

LAYER

1/2009 The Magazine of Sulzer Metaplas GmbH



Moving Ahead Together

**Easy Accessibility Guarantees
Customer Closeness**

**“Particularly Smooth Surfaces”
IP Protection for APA Technology**

**Customer Portrait: Shop-in-Shop Solution
at KOKI TECHNIK Transmission Systems GmbH**

Closer to the Customer

Reconsidering Core Values



Valentin Bühler
Managing Director

Dear business partners

The crisis induced by the financial sector has now reached many parts of the real economy across the globe. Many customers – and Sulzer Metaplas with them – are suffering from this epic slump, whose depth and duration cannot yet be gauged. In these unusual and difficult times we want to place trust on Sulzer Metaplas' core values: Closeness to the customer, permanent innovativeness and reliability. You as a customer can count on that, now and in the future.

During the course of this year we will also be offering you additional state-of-the-art technology and staff know-how at our new location in Altbach. Learn more about the site on page 3. In the section "People in Focus" (page 8), LAYER will be introducing you to our in-house innovation team – namely, our Research and Development department.

The broad range of services for functional and decorative surface refinements of Sulzer Metaplas GmbH not only includes systems engineering and job shops

but also a further form of collaboration: Shop-in-Shop. The Niederwürschnitz site has been commissioned as a Shop-in-Shop solution. Short paths and efficient on-the-ground work is presented to you by LAYER on pages 4 and 5, which highlights cooperation between KOKI TECHNIK and Sulzer Metaplas.

But such a close partnership can also develop without the partners' close physical proximity. The association between Sulzer Metaplas and Umetoku Thailand Engineering (UTTE) in Bangkok cuts across the globe. On page 6, LAYER describes the challenges Sulzer Metaplas staff had to overcome when delivering a METAPLAS-DOMINO.

Achieving objectives requires moving dynamically into the future. This is how we define the present times: Take the opportunities!

Your **Valentin Bühler**
Managing Director

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New Business Location Provides Capacity in Southern Germany

Quicker Access to Coating Service

Sulzer Metaplas' Altbach site (see LAYER report in Issue 2/2008) will begin job-shop operations this year: initially with the METAPLAS-DOMINO for PVD coatings and later with IONIT OX®. In deadline-business with surface refining such as PVD and IONIT OX®, delivery time as well as freight costs are decisive factors for efficient processes.

"The location is an important element within our coating service network. It is part of the organic growth of Sulzer Metaplas. Here in southern Germany, we have many companies from the automotive, machining, and forming industries that will benefit from the easy accessibility of our service staff and our technologies. So we are adding capacity to satisfy existing and future local demand", Borris Gusel, Site Manager, notes in explaining why

"The location is an important cornerstone"

Sulzer Metaplas will be continuing to strengthen the site. For customers, quick access means not only quicker service and lower freight costs, but also a specific contact person locally.

The company developed the site using a "greenfield" strategy. Thus, the planners were able to align the architecture with expected processes as well as include good practise from other locations.

To enhance production throughput, the architects designed the new building in line with the basic principles of process optimisation. The system for heat recovery is a guarantee for energy-efficient heating. Sulzer Metaplas will in the future be implementing additional measures geared towards environmentally-friendly operations in the wake of further developing the site. ■

Overview of German locations:

- 1 Altbach
- 2 Bergisch Gladbach
- 3 Hohenlockstedt
- 4 Salzgitter
- 5 Niederwürschnitz



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Reliable Solutions for Gearbox Technology

KOKI TECHNIK Transmission Systems GmbH



When August Horch laid the foundations for today's Audi Corporation in the early twentieth century, this was the beginning of a tradition now over a hundred years old: automotive engineering in the economic region of Chemnitz-Zwickau in eastern Germany. In old East German times, the Trabant car was manufactured here. Today, the state of Saxony is an important location for Volkswagen.

The long tradition of KOKI TECHNIK Transmission Systems GmbH goes back even further. The original company, founded in 1890, today has sites in Niederwürschnitz near Chemnitz as well as in Constance, on the shores of Lake Constance. As a provider of systems for gear box parts, KOKI TECHNIK has been a supplier for the auto industry since 1946 and, with about 50 percent market share, is today one of the biggest manufacturers of gearshift domes in Europe (see picture). In 2008, this amounted to more than five million pieces. KOKI TECHNIK, in collaboration with its customers in the automotive industry, manages to ideally adapt its components to the growing demands of the practical use. "A specialty of ours is the comprehensive package of services: From development to prototyping, extensive testing, and

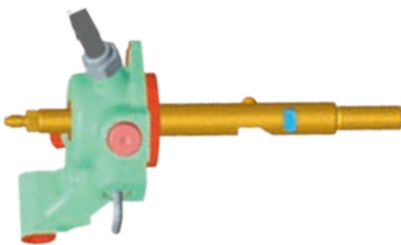
serial production – the customer gets a one-stop solution. Specialists develop a prototype based on customer data such as available mounting space and the designated function. After approval by the customer we test the part in line with the performance specifications so that it can then be serially produced. We are geared to a streamlined process that saves time and holds high quality standards", says Dr. Bernd Schulze, Technical Director at KOKI TECHNIK.

