livingmetals

plansee GROUP

EXCELLENCE IN POWDER METALLURGY 1/2006

The fascinating world of LCD screens

Ceratizit: Constraint management brings major boost to delivery service

PMG: A global service with “local content”

A warm welcome to “Living Metals”, the Plansee Group’s new magazine

Dear reader,

Almost 45 years ago Paul Schwarzkopf published a popular science book entitled “Living Metals”. This catchy title has inspired us when searching for an appropriate title for the new Group magazine. But what exactly does it mean?

Metallurgists know an enormous amount about the inner workings of metals – the interactions of protons and neutrons within metal atoms. But in many ways, the applications of metals are even more interesting. Our powder metallurgical products power cars and machines, light houses, transmit energy and make tools perform. And they are becoming more and more important, especially in future-oriented industries such as electronics, power engineering and medical technology.

Last but not least “Living Metals” is part of our corporate culture: Throughout our 85-year history, developing new powder metallurgical technologies and applications has been not just our business, but also our passion. This commitment to excellence in powder metallurgy and achieving market-leading positions is shared by all three of our divisions – Plansee High Performance Materials, Ceratizit Hardmaterials & Tools and PMG PM-Products. With the PMG merger last year we created a world-wide supplier of PM-Products to the automotive industry, and the integration of the two companies is progressing well (see p. 4).

Delivering excellence means first and foremost being our customers’ preferred supplier of powder metallurgical products and components. We see our role as that of a development partner, sharing our specialized expertise with our customers. This strategy of close cooperation has proven extremely successful, for example, in the field of coating technology for hardmetal tools (p. 12).

However, excellence also means subjecting our own processes and techniques to stringent testing, and adjusting them in line with the volume and quality requirements of our customers. With this aim in mind, we are spending well over ten per cent of our sales back into investment projects this year, thus guaranteeing the availability of products such as sputter targets for the flat screen industry (p. 6) long into the future. The article on constraint management at Ceratizit illustrates our approach to optimizing our production processes over the long term (p. 10).

Last but not least, we address the decisive role our employees play in our ability to deliver excellence – which is why we are investing considerable time and effort in recruiting the brightest and most enthusiastic young people around, and making every effort to keeping them in the Plansee family for many years to come (p. 19).

Wishing you an enjoyable read,

Michael Schwarzkopf

Michael Schwarzkopf
Chairman of the Executive Board
at Plansee Group

CONTENT

IMPRINT

Produced and distributed:

Plansee Holding Aktiengesellschaft
6600 Reutte, Austria
www.plansee-group.com

Editor: Dénes Széchényi
Photos: Plansee Group

Design and production:
Markenwerke AG, Stuttgart
www.markenwerke.com

Double-digit growth

Record sales in the 85-year history of Plansee Group. In the 2005/06 fiscal year the Group's consolidated sales increased by 26 per cent, reaching 857 million euros.

The strong growth was facilitated by the robust global economy, and the strong demand from China. Despite significant rises in raw material and energy costs, all three divisions further strengthened their positions in major markets. The proportion of sales accounted for by the Asian region rose from 18 to 23 per cent.

The Group's success drivers include new product launches, its expansion into emerging markets, extensive capital expenditures programs, and investment in product and process development. 30 per cent of the Group's total sales were generated by products developed within the last five years.

The Group's profitable growth has allowed a record capital expenditure program, with a total investment of around 90 million euros (11 per cent of sales). The majority of it went in product and process development, as well as measures to improve production capacity and overall excellence.

Employees information about the fiscal year 2005/06.

Ceratizit America Latina

The Ceratizit Group has strengthened its foothold in South America by setting up a new subsidiary, Ceratizit America Latina Ltda., and opening a distribution office in Sao Paulo. The team of 12 people there is headed up by Harald Egger and consists of sales executives, engineers and a programmer. The team will have a specific focus on developing solutions for the aerospace, wood processing and agricultural machinery sectors.

Harald Egger (center), Managing Director of Ceratizit America Latina Ltda.

