NEWS

TeroLab Surface

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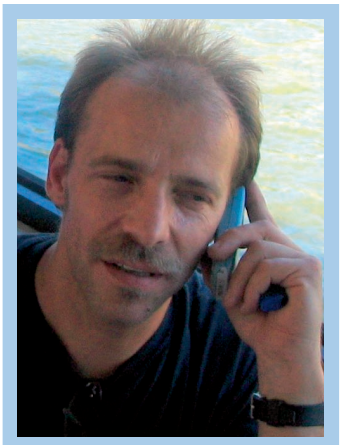


Stefan Koppers, Chief of the Betriebsrat:
«The ‹Betriebsrat› (works council) considers the company's situation, he is aware of business challenges.»

«It is important to make compromises»

Since 1995 Stefan Koppers is the chief of the TLS' «Betriebsrat» (works council) in Germany. In this function he represents the interests of about 80 employees. Stefan Koppers carries out his function as chief of the «Betriebsrat» in addition to his work as plant electrician.

TLS works council Langenfeld (Germany) receives new work safety documentation from safety inspector.

What are the main tasks of the chief of the «Betriebsrat»?
The chief of the «Betriebsrat» takes over the pre-negotiations with the management of TLS Germany. He informs the other «Betriebsrat» members about the discussions with the management and vice versa informs the management about the decisions of the «Betriebsrat».

Could you name a typical situation in which an employee asks for your support?
Problems in his personal field of work, i.e. he is supposed to produce good quality but his tool is not that good. Problems regarding work safety, i.e. open gates in winter which affects the health of the work force. Quarrels between colleagues, if someone feels himself unjustly treated.

How does the collaboration with the management work?
The collaboration is based on trust. Sometimes there are schedule difficulties or it takes some time to get the necessary papers from the management. It is important that the management respects the requests of the «Betriebsrat». But most of the time it is a «working together» situation. The «Betriebsrat» also takes into consideration the company's situation, he is aware of business challenges and that it is no good just to consider the interests of the employees. For the future of the company it is vital to make compromises.

What are typical fields where the «Betriebsrat» has the right of co-determination («Mitbestimmungsrecht»)?
The «Betriebsrat» has influence in the field of hiring, terminations, personal measures, overtime, health and safety protection, environmental protection, organization of the working place, working time and others.

What was your greatest success as chief of the «Betriebsrat»?
Basically the finalization of a «Betriebsvereinbarung» (agreement between the works council and the employer concerning working conditions) is a success. It is a written agreement which gives the employees more rights and respectively more safety. My success is that the workers trust me.

What is your current concern?
It is important to find other solutions than terminations. We are in need of young skilled people, we have to train young people. And we also need to keep experienced people in the company. Our experienced work force is on average aged 45. Some skilled people will retire in a few years. We need a good forward plan. It is important that the highly experienced «elder» staff train young people, we need the time ahead of us so that they give their knowledge to the younger ones.

What do you do in your free time?
I enjoy playing in a band as a drummer. From time to time we give a performance. We also played at the 2006 TLS' summer event.

Interview: Ellen Gall

TLS surface engineering

Editorial

My dear Friends,

We are already approaching the end of the year and 2006 shall soon be behind us. A time to reflect on achievements and on challenges to come. TLS Group has enjoyed a strong recovery in the first three quarters of the year. Our strategy is to consolidate our position before embarking on important new projects in 2007.

I wish to congratulate all of you for this effort and I praise the sense of responsibility and compromise shown by all in the interest of the Group.

It is my belief that the human person should be at the heart of corporate enterprise. The development of individuals is in no way opposed to the economic interests of a business. On the contrary, it is a prerequisite for the enterprise to last and for its growth and its ongoing contribution to the common good to be sustainable. I am happy for all in TLS to have a voice and to share their experience and knowledge. Our Newsletter is one of many ways to achieve this communication.

Christopher H. Wasserman
President

Hard chrome and its replacement by thermal spray coatings

Thermal spray coatings are a versatile and cost efficient way to replace hard chrome applications increasingly hampered by environmental, health and safety regulations. According to the technical requirements the best fitting spray coating solution can be chosen.

Hard chrome is a chromium coating with a thickness of over 10 µm deposited by electrolytic process (hard chrome plating).

Hard chrome plating is a very well trusted coating process, thanks to the following points:

- hard chrome is hard (800-1000 HV) and resists wear well,
- hard chrome is smooth and has a good tribological performance,
- hard chrome can protect against corrosion, when thick enough,
- hard chrome plating is a relatively economical process.

The applications of hard chrome are various. For examples, they are applied onto hydraulic cylinders, rotating shafts, aircraft landing gear, pistons, etc. However, the solution materials for hard chrome plating are toxic, corrosive and damaging to the environment. Therefore, costs have been steadily increasing, because environmental, health and safety regulations are placing increasingly stringent demands on the process operations and waste treatments.

It has become critical to industry to find alternative processes. To replace hard chrome, thermal spray technology has played an important role. Spray coatings are replacing hard chrome on aircraft landing gear, gas turbine journals and hydraulic rams, etc.