A streamlined process also requires quick solutions in terms of surface refinement: The systems technology of Sulzer Metaplas is directly attached to KOKI TECHNIK's production. The factory floors of both companies are only separated by a rolling shutter gate so that the parts can

„We give the customer a one-stop solution“

be moved from production straight over to coating (see picture on page 5). IONIT OX® is used in

KOKI TECHNIK's gearshift lever shafts. The process consists of gas nitrocarburising, plasma activation and oxidation and improves the surface hardness as well as abrasion properties of the parts. It also serves as a protection against corrosion and wear. Learn more about the benefits of Shop-in-Shop concepts in the interview with Dr. Schulze on the next page. www.kokitechnik-nw.de ■



The gearshift dome is a central control device inside the gearshift assembly of a manual transmission.



The gearshift lever shaft, the heart of the gearshift dome: In the Shop-in-Shop solution, it is coated at KOKI TECHNIK using IONIT OX® from Sulzer Metaplas.



Inner gearshift: The shift fork (blue) and the gearshift dome (green) together constitute the inner gearshift, which is the transmission between gearshift lever and gearbox. The perfect interplay of all components provides for a smooth changing of gears using a gearshift that transmits an ideal torque to the wheels.

“Ideal Solution for Us”

Dr Bernd Schulze on the advantages of the Shop-in-Shop concept

LAYER: Dr. Schulze, you have been working with Sulzer Metaplas since 2004 in the context of a Shop-in-Shop solution in Niederwürschnitz. Tell us about the reasons for making a decision in favour of this specific form of collaboration.

The Shop-in-Shop idea fits perfectly with our philosophy of streamlined and efficient processes. As all of our processes, from conceptualising ideas to producing the goods, take place under a single roof, we also place great emphasis on the execution of coating work in our immediate vicinity. In this way we can guarantee short throughput times and constantly monitor the quality of our products. Because of the direct integration of the Sulzer Metaplas technology into our production stream, the Shop-in-Shop is the ideal solution for us.

LAYER: You say that you like to have everything under a single roof – then why do you not take over coating by yourself too?

We concentrate on our original business area, gearshift components, and bundle all resources for that. Since coating is such a complex issue we are glad to be able to leave that to an expert. Thanks to the Shop-in-Shop solution, we are still always as close as possible to our products.

LAYER: What are the concrete advantages of the Shop-in-Shop concept in everyday work?

The closeness of our neighbour provides for very short paths. The decisive factor is timesavings, which is particularly visible in terms of logistics. We are not dependent on long transport routes. With any coating questions we may have, a technician of Sulzer Metaplas is always right there and even provides us with valuable advice during the development phase. This setup not only optimises our product features through coating, but also our processes: Take, for example, our gearshift lever shaft production, where we were able to eliminate a whole step in the production process thanks to the know-how of Sulzer Metaplas staff.

LAYER: Seen from the perspective of the customer: What effects for the buyer of the product does the close collaboration between Sulzer Metaplas and KOKI TECHNIK have?

As two companies specialised in their specific areas collaborate, the customer knows that he will get high-quality products at a good price-performance ratio. He thus trusts the specialists and benefits from the synergies.

LAYER would like to thank Dr. Bernd Schulze for the interview. ■



Dr. Bernd Schulze, Technical Director of KOKI TECHNIK Transmission Systems GmbH

Are you interested in a customised Shop-in-Shop concept?

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Close connection: The Sulzer Metaplas site is directly attached to KOKI TECHNIK's factory floor.



Shorts paths: From KOKI TECHNIK's production...



...the parts move directly on for coating using state-of-the-art IONIT OX® technology.

Challenges Mastered Together

New METAPLAS-DOMINO for UTTE in Bangkok

Finally the breakthrough: Now the new METAPLAS-DOMINO only has to be set on its place after being lifted through the precisely gauged hole. The wall of the building of Umetoku Thailand Engineering Co., Ltd. (UTTE) is the last obstacle standing in the way of the PVD system.