A global service with “local content”

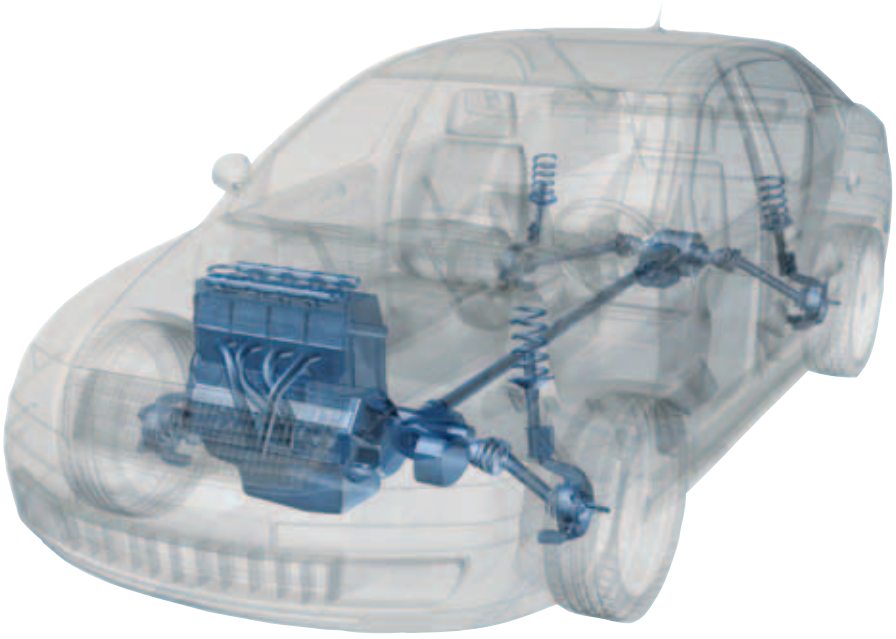
Almost ten months have now passed since the Plansee Group and Mitsubishi Materials Corp. merged their PM-Product activities, and Living Metals caught up with PMG SA Executive Vice President Michael Krehl to discuss how everything is progressing.

Automotive

Would you say the merger has achieved its objectives?
Our primary aim was to create a company with a leading market position and that’s exactly what we’ve done. We operate in each of the world’s three major economic areas – Europe, Asia and America – and our customers increasingly see us as a globally active partner.

Michael Krehl, Executive Vice President PMG SA.

Our second aim was to expand our focus strategy, by reducing the diversity of our product range and concentrating our efforts on a smaller number of product groups. We see this business model as a key factor in ensuring our future success, and so far things are progressing well.



Thirdly, we knew that by pooling our resources, we would substantially increase our technology base for development and production.

What did PMG’s two owners, Plansee Holding AG and Mitsubishi Materials Corp., hope to gain from the merger?
The Plansee Group’s aim is for each of its divisions to achieve a market-leading position; while Mitsubishi’s Japanese customers expect the business to support their expansion into Europe and America. The merger has helped both companies achieve this.

Your customers demand global service support. What exactly does that mean?
It means that they can call on an international network of production, sales and development sites at any time. Say, for example, a US customer places an order – our Japanese colleagues provide the production expertise, while what we call “local content” is added at the PMG plant in Füssen. From here, the goods ordered are delivered on a just-in-time basis to one of the customer’s production sites in Strasbourg.

Just how important is the Chinese market?
For many of our customers, operating in China is a major part of providing a global service. Individual sales of Sinterstahl and Mitsubishi products just weren’t significant enough for either company to be able to commit themselves fully to China. However, by joining forces we’re now big enough to make a successful entry into the market.

What were your targets for the first year after the merger?
Our aim was to create a fully integrated company within twelve months. Our new logo and corporate design have now been seamlessly introduced, while the integration of both companies' business processes is well under way – though there is still plenty of work to do.

What are the challenging tasks?
The outline conditions to complete a merger are highly complex – the consolidation process is advancing, both for the big manufacturers and the suppliers. Added to this are rising raw material prices which increase the extreme price pressure already existing in our business. No doubt, the market requires our full attention in this situation.

At the same time, we need to ensure we have a clear, attractive brand – not just for our customers but for our staff too, and one of our main aims over the coming months will be to stimulate a common sense of pride in, and commitment to, the company among all our employees.

So what are the next steps?
Firstly we have to successfully conclude the integration process. After that, we'll be concentrating all our efforts on becoming the global market leader – whether that will be through organic growth or acquisitions remains to be seen.

A moving look at the world of the Plansee Group

A new image film gives an informative, exciting and entertaining insight into the world of the Plansee Group. Shot at a variety of sites, the film shows some of the most important applications of our products as well as finished products and their production processes. A virtual camera takes viewers on a three-dimensional journey through the inner world of a car, packed with components of Plansee Group. The film can be viewed online at www.plansee-group.com.

New design worlds

The Plansee Group and the Plansee High Performance Materials division now have new logos and new corporate identities.