The main benefits of thermal spray technology compared to hard chrome plating can be summarized:

- a lower capital investment in equipment,
- much less expensive for waste disposal,
- when parts are large enough and the coating thickness requirement is high, thermal spraying becomes very cost competitive,
- the equipments have an on-site capability,
- individual applications can be optimized due to a wide range of spray materials and spray processes.

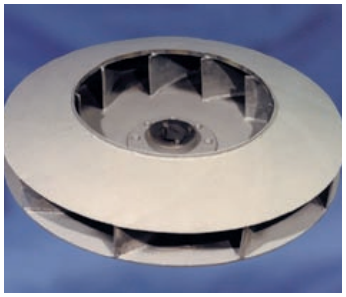
TeroLab Surface Group is one of the pioneers in the replacement of hard chrome by spray coating and today can provide different spray coating solutions to replace hard chrome. The environment-friendly technology and excellent coating performances have been well acknowledged by its clients.

TLS sells Wear Plates Technology License to US manufacturer

TLS Gotek®Composites have gained such an excellent reputation that a US company has acquired the license to produce and promote the TLS Wear Plates. Amongst other the TLS technology will be applied to treat parts for cement and power plants.

Kennametal Inc. a US based company is convinced by TLS Wear Plates and trust in the future of this technology. In September 2006 the US Company acquired the licence from TLS to produce and promote the TLS Wear Plate Technology in the US market. TLS produces the Wear Plates at its Gotek plant in Frankfurt and sells them under the Gotek®Composites brand in Europe. Gotek®Composites are alloys against heavy abrasive wear. The composites consist of semi-finished or finished parts forming the substrate, normally plates or flat bars, onto which anti wear alloy coatings, 2 to 8 mm thick, are deposited.

The protective layer consists of self-fluxing nickel based powder alloys and /or chromium and/ or tungsten carbides which undergo a special surface treatment through sintering in a furnace under vacuum. The wear protection coating offers a wide range of applications, i.e. in industries such as cement and wood processing or in power plants.



Unique resistance qualities: ventilator consisting of Gotek®Composites.

Modern railway equipment with TLS functional coating

TLS has developed special coating solutions for railway switching points allowing reduced maintenance costs and better environmental protection. With this technology TLS is breaking ground in a new and promising industrial field beside its partner CDP Bharat Forge.

Together with CDP Bharat Forge GmbH at Ennepetal (North Rhine-Westphalia/ Germany) TLS is responsible for the development of a coating solution of a modern railway component for switching points. While CDP is forging the railway components TLS develops and produces a functional coating which replaces lubricants and allows for low maintenance.
Thanks to TLS surface technology CDP Bharat Forge provides railway operating companies with low maintenance and lubrication free Clamp Lock Devices. Thus the railway components need not be maintained by workers applying lubricants. Moreover this lubricant free system helps to protect the environment. The railway components consist of two pieces, a bar and a clamp, onto which TLS deposits a molybdenum coating. Today the use of this kind of system is required by a great railway operating company which has registered TLS in the technical certificate.

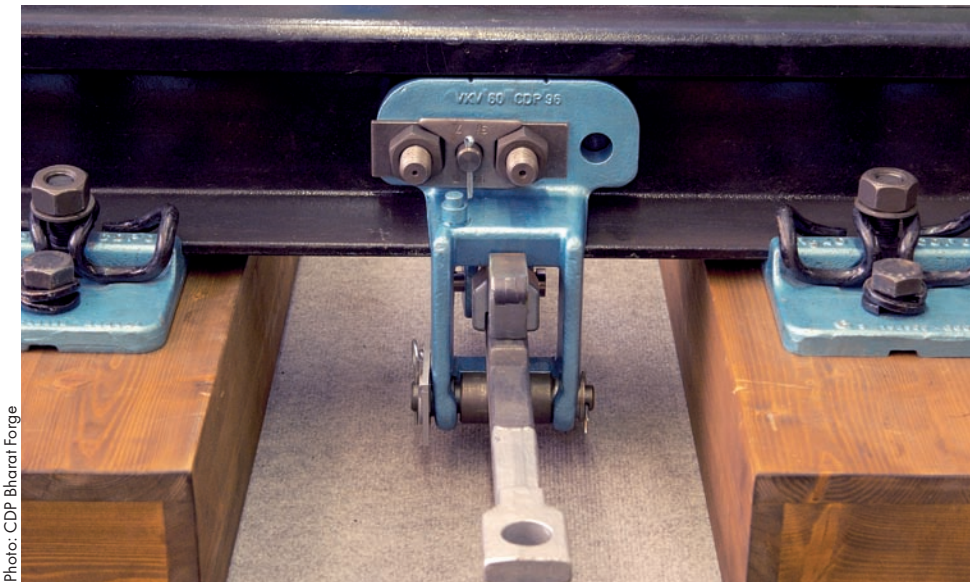


Photo: CDP Bharat Forge

No lubrication necessary: clamp lock device with functional TLS coating.