Earlier, the shipment from Bergisch Gladbach to Bangkok had been slightly delayed: The reason was the political unrest that led to the blocked airport in the Thai capital at the end of 2008. But, thanks to the good collaboration within the project team, the new system was able to be commissioned on time.

UTTE, the Thai subsidiary of Umetoku Co., Ltd. from Japan, offers surface re-

finement services, particularly for tool steel. After being founded in 1985, UTTE concentrated mainly on heat treatment. Today, CVD and, since 2007, also PVD coatings are further elements in the portfolio of the company's Bangkok operations. Most customers are small and medium-sized enterprises from the mould and die as well as toolmaking sectors.

Due to the high demand for PVD solutions in Thailand, UTTE now extended its capacities with the METAPLAS-DOMINO – in addition to an already existing Sulzer Metaplas PVD system. In the interview with LAYER, the UTTE staff members Yoshikatsu Kagoya, Vice General Manager, and Norio Mitsui, PVD Manager, talked

about the reasons that led to investing in the new METAPLAS-DOMINO.



Not even a concrete wall on the first floor was an obstacle for the METAPLAS-DOMINO.

LAYER: Why did you decide to take over PVD coating by yourself instead of continuing to rely on external job shops in 2007?

Yoshikatsu Kagoya: Modern Sulzer Metaplas systems decisively enhance options in the area of PVD. Demand for such surface solutions has significantly increased. Moreover, requirements for coatings are increasing and becoming more and more specific. Many of the suppliers do not specialise in the forming tools we coat. For us, it is important to be able to guarantee reproducible quality and delivery dates. And this is only possible if we do the coating in-house.

LAYER: What particular relevance does the commissioning of the new system

METAPLAS-DOMINO have for UTTE and its customers?

Kagoya: The new system gives us higher capacity and greater flexibility in the area of PVD. It is now possible for us to serve customers in a more individual way while at the same time enter into new market segments.

LAYER: What technological features of METAPLAS-DOMINO convinced you to make this investment?

Norio Mitsui: The system offers evaporator technology and sputtering in one. This hybrid technology is of great importance for our largest customer segment, which works in forming. Thanks to the APA technology (see report on page 7, note by the editors), we can improve the

quality of standard coatings and are also able to work productively in terms of time savings.

LAYER: Besides the technology itself, what made you decide in favour of Sulzer Metaplas?

Kagoya: A good system alone is not enough. For us, the transfer of Sulzer Metaplas' know-how was very significant. This took place in extensive pre-order talks and moved through turn-key installation right up to custom training on the new system.

LAYER would like to thank Mr Yoshikatsu Kagoya and Mr Norio Mitsui for the interview. ■



Jörn Penke (middle), Sulzer Metaplas Project Manager, describes the system's features.



Yoshikatsu Kagoya, Vice General Manager UTTE, during the interview with LAYER



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“Particularly Smooth Surfaces”

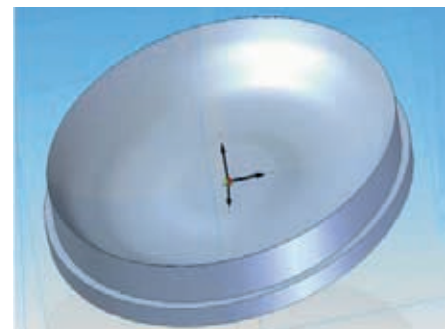
IP Protection for APA Technology

Patent applications have been filed in the most important industrial regions of the world for the Advanced Plasma-Assisted (APA) evaporator technology, developed by Sulzer Metaplas. The evaporators active in the METAPLAS-DOMINO PVD system can thus be used exclusively worldwide. APA optimises the conditions for layer growth by means of a strong plasma excitation. The concept of a vacuum arc vaporisation source has existed for some time: In a vacuum chamber, a cathode formed by vaporising material generates an arc discharge. The arc's energy vaporised the vaporising material, is ionised and applied to a substrate as a thin film.

The disadvantages of existing vaporising technology that uses rounded standard cathodes were limitations on material utilisation, frequent cathode replacement, and limited deposition rates. The newly developed generation of APA vaporisation overcomes these disadvantages. At the same time, it preserves the flexibility of the precipitative layers that comes with the application of quickly changeable,

round cathodes. Dr Jörg Vetter of Research and Development at Sulzer Metaplas and inventor of the APA technology was able to solve this problem: „Besides overcoming the typical disadvantages of standard cathodes, we were able to prove jointly with customers that the APA vaporising technology significantly reduces the entrapment of droplets in thin layers. This provides for a particularly smooth layer surface. In addition, the process itself becomes even more efficient: High deposition rates imply shorter coating times. The ideal target utilisation also reduces production costs.“ This is due to the improved arc lead that is a result of the special arrangement of all components, which ensures a more uniform cathode burn-off as well as better coating results. The system's magnetic fields can be flexibly adjusted. Thus, the arc vaporisation source can be tuned to alternating requirements. The platform for APA, METAPLAS-DOMINO, offers a wide range of opportunities for new coating architectures. With the help of APA, it produces high performance coatings such as the new Micro Alloyed

