SULZER

Sulzer Metco

LAYER

2/2008 The Sulzer Metaplas GmbH magazine

Efficiency with M*power*

Simply Machining More Productively

Destination Shanghai
PVD Technology Enhanced Portfolio in China

Customer Interview:
Voha-Tosec Werkzeuge GmbH
Arenz GmbH

Mpower Performance

Getting Results Efficiently

Valentin Bühler
Chief Executive Officer

Dear readers

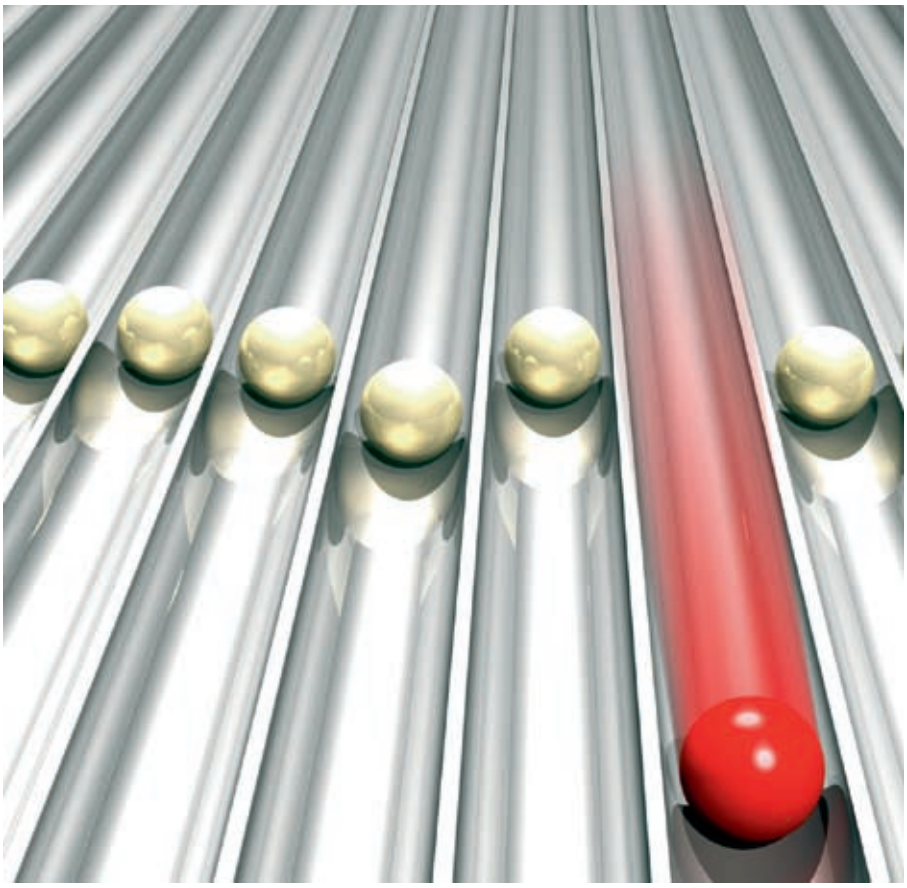
In the face of rising energy and raw materials costs, innovative solutions that both save resources on the basis of increased efficiency and uphold high quality levels are needed. New coatings such as Micro Alloyed Coatings (MAC) meet these requirements. Micro Alloyed Coatings are the result of hands-on research and allow for more efficient processes and products. LAYER will be introducing you to a representative of the MAC series on page 3: Mpower. There, you can find out how this coating decisively increases the efficiency of production processes. METAPLAS-DOMINO (see LAYER 1/2008), which manufactures the MAC series coatings, was relocated from the systems area to the job shops area within the Bergisch Gladbach location. On page 9 you will find further details on the kick-off of serial coating.