This year TLS produces coatings in this field worth more than half a million Euro turnover and expects an increased turnover next year. This is an important expansion of TLS railroad business and opens a promising perspective into the future.

Giant global players are cooperating to develop thermal spray coatings for car engines

Engine lines of the future in the motor industry could be equipped with thermal spray coatings. Internationally leading producers and universities have started a development project.

In a large German project (BMBF NKNM 03052105), the world's leading car producers are cooperating with universities and other industrial partners to develop high quality but economical thermal spray coatings for aluminium cast alloy car engines. The project aims to replace the cast iron engine liners with thermal spray coatings. The research work concerns development of coating materials, optimisation of spray processes and optimisation of coating machining processes. Engine lines of the future in the motor industry could be equipped with thermal spray coatings.
The project partners include:

- General Motors Powertrain-Germany GmbH
- Porsche Engineering Group GmbH
- DaimlerChrysler AG
- Ford Forschungszentrum Aachen GmbH
- Ford Werke GmbH
- Gehring GmbH & Co. KG
- Durum Verschleiß-Schutz GmbH
- GTV Verschleiß-Schutz GmbH
- Federal-Mogul Burscheid GmbH
- RWTH Aachen, Institut für Oberflächentechnik
- TU Braunschweig, Institut für Werkzeugmaschinen und Fertigungstechnik
- Universität Kassel, Institut für Maschinenelemente und Konstruktionstechnik
- Universität Duisburg-Essen, Institut für Produkt Engineering, Werkstofftechnik II

What's Up

25. January 2007
Die Technik des Thermischen Spritzens, Potenziale, Forschung, Märkte
DVS Forschungsseminar
Stuttgart
www.dvs-ev.de

11. – 15. March 2007
NACE International Corrosion 2007 Conference & Expo
Nashville, TN USA
www.nace.org/c2007

TLS surface engineering

TLS Medical is developing an innovative coating for implants

New biomaterials are about to innovate the orthopaedic implant industry. With its current development of coatings for polymeric implants TLS Medical is a front runner enabling high compatibility with the human body and new checking possibilities after surgery.

At present TLS Medical is developing an innovative coating for implants consisting of new biomaterials such as biocompatible polymers like PEEK (polyether ether ketone). The new biomaterials are about to revolutionise the field of the orthopaedic implant industry. Since 1999 PEEK biomaterial is approved by the US Federal Drugs Administration (FDA). The use of PEEK for orthopaedic and dental implants is also CE-approved.

The characteristics of PEEK provide a lot of benefits that will soon impose its use: obviously PEEK is not magnetic which allows analysis by Magnetic Resonance Images. The material is biocompatible. Moreover PEEK is transparent to X-rays which enables to easily read radiographs. The mechanical characteristics of PEEK are a future point of core importance, namely its density and its elasticity. In contrast to metal alloys which are used today the characteristics of PEEK resemble the human bones.

TLS Medical as well as important implant manufacturer like the Stryker Group are carrying out research regarding the use of the new biomaterials in their field. TLS is studying the possibilities of bioactive coatings of hydroxyapatite to deposit on this new type of substrate. Therefore TLS Medical is keeping in touch with Vitrex, the manufacturer of PEEK, as well as with US and European spinal implant manufacturers. The first results have been very promising. They have shown the feasibility of this concept which was discussed notably during the Congress «Implants 2006» in Paris in June. In the near future tests are undergoing with regard to the approval of the Federal Drugs Administration.

Insider Views

- The value of worldwide sales for coatings and surface treatment processes applied in manufacturing medical devices amounted to $2.96 billion in 2005.
- Already many Western European paint and coating manufacturers are either using or evaluating the potential of nanomaterials in their formulations.
- Frank Bremer was appointed Plant Manager at TeroLab Surface GmbH Werk Gotek Frankfurt.
- The «Prix Prof. René Wasserman» 2006 was awarded to Laurent Felberbaum (EPFL, Lausanne) for his thesis «Microstructure and Embrittlement of leaded Copper Alloys».

Paper Industry benefits from special TLS coatings with high surface roughness

Maintenance processes in paper mills can be made less cost intensive by a specific TLS technology that allows improved coating of new rollers as well as on-site-treatment of worn out parts.

Thanks to TLS special coatings of rough surfaces the rollers' lifespan can be tripled. Rollers need an effective and long lasting protection coating as they are under constant pressure through highly abrasive coated paper. Apart from protection the rollers require a functional layer, a special roughness, to roll up the web smoothly without damaging the paper.

Besides the coating of new components TLS' Austrian subsidiary is also carrying out on-site-coatings. They have developed a special clarifying treatment that can be applied inside the machine. Thus it allows the repair of the initial coating without the removal of the roller and without removing the old layer.

The result is a remarkable reduction of the maintenance costs: compared with ordinary coatings TLS coatings still have 80 % of its original roughness even after twice the lifetime.

Rough coating of a paper roller

TeroLab Surface

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