of one brush being defective, only one sixth of the total brush contact area is lost. Products by other manufacturers generally use only two or three carbon brushes.

#### 5 Compact design and low mass.

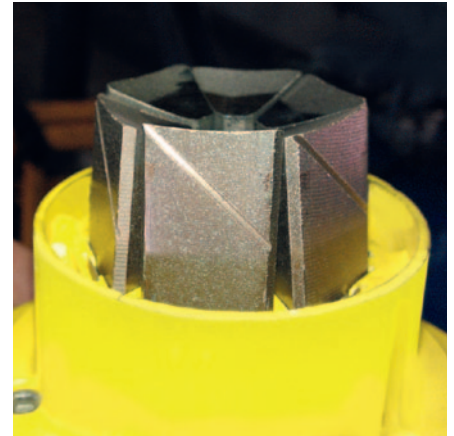
Thanks to the extreme compactness of this new earthing contact type 3/6, the entire assembly weighs about forty percent less than its predecessors among the Tibram product range. This has significant benefits with regard to wear and tear on the moving parts, because thanks to their lower mass, they are subjected to lower acceleration and deceleration forces. The new

earthing contact type 3/6 has the same dimension for installation on the wheel axles as the previous types.

**6 Great flexibility.** Thanks to its design – with circular arrangement of the carbon brushes – Tibram's earthing contact type 3/6 can be adapted to meet all the individual requirements of rail operators. If currents are relatively low, the earthing contact can be fitted with only three or four carbon brushes. As a general rule, the current through each carbon brush should be no more than about 100 amperes. The earthing contact type 3/6 can therefore carry a maximum current of 600 amperes, while configurations for 300 or 400 amperes are also possible.

#### 7 Professional logistics support.

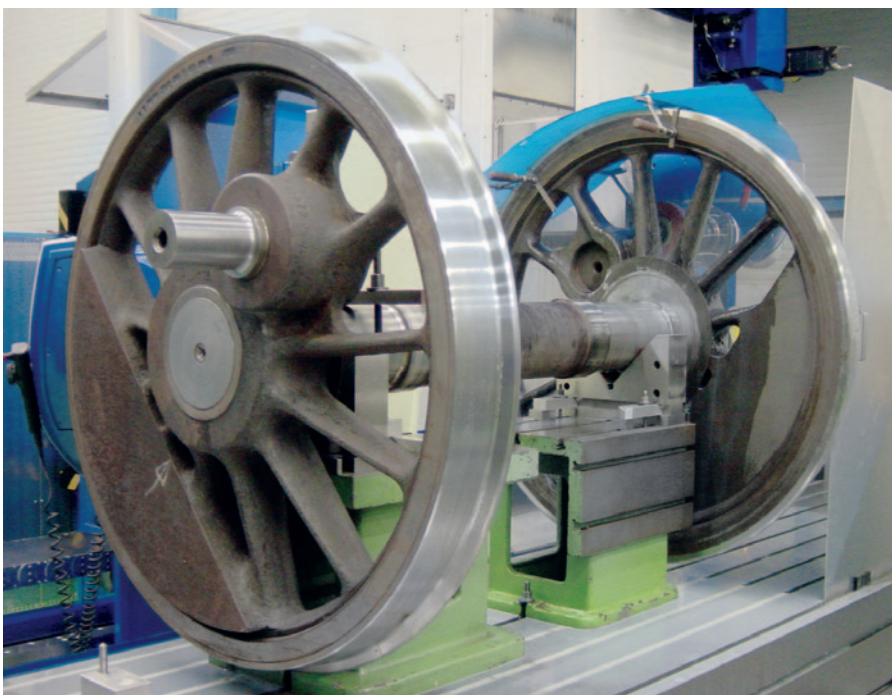
Conventional earthing contacts are made up of a large number of individual components. But thanks to the maintenance-free design of this new Tibram earthing contact type 3/6, rail operators will only have to look



Earthing contact type 3/6 with rounded carbon brushes (Jungfraubahn)

after a single article in future. The Tibram production and assembly organization is so perfectly optimized, that new earthing contacts can be delivered within only twenty-four hours. This saves rail operators substantial storage costs and logistics outlay. Furthermore, this new earthing contact type 3/6 is fully compatible with all other Tibram earthing contacts.