One of the focal points of this edition is customer proximity. In the last edition, LAYER reported on the establishment of our activities as a PVD coater in China. Following up on developments there you can find information on the transport of the new PVD coating system to Shanghai on page 8. Sulzer Metaplas is also close to the customer – not only in the Far East – in southern Germany where it has established a new service centre in Altbach. Learn more about this project on page 9.

In this edition, we will also be introducing our readers to two customers: The Voha-Tosec Werkzeuge GmbH from Lindlar has been working with Sulzer Metaplas for about 20 years. Werner Röttel, the company's Managing Director, describes on page 4 the advantages of close collaboration in developing coatings for milling tools. On page 6, Christian Euskirchen, Managing Director of Arenz GmbH from Meckenheim, explains in an interview with LAYER why coatings have a significant influence on the productivity of an extruder screw.

We wish you informative reading.

Valentin Bühler
Chief Executive Officer



Simply Machining More Productively

Increasing Cutting Rates With *Mpower*

In order to meet the demands of innovative production processes in terms of productivity increase and process efficiency, modern precision tools need to be continuously operated at the limits of process performance capability. For this reason, precision tools are subject to continual optimisation and enhancement.

"Exploit savings potential"

Various components determine the quality and productivity of a machining tool: Besides the basic material, the geometry and surface properties, the high performance coating is a decisive success factor.

The declared goal of surface refinement of precision tools is to exploit savings potential. In addition, the market expects this optimisation to be implemented within existing machine concepts. To arrive at the savings, the loss factors attrition and wear have to be minimised. An attrition and wear-free tool increases the material removal rate and thus raises the productivity and efficiency of the process considerably.

In practice, manifold structural-mechanical, thermal and chemical factors have an influence on the wear behaviour of tools. The effect of surface refinement can be just as manifold: It extends service life, optimises efficiency as well as productivity, imparts new boundary surface properties and improves performance. Greater complexity of applications exacts higher demands on the properties of a modern high performance coating. The high degree of tool specialisation and the quest for more efficient processes are the drivers behind the rapid developments of surface refinement processes in this area.

