

TeroLab Surface

No. 10

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The voice of the leading expert
Prof. Dr. Erich Lugscheider

«Only by the means of innovation and high technology products we can face Chinese industry in the world market.»

«Thermal Spraying is more competitive»

Professor Dr. Erich Lugscheider, the former head of IOT Surface Engineering Institute at RWTH Aachen University and the world's leading experts of Thermal Spray, gave «TeroLab Surface» an outlook into the future.

What is the significance of Thermal Spraying in comparison to other coating technologies?

With Thermal Spraying we are able to produce coatings with nearly any material on nearly any surface. Due to the large variety of Thermal Spray processes we can adapt the coating technology to the technical needs of the customer and also to his economic circumstances.

Where do you see the future of Thermal Spraying?

There are many potential applications for thermal sprayed coatings, we will see more of them in the transportation industry, in the medical industry and mechanical engineering as well as in the energy industries. Thermal Spraying will play an important future role by replacing environmental critical materials such as hard chrome and will grow in repair and maintenance.

What are the technical trends in the field of surface technology?

We will see further improvements in the field of coating materials, the possibilities that are given by nano technology will be a driving force in materials developments. Hybrid technologies that means the combination of Thermal spray processes with other surface engineering techniques have a big potential.

Could you state general tendencies regarding the industrial clients' demands and requirements?

Our clients will demand a better coating quality at a lower price. Through a better understanding of the coating process itself we have to introduce lean production. This will make the Thermal Spray technology more competitive in comparison to other coating techniques.



Members of the TLS board meet with minister Cheng and professor Huang to celebrate breaking into the Chinese market.

You have had close contacts with China for years. What do we have to expect from this country?

China is the most expanding market in the world. We have to try to be faster in realising new ideas and we have to reduce our time-to-market.

Only by the means of innovation and high technology products we can face Chinese industry in an increasingly competitive world market.

Where does your next journey go to and why?

The most important event in Thermal Spraying will be the next International Thermal Spray Conference taking place in China in 2007. I expect one of the largest Forums on Thermal Spraying we ever had for the exchange of knowledge and business as well as for meetings of experts coming from all over the world.

What was your greatest «Faux pas» at a dinner with Chinese business partners?

At one of the first official dinners I attended in Beijing I failed to speak highly enough of China's most prestigious national drink called Mao Thai, for many Europeans a quite strange tasting «Schnaps».

Editorial

My dear Friends,

I am pleased to report that our strategic review and subsequent actions in 2005 have paid off.



After a difficult reorganisation process, TLS Group can look forward with confidence to its future growth and development.

2006 is the year of new market opportunities:

TLS Group will focus on a strong international marketing policy under the banner «One Company, One Market, One Salesforce».

Having regrouped its activities around three pillars of excellence

- 1 TLS Medical
- 2 TLS Parts & OEM
- 3 TLS Repairs and On-Site

TLS Group will sell its services in all of Europe.

In order to improve and strengthen the TLS Brand Name we are proud to introduce:

- New Logo and slogan: «TLS-Surface Engineering»
- New Corporate Name: «TeroLab Surface»
- New Website address: www.terolabsurface.com
- New Newsletter
- New corporate documentation

With the dedication, efforts and expertise of our skilled teams, these new tools will help us reach our natural place in Europe: market leaders in our fields of excellence.

*Christopher H. Wasserman
President*

Altairnano cooperates with Sulzer Metco

Nano-structures are the base of a joint effort to further enhance thermal spraying.

Altair Nanotechnologies Inc. (Altairnano), an innovator and supplier of advanced ceramic nanomaterials, announced recently that it has entered into a supply and distribution agreement with Sulzer Metco, one of the world leaders in thermal spray technology. Altairnano and Sulzer Metco have agreed upon a framework to supply and sell what is

projected to be tons of nano-structured titanium dioxide and nano-structured yttria stabilized zirconium oxide.

The parties will determine which Altair nano-structured powders will be manufactured and licensed for thermal spray applications and develop a five-year marketing and distribution plan.

Fast handling of Alstom Power's bulk order

Efficient handling allowed to make up for the delay of a late shipment.