## METAL PROCESSING FOR THE RAILWAY INDUSTRY



Machining a driving wheel axle of an SBB CE 6/8 «Crocodile» locomotive

Thanks to long-standing experience and know-how, innovative drive, and a state-of-technology production infrastructure, Tibram is also a trusted partner to the railway industry for manufacturing CNC-controlled milling and turning parts as well as for complete assemblies. Customers also profit from the specialized know-how and additional capacities of Tibram's affiliated companies Jost AG and Jasinox AG. Tibram can therefore take over all kinds of contract manufacturing assignments from railway customers, whether for overhauling or refurbishing existing components such as axles, or for manufacturing new ones including wheels and complete bogies.

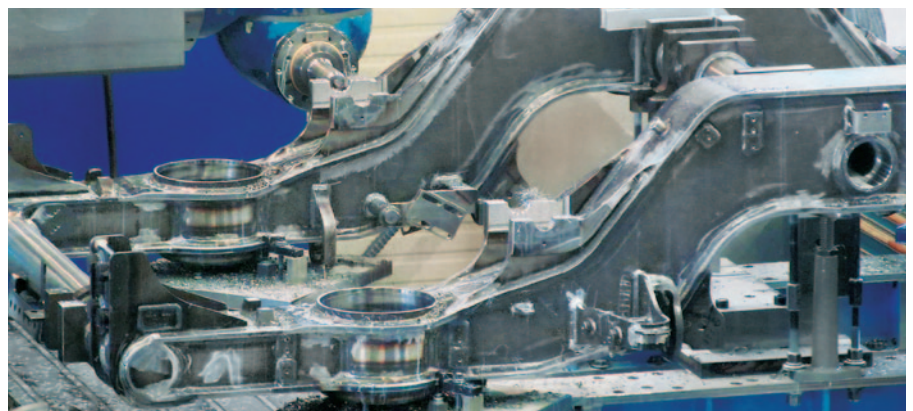
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Tibram's railway customers profit from the following advantages:

- **Comprehensive expertise:** rail technology and manufacturing know-how under one roof.
- **One-stop shopping for all kinds of metal processing:** turning and milling, locksmithery and assembly.
- **Minimal interfaces:** the same partner whether for individual components, small batches or complete assemblies.
- **Quality and dependability:** a highly efficient team of designers, polymechanics and production mechanics, plant and equipment engineers, working hand-in-hand.
- **Flexibility:** fast decision-making, well thought-out processes and highly committed employees guarantee punctual short-term delivery.
- **Consulting support:** our entire design team is at your service.



Machined wheel-set disks for the BLS railway



Motor-bogey production for Stadler Rail

**Tibram's CNC machining services**

- **Workpiece sizes**  
from 20 mm to 8000 mm
- **Milling**
  - Various horizontal machining centres with up to 1600 mm traverse
  - Rigid-bed and gantry milling machines with up to 6500 mm traverse
- **Turning**  
workpiece diameters from 20 mm to 1600 mm and lengths up to 4000 mm



Turning and milling a wheel-set disk



Turning a wheel-set axle

**AND WHAT CAN WE DO FOR YOU?**

**Your Tibram contact partners**

**For earthing contacts**

**Timotheus Gfeller**  
Head of Rail Technology  
Phone +41 (0)33 345 06 59  
t.gfeller@tibram.ch

**For metal processing**

**Marcel Gasser**  
Plant Manager  
Phone +41 (0)33 345 06 58  
m.gasser@tibram.ch

**TIBRAM AG**

Rail Technology

Industriestrasse 2  
CH-3661 Uetendorf  
Phone +41 (0)33 345 10 57  
Fax +41 (0)33 345 59 57

www.tibram.ch  
info@tibram.ch