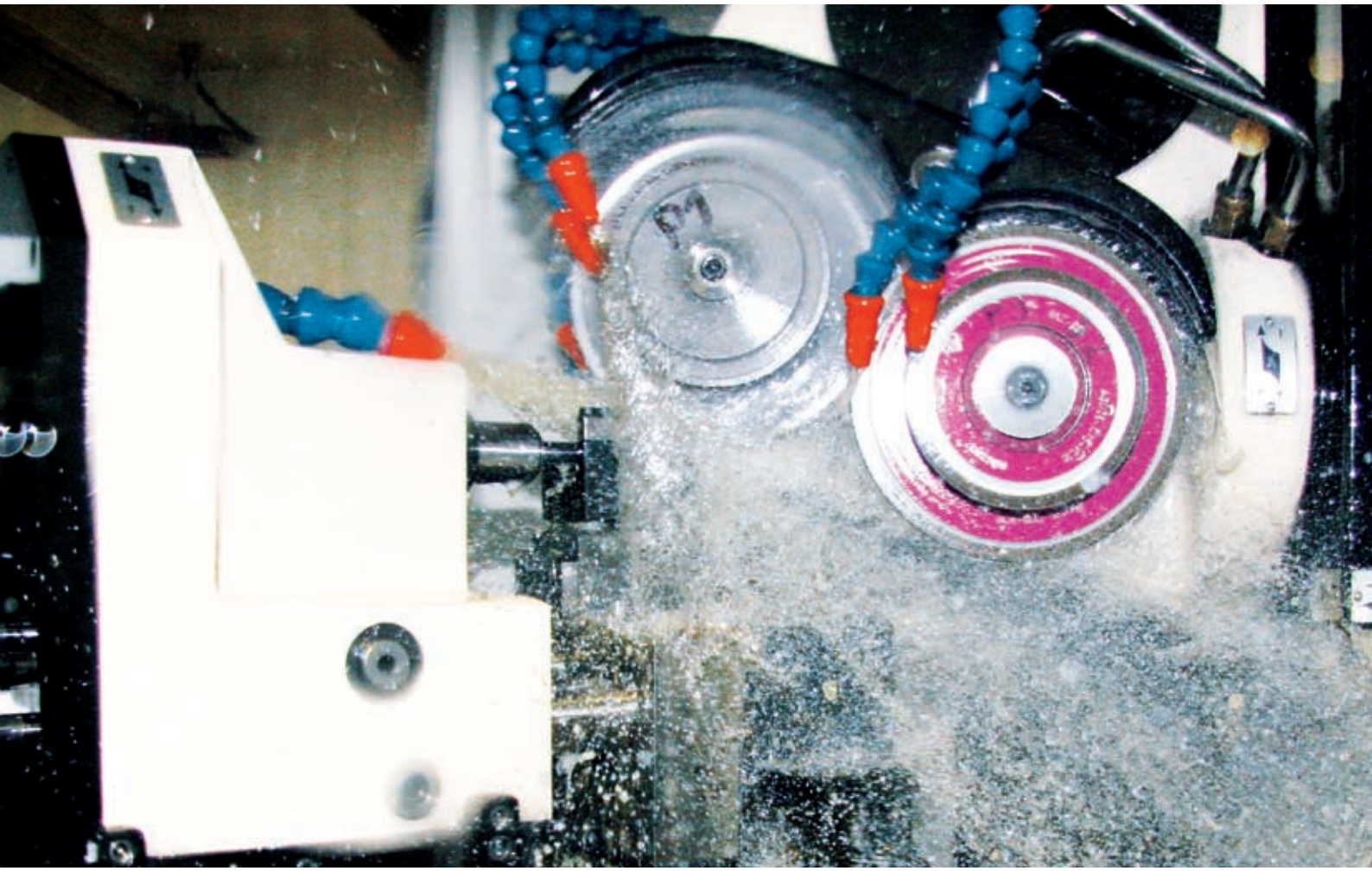
Sulzer Metaplas' Mpower coating within the young generation of Micro Alloyed Coatings (MAC) gives tools targeted properties that allow for higher material removal rates and therefore increase in efficiency for users. The METAPLAS-DOMINO system offers flexible and precise adjustment of Mpower coating designs to individual application requirements (also see LAYER 1/2008). Due to its high phase stability up to 1150 degrees Celsius and its suitability for processes with large cutting depths, Mpower is a solution particularly for tools in the area of high performance cutting.

These highly specialised tools are no longer competitive without a layer that has been accurately adjusted to the application. If the operator wants to arrive at a particularly efficient process, the properties of a high performance coating need to be fitted exactly to the precision tool and the machine. ■

Further Information

Are you interested in the Mpower coating? For details contact us at:

Tel.: + 49 2204 299-256
Email: martin.fromme@sulzer.com



Glimpse of the complex production process at Voha-Tosec

Roughing mill with AlTiN-Saturn surface refinement

"Cooperation is the Key to Development"

Interview with Werner Röttel of Voha-Tosec Werkzeuge GmbH

The company Voha-Tosec Werkzeuge GmbH was founded in Lindlar near Cologne, Germany, in 1988. Since then, the company has been developing and manufacturing high performance milling tools made of solid carbide. Together with the sales partner Pokolm, Voha-Tosec offers full-service milling solutions for toolmaking, mould and die production, model making and engineering. The company also carries out customer-oriented and customised training courses. The diameter of the tools produced ranges from 0.4 to 20 millimetres. Voha-Tosec has been working with Sulzer Metaplas for nearly 20 years. LAYER talked to Werner Röttel, Managing Director and founding member of the company, in Lindlar.