The Group has introduced a new logo and the claim "Excellence in powder metallurgy" that clearly expresses focus and ambition of its business activities.

plansee GROUP

PLANSEE

Plansee High Performance Materials is the global market leader in refractory metal and composite material products. A new logo and a new corporate identity clearly position the division as an innovative and forward-thinking global business.

The fascinating world of LCD screens

Targeting facts and market figures about sputtering

Molybdenum layers created by sputter targets play a hugely significant part in modern liquid crystal displays. To find out what they do, what sputter targets are and just how liquid crystal displays are produced, we took a closer look at the fascinating high-tech world of LCD screens. Gregor Schmalz, Leo Wu and Harald Lackner

Molybdenum layers are what bring the brightness, light and colour to our mobile phones, TVs, GPS systems, digital cameras, laptops and monitors. Liquid crystal displays are based around thin film transistors (TFT), and these require a very thin layer of molybdenum to function correctly.

USEFUL INFORMATION

- The number of applications for TFT-LCD flat panel displays is increasing.
- Production facilities are concentrated in Taiwan, Korea, Japan and China.
- Only the top five manufacturers are expected to survive in the long term.
- Plansee provides molybdenum sputter targets needed to produce thin film transistors used in TFT-LCD displays.
- Plansee is investing in every stage of its production process, to ensure its long-term ability to supply high-quality sputter targets.

How an LCD TV works

If you cut an LCD screen in two, you'd find two transparent panels with a layer of liquid crystal sandwiched in between. A light source behind the panel then shines light through the display. Each crystal acts like a shutter, either allowing light to pass through or blocking it. The pattern of transparent and dark crystals forms the image we see on the screen.

LCD TVs use the most advanced type of LCD. This technology is based around thin film transistors (TFT) – basically, tiny switching transistors and capacitors that are arranged in a matrix on a glass substrate. Their job is to rapidly switch the LCD's pixels on and off. In the LCD on a colour TV, each pixel is created by three sub-pixels, with red, green and blue colour filters.

The sputtering process

A very thin film of molybdenum atoms is required to be applied on the glass substrate. To achieve this, molybdenum is sputtered onto the substrate. Sputtering is the process whereby atoms are ejected from a solid target material into a gas as a result of the bombardment of the material by energetic ions. Plansee High Performance Materials manufactures these sputter targets.

Highly concentrated LCD industry

The LCD TFT industry is extremely concentrated, with Taiwan, Korea and Japan accounting for almost 90 per cent of all LCD panels produced. In the first quarter of 2006, the top five manufacturers had a market share of approximately 82 per cent.

To try and gain an edge over their competitors and achieve economies of scale, companies have slashed

Finishing and packaging
of bonded sputter targets
in our bonding shop in Japan

Glas substrate for the production of flat screens in the clean room

prices over recent years. For example a 30″ to 34″ LCD TV would have cost around 3.500 Euros two years ago – today it is available for under 1.200 Euros.

Factory capacity has tripled or even quadrupled over the past three years, while further investment is earmarked to develop the next generation of TVs in Korea, Taiwan and Japan. On top of that, Chinese businesses are looking to gain a larger slice of the pie over the coming years, and are expected to invest approximately 15 billion Euros in new production facilities over the next two to three years alone.

The industry is being driven by speed, price and yield rates for each product line, and is developing extremely rapidly – not least as a result of the huge investment companies have made in further developing the technology.

Substrate sizes on the rise

Two issues are set to further fuel the efficiency race between manufacturers. One is the enlargement of substrate sizes to improve economies of scale and the other is the reduction of component material costs.

Maintaining a competitive advantage in the LCD business will therefore come down to companies' ability to lower the cost of materials, and they will need to think carefully before investing in post seventh-generation lines and bigger substrates. In some of today's seventh-generation lines, the substrate size is approximately 1950 mm x 2200 mm, while for the eighth generation (expected in 2007) manufacturers are already talking about 2200 mm x 2500 mm as the new standard.

One step ahead in sputter technology

To keep pace with the rapid expansion of the market for liquid crystal displays, Plansee is constantly investing in new technologies and personnel. In 2001 Plansee Taiwan was founded, in 2003 the Plansee Bonding Shop opened in Japan, in 2004/05 Plansee Korea started trading, and since 2004 the Group has been looking to identify new local bonding partners and strengthen its relationships with existing ones.

Developing new dimensions, sizes and geometries

Working closely together with LCD TFT manufacturers, Plansee is constantly developing new dimensions, sizes and geometries for sputter targets. As a world leader in molybdenum, Plansee currently offers the largest planar targets available on the market, which measures approximately three metres by three metres.