With an outstanding performance TLS Repairs & On-Site has processed a bulk order for Swedish Alstom Power: The coating of tubes for boilers with a total length of 3 800 metres in less than three months. «Although we had received the tubes with a three weeks delay we shipped the coated tubes in due time respecting the required quality» says Franz Kreamsner the CEO of TLS Repairs & On-Site. «This was possible as we worked three shifts during the last weeks, 24 hours a day.» The tubes were coated by arc spray process. TLS shipped the tubes ready to use in the boiler. Apart from coating they had cut the tubes and provided them with a weld seam. The quality of the coating is represented by uniform thickness of 0.8 mm with a tolerance of only +/- 0.1 mm and bond strength of 25 N/mm². Every three to four years TLS Austria receives this kind of order when the parts of the boilers have to be replaced.



Proven flexibility: Boiler tubes of TLS Repairs & On-Site client Alstom Power were coated in extra shifts to compensate a delivery delay of three weeks.

OBZ and TLS start cooperation

Along with OBZ Dresel & Grasme, TLS Parts & OEM breaks new ground.

The exchange of technological know how and ideas is the objective of a cooperation between OBZ Dresel & Grasme in Bad Krozingen and TLS Parts & OEM. OBZ is the first company in our industry which has found industrial applications for cold gas spray. For this advancement OBZ received the René-Wasserman-Prize last year.

The associates intend to develop innovative spraying coating solutions for the future in joint projects. The two companies however keep their entrepreneurial independence. In autumn of 2006 it is planned to have a common booth at the «Surfacts» fair in Karlsruhe.

SCC for TLS Repairs

With regard to their Safety Management System TLS Repairs & On-Site successfully has passed the annual Safety Certificate Contractors audit in March valid till May 2008.

TECHNOLOGY

New Plasma Spray System for printing industry

Brand new high-tech equipment pushes TLS to the top in deposition of ceramic coatings on rollers for the printing industry.

TLS Parts & OEM has invested more than half a million euros in a modern automated plasma spray system especially designed for parts for the printing industry, which is used to improve efficiency. The typical parts to be coated are small anilox rollers and ink ductor rollers for the printing industry, depending on a hard, wear resistant coating and in the case of anilox rollers demanding for the ability of subsequent laser treatment. «We choose GTV equipment for three main reasons: technical excellence, price, and outstanding customised service», says Dr. Gregor Langer, CEO TLS Parts & OEM.

Thermal Spraying – a Coating Technology for High End Products

As an extremely versatile technology Thermal Spraying allows tailor-made solutions for a large number of industries.

Thermal spraying is used to provide components with a protective coating or with special surface functions. Due to high flexibility in selecting materials and processes the thermal spraying technology provides tailor-made coating solutions. A wide range of materi-

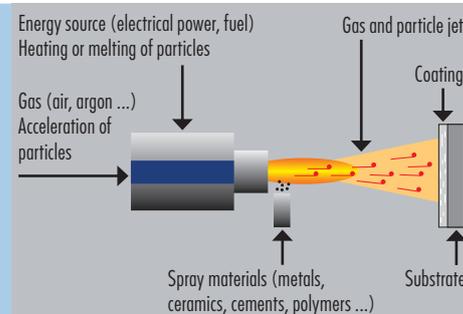


Diagram of a thermal spraying process.

als (metallic alloys, ceramics, polymers etc.) can be deposited as coating materials onto various substrate materials.

Shortened loading cycles

In order to reach a higher grade in terms of economics and quality, the coating automat is equipped with a state of the art handling system allowing the handling of parts outside the spraying booth. In addition, the machine is able to switch from bondcoat to surface layer deposition without manual intervention of the operator. During the coating deposition, the process is monitored by a high tech CCD camera system. This high-tech equipment pushes TLS to the top in deposition of ceramic coatings on rollers for the printing industry.

Chromia Coatings for the printing industry

Dense and smooth hard ceramic coatings guarantee superior results in printing units.