"Voha has been working with Sulzer Metaplas for nearly 20 years"

LAYER: Mr Röttel, what characteristics connect your customers with your company and the products and services you offer?
Customer feedback confirms our status as a reliable partner in toolmaking technology. This is based on our high standards of tool quality control as well as in-depth technical advice. Moreover, nowadays it is important to react to market requirements quickly and flexibly. We meet these requirements thanks to very close collaboration with customers.

LAYER: What concrete demands does the market exact on your products?
Of course they have to correspond to high quality standards. Customers also demand flexible deployability and the fulfilment of evermore special functions. The materials to be processed are also of evermore higher quality and thus exact higher demands on our tools. We therefore work in close collaboration with steelmakers. Our cooperation with the leading CAD/CAM and machine manufacturers helps us and our customers develop new strategies.

LAYER: What high performance coatings by Sulzer Metaplas are applied in your tools?
Sulzer Metaplas coats our tools in the area of steel roughing with AlTiN-Saturn. For hard machining above 60 HRC, AlTiN-mod is the ideal coating. In copper-based electrode production chrome nitride is also used.

LAYER: What core characteristics does the refinement process give your tools?
Definitely wear protection as well as enhancing tools' cutting edge surfaces. Our tools are no longer competitive without refinement. Each of the tools we manufacture has been surface-refined.

LAYER: Do you collaborate with Sulzer Metaplas in the further development of your precision tools? Why is such collaboration important?
Only intensive cooperation in developing and further enhancing coatings enables us to keep abreast of market demands. That only works with input from both sides. We take those steps together with Sulzer Metaplas.

LAYER: Sulzer Metaplas' technology is highly automated – what implications does this have for your daily business?
Automation of the production of high performance coatings is important for us and a basic prerequisite, as it guarantees a quick, reliable, always comprehensible and process-safe throughput. ■

Administration building of Voha-Tosec in Lindlar near Cologne

Talking to Managing Director Werner Röttel

“Quality, Service and Trust”

Arenz GmbH from Meckenheim Uses the Chrome Nitride Technology

Arenz GmbH constructs, produces and repairs extruder screws for a wide variety of applications

LAYER talked to Christian Euskirchen, Managing Director of Arenz GmbH in Meckenheim, about his company and cooperation with Sulzer Metaplas. For over 30 years, Arenz GmbH has stood for competence and experience in plasticising and wear technology.

LAYER: Mr Euskirchen, please briefly describe the products and services your company provides. What industrial sectors do you cater to?
An important part of our work is in the construction, manufacturing and repair of spare parts for injection moulding machines, plastics machines and extruders. A focal point in this area is the calculation of screw geometries and the new manufacturing of extruder screws. Our customers mainly come from the plastics and rubber-processing industries as well as from system engineering and construction. Moreover, we have our own extruder programme, execute customised extruder projects for customers and offer technology-consulting services in the area of process improvements.

LAYER: What do your customers like about your products and your company?
We are receptive to our customers and look for solutions aimed at improving system efficiency together with them. It is particularly this philosophy that our customers like about us. Through our technology-consulting services and customer-related project planning we can offer real added value in implementing and optimising systems and processes.

LAYER: Can you describe the function of an extruder screw to a layman?
The extruder screw is the ‘heart’ of a plasticising unit. Three-section screws are most common. The feed section transports the plastic granulate inside, the material is then densified in the compression section and is finally transported

arenz
Plastifizier-und Verschleiß-Technik

Arenz GmbH, Meckenheim

- Founded: 1971
- Staff: 60

outside in the metering section. Due to its continual rotation and heat, the screw moves the granulate along while slowly melting it.

LAYER: What characteristics should a good extruder screw have?
An extruder screw should have a high plasticising performance and give the product an appropriate mass temperature as well as generating a homogenous melt. These requirements exact extremely high demands on the geometry of the screw and the screw's respective constituting material. To get ideal characteristics we exclusively use different kinds of high quality steel and coatings.

"... quality, service and trust built up over the years..."