Coatings (MAC) Mpower, Mtec, and Mforce. Thus, the system is ready for tomorrow, both in terms of patenting and technology. ■



High efficiency: APA boosts cathode utilisation up to 60 percent through optimised lead of magnetic field.

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Time for Innovation

Investing into the Future
During the Crisis

The exact analysis of tools is the basis for innovative surface solutions.

Factors such as profitability and efficiency as well as environmental friendliness play a major role in the production of precision tools and manufacturing components for the industrial processing of high-quality materials. Sulzer Metaplas invests a lot of energy and human resource know-how into the continual optimisation of these qualities.

„Innovations as a basis for competitiveness“

Under the leadership of Dr. Georg Erkens, noted experts work on transferring knowledge into technological benefits and economic success in Sulzer Metaplas' Research and Development Department (R&D) at the Bergisch Gladbach site. "With increasingly dynamic markets, only innovations that are implemented successfully and quickly lay the basis

for international competitiveness", the Division Manager notes. The customer's product strategy and the development know-how of Sulzer Metaplas are given a common denominator in the R&D department in order to find the best possible solution for respective demands. Producers and users can – as partners of Sulzer Metaplas – set themselves apart from competitors and take a good position for future business, particularly in dynamic economic times.

On-location customer advisory services, part submission warrants, seminars, workshops as well as publications and conference presentations are just as much a part of the performance range of Sulzer Metaplas' R&D Department as its development activities. Issues covered

are the further or new development of coating technologies, the combination of procedures as well as process development and the optimisation of process flows.

Only through partnership-oriented collaboration with the customer is it possible to harness the innovation potentials and thereby secure long-term competitiveness. "Our goal is to transform knowledge and our expert know-how into added value for our customers in a quick and targeted way", Dr. Erkens summarises. "Sulzer Metaplas' R&D team invites all of our customers to benefit from our innovations. Now is the time to position yourself strategically through innovation." ■



Sulzer Metaplas' R&D team: Dr. Jones Alami, Dr. Jürgen Müller, Manfred Schmidt-Mauer, Dr. Jürgen Crummenauer, Dr. Jörg Vetter, Division Manager Systems Dr. Georg Erkens, Tariq Rasa, and Peter Zaruba (from left to right)

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METAPLAS-DOMINO

Serial Production in Bergisch Gladbach

“Customers particularly like the flexibility of the METAPLAS-DOMINO. This holds true both for the practical modular engineering design and for the versatile applications of the system”, is how Volker von der Heide, Sales Manager Systems at Sulzer Metaplas describes the advantages of this systems solution for production and development.

The customers are able to equip the METAPLAS-DOMINO in accordance with their individual requirements. Options range from evaporation technology and sputtering via a combination of these techniques all the way to PACVD. The

new system is also equipped to handle the new Micro Alloyed Coatings (MAC) (see report on the right).

“The aggregation of all of these options in combination with the extension potentials makes the METAPLAS-DOMINO a system that is ready for tomorrow’s business”, von der Heide summarises. ■

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Serial production of the METAPLAS DOMINO in Bergisch Gladbach

Sulzer Figures for 2008

Get all annual figures reflected in the 2008 operating results via the Internet at:

www.sulzer.com

In the section “Annual Results”

New Class

Successful MACs

Sulzer Metaplas has successfully introduced Micro Alloyed Coatings (MAC) to the market. “This new class of high performance coatings is presently one of the most innovative solutions for enhancing the performance of tools and components subject to high stress. Micro-alloying makes it possible to adapt to the requirements of a wide range of applications”, explains Dr. Georg Erkens, Division Manager Systems, Research and Development at Sulzer Metaplas. Additions of extra elements in the range of as little as 0.1 to only a few percentage points have a significant influence on the mechanical, physical, and chemical properties of a workpiece.

The first representatives of the MACs are Mtec, Mpower, and Mforce. With their unique properties, they provide greater efficiency in production. In the upcoming issue LAYER will be reporting on the development of the MACs and some positive lessons learned from practical application. You can find more detailed information on Mpower and the MACs in the Internet at www.sulzer-mpower.de ■



Drilling tool refined with Mpower

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