To safeguard its strong position in this growing market, Plansee is expanding capacity and upgrading production technology at its Breitwang site in Austria.

Planning for the products of the future

The investment program covers every stage of the value chain. It aims to ensure adequate access to raw materials; to expand production capacity significantly; to set up production facilities capable of manufacturing sputter targets that far exceed the specifications of the forthcoming eighth generation; and to guarantee consistently high product quality, by using fully automated and standardized production processes.

The future of liquid crystal displays

In the future, the number of applications for LCD technology is expected to increase tremendously, as the "digital revolution" spreads to every area of the home, the office, public buildings and even outdoors. These applications will include:

- TVs, desktop monitors, laptop screens
- Information screens on public transport vehicles (e.g. on trains and buses), at transport hubs such as airports, in lifts, automated teller machines, etc.
- Advertising hoardings
- Screens incorporated into refrigerators/automatic door openers. |

Constraint management at Ceratizit brings major boost to delivery service

Ceratizit's implementation of the Theory of Constraints has had dramatic results – new orders are being processed much more quickly, while throughput times for many products have been slashed. It means a much-improved delivery service, with speedier, more reliable deliveries, and greater flexibility in terms of minimum purchases and deadlines. **Jacques Lanners and Andreas Lackner**

workflow

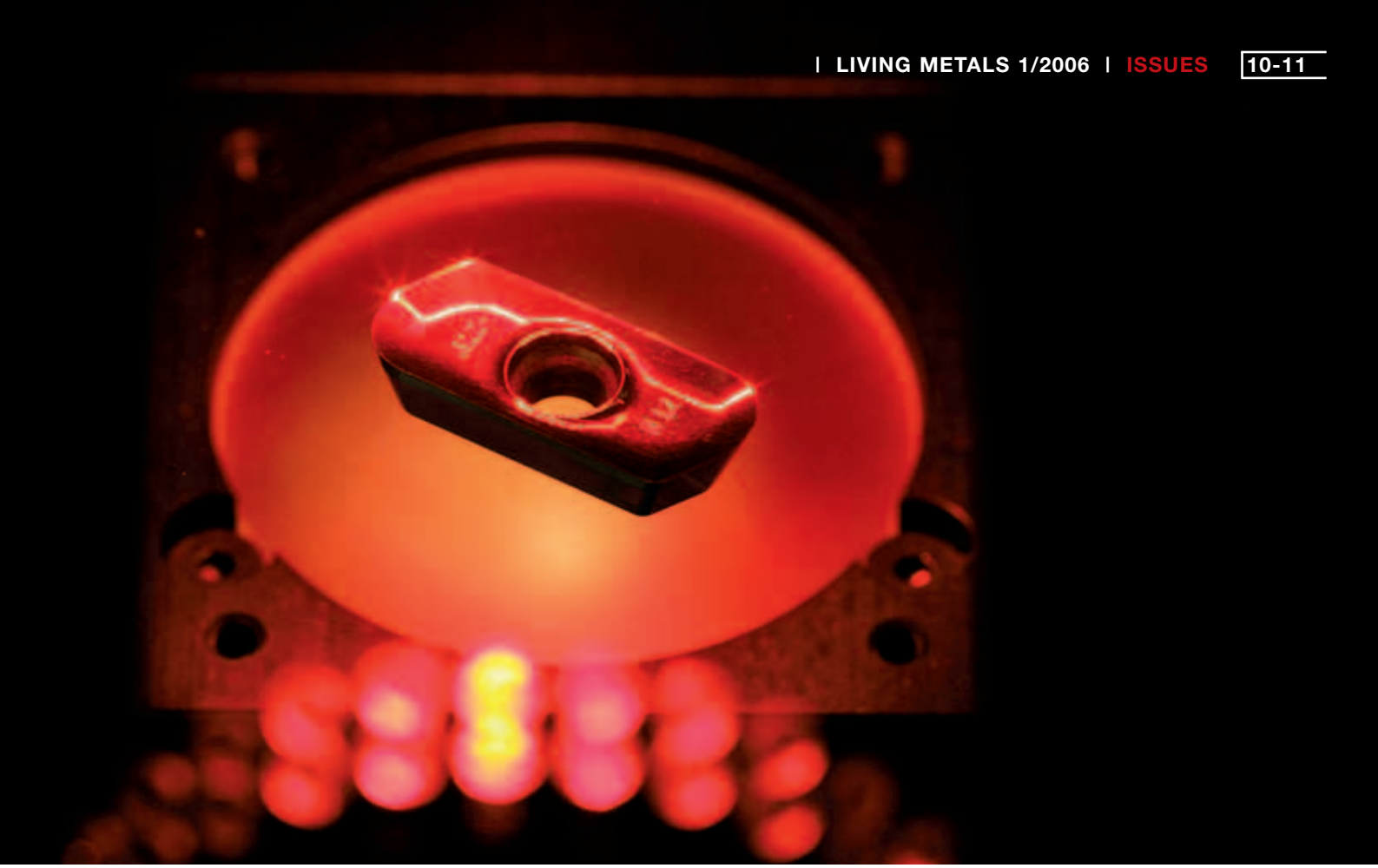
Whenever students from Luxembourg's Sacred Heart University asked Ceratizit board spokesman Jacques Lanners for examples of implementing constraint theory, he unfortunately could not quote from personal experience. Today though, he can talk about the application of the theory at the company's sites in Mamer (Luxembourg), Reutte (Austria), Horb (Germany) and Biel (Switzerland). So what happened?