LAYER: Since when have you been working with Sulzer Metaplas and with what products?
Meanwhile, we have been working with Sulzer Metaplas for over 15 years. In constructing and repairing extruder screws we mainly use chrome nitride (CrN) and modified chrome nitride (CrN-mod).

LAYER: How does refinement alter the characteristics of an extruder screw?
We mostly apply CrN-mod in areas that require a non-stick coating material. The melt sticks considerably less on a refined screw which increases the efficiency of the system substantially. With screws under strong mechanical loads we work with CrN. It improves the durability and economic life of an extruder screw and thus substantially increases the service life of the machine.

LAYER: Do you take further steps to protect the screws against wear?
We armour the flight surfaces of our screws. This armour consists of highly wear-protective alloys and is applied to the screw flight. The screw base and flights are then refined by Sulzer Metaplas. Both processes complement one another very well.

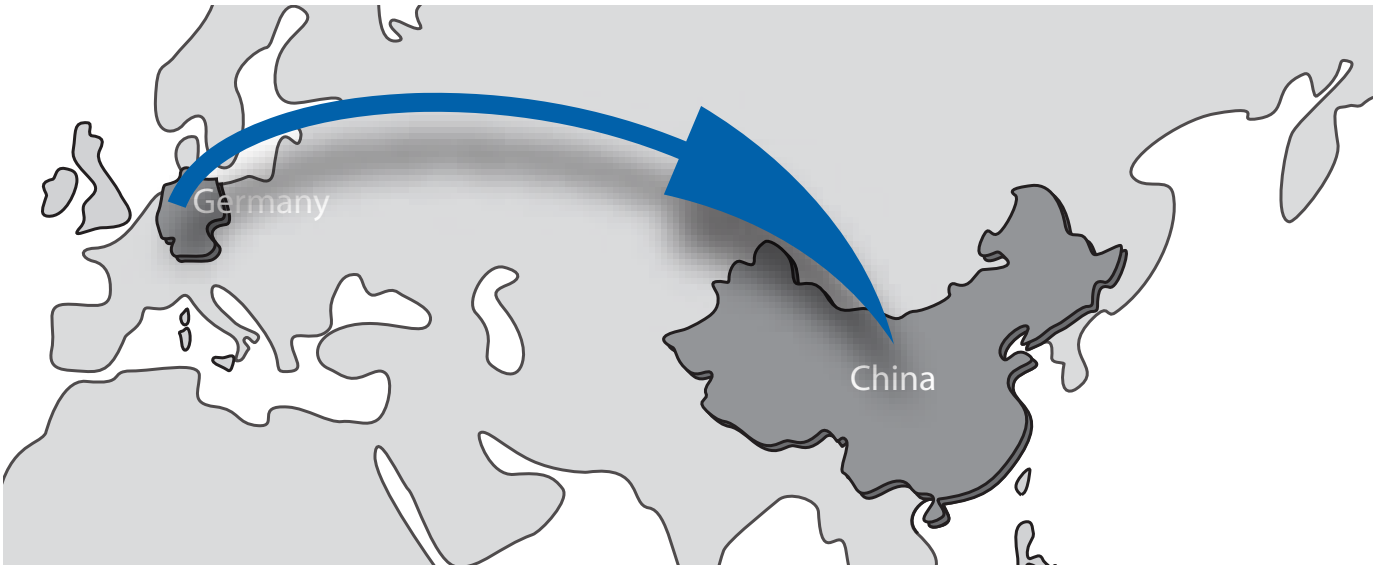
LAYER: What do you associate with the name Sulzer Metaplas?
For us, Sulzer Metaplas stands for quality, service and trust established over many years. We have continued to achieve ideal results with the Sulzer Metaplas' refinements. The constructive exchange of information with their customer service department is a further reason for our satisfaction and our trust in Sulzer Metaplas. This goes as far as having a staff member of Sulzer Metaplas take part in customer meetings. In this way, we can assess precisely the requisite coating for the specific application. A further advantage is the close physical proximity and the associated quick and uncomplicated procedures.