Hard ceramic coatings are used in the printing industry as wear resistant and colour friendly coating on rollers used for ink transportation in the printing unit. The coatings can be sprayed rather densely via the plasma spraying process and can be finished afterwards to a surface roughness down to $R_a = 0.03 \mu\text{m}$. These dense smooth coatings maintain a good stability in acids or bases com-

bined with a good take-on take-off performance for water based colours used in offset printing. The typical thickness of these protective layers ranges between 150 and 300 μm exhibiting porosity values of below 4 percent. Moreover, due to a high hardness combined with a low friction coefficient, chromia coatings are applied as sealing surfaces in various industries.

21 July 2006

ATeSP – Working Group Thermal Spraying of DVS-BV-Munich
Corrosion Protection
Linde AG and DVS German Welding Society

27 August – 2 September 2006

59th Annual Assembly of the International Institute of Welding
Quebec City (Canada)

07 – 08 September 2006

9. Werkstofftechnisches Kolloquium 2006
Lehrstuhl für Verbundwerkstoffe, TU Chemnitz

20 – 22 September 2006

Welding Congress
Aachen (Germany)

21 – 23 September 2006

International Thermal Spray Association
Fall Membership Meeting & Technical Program
Hartford, CT USA

04 – 27 October 2006

Workshop
European Thermal Spray Specialist (ETSS)
Schweißtechnische Lehr- und Versuchsanstalt SLV München

10 – 12 October 2006

Surfact. International Fair Surface Engineering
Karlsruhe (Germany)

10 October 2006

ATeSP – Working Group Thermal Spraying of DVS-BV-Munich
CE Labelling is essential for Thermal Spraying
Linde AG and DVS German Welding Society

09 – 10 November 2006

7th HVOF Colloquium «High Velocity Oxy-Fuel Flame Spraying»
Erding near Munich (Germany)

What's Up

Introduction of LEAN Manufacturing at TLS Medical

TLS Medical counts on the LEAN Manufacturing System which allows the manufacturing of implants for the human body at higher efficiency and with further improved quality.

In January of 2006 TLS has introduced the Lean Manufacturing System (LEAN = Link to Excellence and Application in Network). Based on Japanese methodological principles of organisation it was successfully introduced in the automotive industry in the 90s. «The state of mind of the people is an important thing. For being successful you need the support of the management and of the workforce» says Olivier Decaux, CEO of TLS Medical. «LEAN manufacturing is a constant improvement



Moving soon into new facilities: Virtual image of the TLS Medical's new headquarters near Paris.

implying equipment, materials in stock and procedures. Productivity has increased 27 % in six months.»

Insider Views

Glimpses from the world of surface technology.

- The US navy has successfully used the nano-structured coatings for a number of applications in submarines and other ships
- Linde AG is in an active acquisition policy phase
- All booths for ITSC Beijing 2007 have already been sold
- Technical conferences confirm European leadership in HA powder research and technology
- KBA-Mödling AG, Austria, part of the Koenig and Bauer Group, is investigating the implementation of Thermal Spray technology in their production line

Vacuum Plasma Spraying System for the coating of implants

Vacuum plasma spraying (VPS) allows a superior control of the process.

Since January 2005, TLS Medical has an operational vacuum plasma spraying (VPS) system. It is now used for development of new titanium coatings on new implants for the orthopedic market.

Complete absence of oxides and nitrides

In comparison with the former air plasma spraying (APS) system, this new equipment presents advantages of various kinds: the atmosphere in the spraying chamber is controlled and the entire system is monitored by computer. These two elements enable an unrivalled reproductiveness and control of the process.

TLS is able to complete its offer and forestall the demands of the American market and of legal regulation. Moreover, the spraying

takes place in a tight 5 cubic meter chamber. A primary vacuum (10–6 mbar) is created to eliminate the presence of oxygen and nitrogen in the chamber.

A low pressure of inert gas (between 20 and 895 mbar of argon) is regulated in the chamber during the plasma spraying. This system avoids the presence of oxides and nitrides in the coating and at the interface between the coating and the substrate.

Although very porous (~30 %), the VPS coating presents improved mechanical properties because of the absence of oxides and nitrides which usually weaken titanium APS coatings.

These new VPS porous coatings, which enable a better osseous anchoring around the implant, can be used with a hydroxyapatite topcoat to also improve bone growth.

TeroLab Surface

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