It's all the result of Ceratizit 's Austrian Managing Director Andreas Lackner's decision to implement the Theory of Constraints at the Breitenwang site. And it's a decision that is paying dividends, with figures for order backlogs by machine group, mixed batch stocks and work in progress all up. It's also made a big difference to customers, since new orders can now be processed more quickly and throughput times have been reduced for a range of products. These factors have significantly improved the site's delivery service, as they can now offer speedier, more reliable deliveries, and greater flexibility in terms of minimum purchases and deadlines. Indeed, these advantages will be highlighted in future marketing campaigns.

Total production efficiency with TOC

According to the Theory of Constraints, goods are only produced if they can be sold immediately. In the past, customer orders were transferred into production orders which were processed individually at each machine or production stage. This meant that whatever came in first was processed first, as quickly and efficiently as possible, with the result that individual production stages – such as the press shop or coating department – ran very effectively. However, though individual departments might have benefited from the system, the company as a whole did not – it resulted in high stock levels, long throughput times and migrating constraints across the production process as a whole, with semi-processed material piling up around the factory.

As part of Ceratizit's new approach, a production flow chart was drawn up for each product – from issuing the production order through to dispatching the goods. Though constraints are not eliminated, it means they can be easily identified and managed. This is where supply chain managers, programmers and IT specialists developed a sophisticated program that ensures optimized production control.



It acts as an aid to sales and production by ensuring that what has actually been ordered is produced, that production chains remain transparent and that deadlines are adhered to. Or, to put it another way: The program tells every employee and machine exactly what he, she or it should be doing, factoring in breaks and idle periods.

For many employees, this marks a radical departure from accepted production wisdom. Indeed, getting all the staff to support the project and place their trust in the new system took some work. Nevertheless, it has already won a number of converts within the workforce and the project is truly pioneering within the Plansee Group as a whole.