LAYER: What implications does Sulzer Metaplas' high degree of technological automation have for you?
Due to the high degree of automation we can easily estimate processing times and thus calculate our projects accurately. This enables us to offer our own customers clear target dates and stick to them. Moreover, we can rely on a continuously high product quality level.

LAYER: Are there any other companies offering the services that Sulzer Metaplas does?
Sulzer Metaplas has a special position in the market for surface refinement. In the past, we did work with other suppliers. But we obtained the best results with coatings from Sulzer Metaplas. Besides this purely technical aspect, we really appreciate the fact that Sulzer Metaplas accompanies us through all process steps right up to the finished product, from initial advisory services and planning through to implementation and support. ■

Managing Director Christian Euskirchen ...

... describes the requirements of an extruder screw to the editor (T. Riener/C&G)



Destination Shanghai

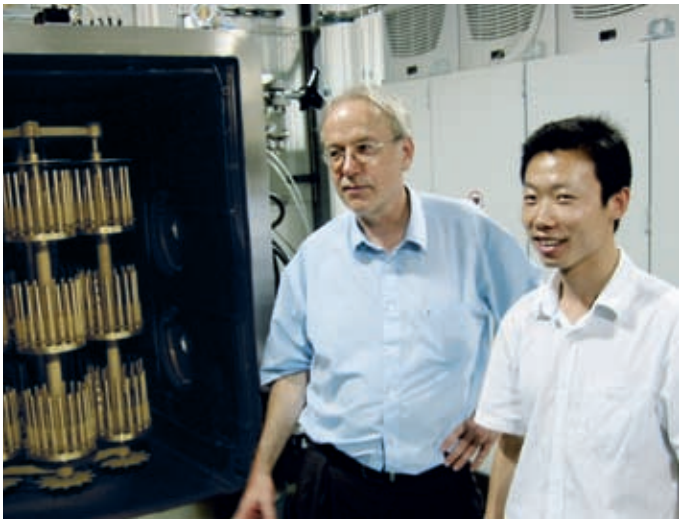
PVD Technology Expands Portfolio in China

Sulzer Metaplas is continuing to expand its range of products and services in China. The shipping of a new PVD coating system from Bergisch Gladbach to Shanghai is a symbol of this long-term strategy. Sulzer Metaplas' system, which extends the existing portfolio of Sulzer Metco in China into the area of PVD job shops, was installed under the supervision of Eduard Müller, Project Manager Business Development at Sulzer Metaplas. After successful installation, production capacities in China are to be increased step by step.

Detlef Ernst (r.) and Christoph Volk during preparations for the coating process

Arrival of the system in Shanghai

Joint wrap-up event



Bruno Tanner (l.) in front of the installed coating system

Close to the Customer

Metaplas in Southern Germany

The development of Sulzer Metaplas' service centre in southern Germany is in full swing. The company has already made available to its customers a depot including a pick-up and delivery service for parts that need to be coated. The presence in Altbach guarantees greater customer proximity and thus shorter order processing times in the job shops segment. With the establishment of the centre in southern Germany, Sulzer Metaplas is accommodating the high demand in the region. In future, the company will be continuously expanding its services at that location in order to meet increasing customer demands.

The new job shop centre in Altbach offers even better customer service

Kick-off

DOMINO Begins Operating

With the on-schedule relocation of the METAPLAS-DOMINO from the systems area to the job shops area, serial coating using this system will be starting at Sulzer Metaplas in Bergisch Gladbach. After the successful premiere of the METAPLAS-DOMINO at the EMO 2007, the company is now offering the high-performance and reliable options of this very cost-effective system to all of its customers on the basis of job shops. The flexible extension opportunities of this system puts Sulzer Metaplas in the position of being able to offer its customers both versatile and individual solutions. Besides well-established coatings such as TiN, TiCN, AlTiN and W:C-H, the system also produces Micro Alloyed Coatings (MAC) such as Mpower and Mforce.