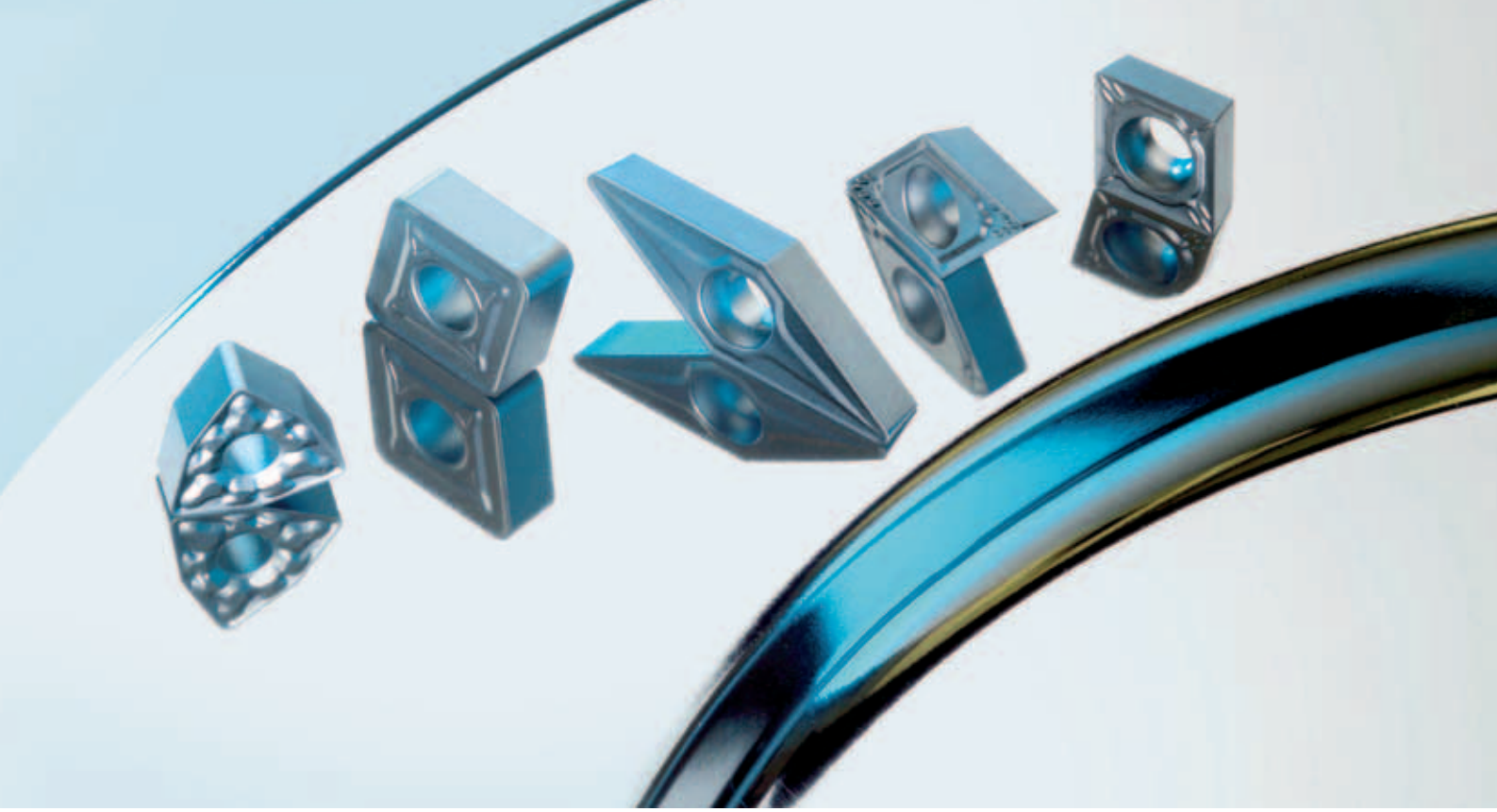
What is the Theory of Constraints?

All real-world systems have at least one constraint; otherwise they would be capable of infinite through-put, which is clearly impossible. According to the Theory of Constraints (TOC), real-world systems are highly unlikely to have more than three constraints.

The upshot of this is that a complex organisation can be far more effectively managed if the business focuses on a few specific areas – e.g. on maximizing performance in these areas of constraint. This ultimately means all strategic decisions are taken on the basis of constraints.

So, how can constraints be managed? It is essential that the area of constraint operates at full production capacity, so there should be no idle periods during coffee or lunch breaks. Similarly, time shouldn't be wasted processing defective parts, which means a high degree of quality control must be exercised upstream from the area of constraint, while producing parts that are not directly required for the customer's order should also be stopped. Finally, small intermediate order buffers should be placed upstream from the constraint to ensure it always operates at maximum capacity.

When implementing the process at Ceratizit, the production flow for around 40 products was mapped out and the relevant constraints identified. The production process then follows a similar pattern to that of the allocation of landing and take-off slots in air traffic control – the aircraft only gains clearance to take off if it is guaranteed a pre-allocated slot for landing at its destination. In a similar way, production only gets the go-ahead to begin manufacturing if there is a guarantee that the product will pass through all the necessary production steps without delay, so that it can be immediately dispatched to the customer.



HyperCoat: minimizing abrasion during metal cutting

HyperCoat coating technology from Ceratizit ensures tools used in demanding metal cutting procedures cut more effectively and last longer. By protecting the tool face and cutting edge from abrasion, HyperCoat delivers unparalleled performance in terms of high-temperature strength, abrasion resistance and friction.

Production is carried out modularly, with the specific characteristics of the coating required for each job determined by the needs of the individual customer. Coupled with this, Ceratizit can offer expert assistance throughout the process chain, with the division boasting a thorough knowledge of the materials needed for cutting tools and coatings, as well as of process engineering methods, complete tooling systems and high-quality applications advice.

The HyperCoat-P series guarantees exceptionally high operational reliability as well as process consistency. The coating minimizes clogging of the cutting edge, while protecting the tool surface against abrasion. It is suitable for the most complex metal cutting procedures, such as those requiring long projecting tools or where there are frequent interruptions.