The METAPLAS-DOMINO on its way...

...to its new place of operation...

... in Bergisch Gladbach

High Level Growth

Half-yearly figures 2008

In the first half-year of 2008, the sales revenue of Sulzer Metco increased by 5 percent as against the same period last year reaching CHF 387 million. Increasing by 4 percent, operating income is now at CHF 37 million. These positive developments took place despite the negative effect of the dollar exchange rate. These results rest particularly on the automobile industry and their interest in the newly developed services and solutions Sulzer Metco offers. The business areas industry and energy production also showed a positive tendency. Particularly the Asian and European markets led to increased demand. Negative currency conversion effects affected growth in North and South America. Corporate strategy continues to aim at strengthening our position as a leading supplier of surface solutions. Due to their stable demand, the energy production and automobile markets in particular are expected to continue to uphold upcoming business figures in a way that will make the entire financial year 2008 show profits comparable to those of the previous fiscal year.

Sulzer			
in million CHF		**2008**	2007
Incoming orders		**2 265.9**	2 132.9
Sales revenue		**1 757.6**	1 653.7
Earnings before depreciation/amortisation	EBITDA	**275.9**	229.2
Operating income	EBIT	**227.4**	177.4
Operating margin (EBIT/turnover)	ROS	**12.9%**	10.7%
Net profit for shareholders of Sulzer AG		**158.2**	131.8
Net assets for shareholders of Sulzer AG		**1 499.3**	1 551.2
Staff (full-time) on 30 June / 31 December		**12 465**	11 599
Cash flow from business operations and investment activity		**141.5**	-52.3
Net current assets (liquid assets and securities less financial debt)		**228.5**	198.5

[1] Average current assets incl. goodwill

Sulzer Metco			
in million CHF	**2008**	2007	+/-%
Incoming orders	**384**	395	-3
Sales revenue	**387**	368	5
Operating income	**37**	36	4

Publisher's and editorial address:
Sulzer Metaplas GmbH, Am Böttcherberg 30-38, 51427 Bergisch Gladbach, Germany
www.sulzermetco.com

Editorial staff:
Sulzer Metaplas GmbH, Corinna Heinz
C&G: Strategische Kommunikation GmbH, Overath, Germany

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www.c-g-gmbh.de

Sulzer Metaplas GmbH
Headquarters

Am Böttcherberg 30-38
51427 Bergisch Gladbach
Germany

Tel.: +49 2204 299 0
Fax: +49 2204 299 266
e-mail: metaplas@sulzer.com

Sulzer Metaplas (US) Inc.

222 Goldstein Drive
Woonsocket
RI 02895
U.S.A.

Tel.: +1 401 766 3353
Fax: +1 401 766 5646
e-mail: sulzermetaplas@sulzer.com

Sulzer Metco Surface Technology

(Shanghai) Co. Ltd.
666 Min Bei Road
Minhang, Shanghai 201107
P.R.China

Tel.: +86 21 5226 2000
Fax: +86 21 5226 4701
e-mail: smcn.shanghai@sulzer.com

Sulzer Metaplas GmbH

Deutsch-Ordens-Straße 7
25551 Hohenlockstedt
Germany

Tel.: +49 4826 371 0
Fax: +49 4826 371 11
e-mail: metaplas@sulzer.com

Sulzer Metaplas GmbH

Theodor-Heuss-Straße 63
38228 Salzgitter
Germany

Tel.: +49 5341 8587 0
Fax: +49 5341 8587 16
e-mail: metaplas@sulzer.com

Sulzer Metaplas GmbH

Stollberger Straße 40
09399 Niederwürschnitz
Germany

Tel.: +49 3729 69324 0
Fax: +49 3729 69324 119
e-mail: metaplas@sulzer.com