The HyperCoat-C product range has been developed for use in modern turning operations which call for high levels of strength at elevated temperatures. It also provides outstanding protection for the cutting edge and is ideal for turning particularly strong steel, producing a surface that allows manufacturers to switch easily between different materials and processes, while ensuring small production runs are profitable.

Briefly introduced: New products at Ceratizit

MaxiLock D

OvalFlex

CombiEdge

MaxiLock D: the all-in-one tool
An innovative tool for turning inserts. MaxiLock D clamps the insert securely to the location and contact face, ensuring that the insert is mounted safely and is protected against cutting forces. The tool and accessories comprise a single unit, with a spare shim and screw stored in a pocket on the tool body.

OvalFlex: the oval all-rounder
A new patented tooling system for machining aluminium rims, it increases tool life by up to 100 per cent and reduces logistical complexity by providing standardized interfaces and insert seats. Its unique feature is its oval shape, which makes the tool's assembly height larger than that found in normal round tools, improving stability and performance.

CombiEdge: The triple solution
Longitudinal and face turning, as well as grooving radii, can now all be done with a single tool. CombiEdge is the latest solution for producing bearing rings. Unlike Maltese cutting inserts, the CombiEdge has a pressed chip groove, which when combined with a three-point contact, also found on the MaxiLock, guarantees inserts are clamped securely.

www.ceratizit.com

Micrometer accuracy with our milling system for aluminium components

HSC-11 milling system from Ceratizit

Durability, reliability and extreme accuracy are the key attributes of our milling tools, which are used to machine aluminum components, e.g. in the aircraft industry. Ceratizit milling tools cut away up to 95% of the material's gross weight with micrometer accuracy, doing away with the need for time-consuming and expensive finishing work. Ceratizit provides not only the milling systems itself but offers comprehensive development partnerships to tailor-made the milling systems exactly towards the customers' specific needs.

Expanding capacity in Japan

In early May, Michael Schwarzkopf, Chairman of the Executive Board of Plansee Group and Bernhard Schretter, member of the Board, attended a traditional Shinto ritual known as the "Jichinsai" or "ground-breaking". The ceremony marked the launch of an expansion project at Vacs Precision Co., Ltd. in Oshu, Japan.

One of the main product groups manufactured by Vacs Precision is ion implanter components, which are used in the manufacture of semiconductor tips. The exponential recent growth of the electronics industry in Japan and other Far Eastern countries such as South Korea and China has led to a huge increase in demand for ion implanter parts – and this trend is set to continue. A new building will make possible a significant capacity increase.

In May 2006, a Shinto "Jichinsai" ceremony was held at the Oshu site in Japan. A priest (left page) asked the god of the place to purge the land of evil spirits, and bless the new building. Afterwards Noriaki Nakayama, president and representative director of Vacs Precision, made the first cut into the turf (left) and Michael Schwarzkopf (above) broke the ground.

Transfer of production equipment

Japan

To increase production capacity of stainless parts and wear resistance parts, technology and machinery is actually transferred from the PMG Niigata plant, located at the west coast of Japan to the PMG Fujioka plant, where plenty of room is available to amplify production facilities.

From the beginning of December, Fujioka plant will start production of stainless parts and wear resistance parts at full capacity.

New building at Fujioka plant to increase production facilities.

Three in one:
The New Polmetasa in
Mondragón

Spain

"New Polmetasa": making room for future growth

The success enjoyed by PMG Polmetasa in recent years has meant that it has exhausted all the possibilities for expansion at its current site in Northern Spain. However, the "New Polmetasa" project will shortly see the company relocate all its production activities to a new site in a nearby industrial park. This will provide ample scope for further expansion.

PMG Polmetasa was founded in 1955 in Mondragón, in the heart of the Spanish Basque Country. In 1991, it was acquired by the Sinterstahl Group. The new owner implemented a program to convert the former diversified industrial group towards a focused powder metallurgical shock absorber components supplier for the automotive industry.

Today, the PMG Polmetasa factory is probably the world's largest facility for the production of shock absorber components, and its products are used by all the major international shock absorber manufacturers.

The "New Polmetasa" project is due to be completed in 2008, and will see the company's three existing plants relocated to a single location, with an optimized layout and plenty of room for further expansion.

Manuel Perez Latre

Restructuring at Plansee TMS successful

The relocation of the ceramics department marks the completion of the restructuring of the Plansee TMS plant in San Diego, California (formerly Polese). The number of buildings was reduced from four to two during the last few months. The material flow was optimized and the package business was increased. Low margin products were optimized or discontinued.

"Effective September 1 Polese Co. was renamed Plansee Thermal Management Solutions (TMS) and joins the Plansee High Performance Materials Group", says Heri Sontgerath, president and CEO of Plansee TMS.

Heading for success: Profit centre for target materials in Lechbruck

Plansee High Performance Materials is looking forward to a bright future for hard coating target materials used in wear and decor applications. While many customers aim at placing their products in mature markets, Plansee HPM helps them to develop individual coating processes for wear-resistant, friction reducing and decorative applications in industries such as tool manufacturing, components for the automotive and mechanical engineering industry as well as coatings for fittings, mountings, watch casings, spectacle frames, etc.

To strengthen Plansee HPM's supplying ability, a profit centre has been established at the Lechbruck site in Germany. The profit centre's task is to offer the customers a wide range of services, starting from the development of new target materials up to logistic requirements, In the future titanium, chromium alloys and innovative ceramic materials will be offered in addition to aluminium alloys and chromium.

Robert Riedl and Peter Polcik

Expanding facilities in Lechbruck/Germany.

10 years of Ceratizit Bulgaria AG

Dimiter Radev, Managing Director of Ceratizit Bulgaria AG, greets Hilde Schwarzkopf, majority shareholder of the Plansee Group.

Ceratizit Bulgaria AG's 10-year anniversary was celebrated in mid-July with a big party for employees and their families. Gabrovo has over 700 employees, making it one of the Ceratizit Group's biggest sites, and produces hard materials, tool fittings, tool bodies and specialized tools, such as paper knives, tongs and hammer tools. In summer 1996 Ceratizit Group took a majority share in Ceratizit Bulgaria AG that has a long tradition in Gabrovo and was originally founded in 1947.

Family open day: experiencing Plansee

In early July, the Plansee Group celebrated its 85th anniversary. To mark the occasion, it held a family open day at its Breitenwang site in Austria. The event was attended by much more than 6,000 visitors, who experienced a programme of events that was both entertaining and informative. On four separate stages along the route around the factory, cabaret artists staged an impressive presentation of Plansee Group products and solutions, while poster displays provided more in-depth information about the applications of powder metallurgy products and technologies. Asian, American and European food was served, literally giving guests a taste of the Plansee Group's international outlook, and live music ensured a festive atmosphere.

Wanted: talented youngsters for a bright future together

The Plansee Group has produced a new recruitment brochure, aimed at Young Potentials: It is designed to get students, graduates and young professionals interested in the Plansee Group, and describe the exciting career opportunities available in a group that includes 62 companies in 22 countries around the world. The Group is growing rapidly, and urgently needs young people with the right qualifications and skills. For successful candidates, it offers a variety of challenging and stimulating roles with a high level of responsibility.

The recruitment campaign is backed up with a comprehensive training and management development program. There is a mechanism in place for promoting talented staff on both the technical and managerial sides, with the aim to fill as many key positions as possible with internal candidates. The Group seeks to identify people with promise at an early stage, and systematically prepare them for challenging roles at its locations around the world.

career@plansee.com

The Plansee Group is actively seeking qualified young employees around the world.

Award goes to PMG Ohio

PMG Ohio Corporation, won the award of distinction in the automotive-transmission category at the 2006 Powder Metallurgy Design Excellence Award for a steel one-way clutch race (OWC). The high-strength part is used in automatic transmissions found in Chevrolets, Pontiacs and Saturns.

Award for the steel one-way clutch race of PMG Ohio.

PLANSEE CERATIZIT PMG

Three divisions - one aim: excellence in powder metallurgy

To address the highly specialized requirements of our customers in future industries, we have concentrated our material competence into three independent divisions: PLANSEE High Performance Materials, CERATIZIT Hard materials & Tools and PMG PM-Products. In this way, we guarantee selective marketing, a targeted customer approach and individually-tailored product solutions.

As a private company, our thoughts and actions are focused on the long term, and our present investment is aimed at securing our leading position in powder metallurgy for the future. With the support of a unique corporate and innovation culture embracing our entire workforce, all our efforts are directed towards the achievement of one aim: **Excellence in powder metallurgy.**

Electronics

Lighting technology

Medical technology

Power engineering

Mechanical engineering

Automotive industry

Construction industry

Plansee Holding Aktiengesellschaft, 6600 Reutte, Austria, Tel. +43 5672 600-0, Fax +43 5672 600-500

www.plansee-group.com

plansee GROUP