

Issue 29/2007

GOLD POST

For friends and
associates
of Umicore
Galvanotechnik

**New: AURUNA® 312 and
PALLUNA® 469**

PLATINODE® in MIRALLOY®

**Company profile of IMO,
Königsbach-Stein**

New analytical laboratory

**Knowledge is power –
20 years Z.O.G.**

Back to the future

Dear Business Partners,

last year, under the motto of „making good even better“ we introduced a method which aims to make operational workflows even more efficient. Continuous Improvement Process (CIP), has proven to be an invaluable aid for many years – especially in the automotive industry. With CIP internal workflows are slimmed down, expenditure is reduced, costs are saved and time is gained.





We will use this time to make further improvements to our existing operations. Our aim is to continue offering you efficient processes and innovative services well into the future.

One of the actions taken towards reaching these goals is the change in our internal organisation, which was effected as of 1 January 2007. Electroplating is used in almost all areas of industry. To ensure that we are servicing the needs of our customers we have now aligned our organization in a cross-product manner, with the focus now on the four main applications, and also bundled our excellent competencies in sales and applied technology. The new structure will be formed by the four areas of application "Technical Precious Metals", "Decorative Precious Metals", "Base Metals" and "Printed Circuit Boards". Each unit has a team of technical and sales experts who can answer all your questions quickly and competently.

Research is the key to innovation and growth. Within our core competencies we specifically look for innovative processes for precious metal plating, special alloys, platinizing refractory materials and coating of PCB's to obtain surfaces that can subsequently be bonded or soldered. Over the years we have continuously strengthened our research activities and are happy to have been able to provide you with innovative ideas for your applications.

The success of plating processes is very dependent on the user's specific operational conditions. Consequently, it is especially important to maintain close contact between the supplier and the user. I look forward welcoming you personally in our company and wish you all the best from Schwäbisch Gmünd.

With kind regards
Thomas Engert

Managing Director
Umicore Galvanotechnik GmbH,
Schwäbisch Gmünd

Front page:

Reel-to-reel products – selectively plated – at IMO (Ingo Müller Oberflächentechnik) in Königsbach-Stein.

Trade fair review

In 2006, Umicore Galvanotechnik presented important products together with foreign agencies at international trade fairs.

Watch & Jewellery in Dubai:
12 – 16 December 2006

SF-China, Shanghai, Surface Fair:
9 – 13 November 2006

SUR/FIN AESF, Milwaukee, USA:
18 – 21 September 2006
Our representative in North America, Uyemura International Corporation, showed MIRALLOY® and AURUNA® processes. The fair is an ideal platform and meeting place of the American electroplating industry.

EBRATS Interfinish, Sao Paulo, Brazil:
9 – 11 May 2006
Our subsidiary Umicore Brazil participated in the important trade fair in South America; this fair takes place every three years. In addition to the extensive electroplating programme, further Umicore business areas were advertised at the booth. Contacts with many business partners from Brazil as well as other South-American countries could be established.



India International Jewellery Show Mumbai: 27 April – 1 May 2006
Together with our Indian agency distributor N. H. Wadia Jewellery Techniques, Mumbai, Umicore participated in this fair for the first time. The main emphasis was on the RHO-DUNA® processes for the jewellery industry.

SITS, Paris, France:
27 – 31 March 2006
Umicore Galvanotechnik presented important processes at this surface finishing fair; among them AURUNA®, MIRALLOY® and PLATINODE®. It was also pointed out that since 2005 Umicore Marketing Services France, Service Galvanotechnique have been selling all Schloetter products. Umicore Climeta was a further exhibition partner.



Istanbul Jewellery Show, Turkey:
22 – 26 March 2006
Together with the representative Galtek, Umicore participated in this jewellery fair. The main emphasis was on decorative and nickel-free coatings.



CPCA-Show, Shanghai, China:
22 – 24 March 2006
Umicore participates in this important printed circuit board trade fair in China every year. It is the ideal platform for presenting the AURUNA® gold plating processes which are known world-wide.



Precious Stone and Jewellery Fair, Bangkok:
1 – 5 March 2006
Umicore Precious Metals Thailand Ltd. participated in this important international jewellery fair for the first time and presented its products and services. The response of the visitors was very positive.



Fair preview

CPCA-Show, Shanghai, China:
21 – 23 March 2007

Trattamenti & Finiture, Parma, Italy:
22 – 24 March 2007

Hannover Fair – Surface Technology:
16 – 20 April 2007

SUR/FIN AESF, Cleveland, USA:
13 – 16 August 2007

Stamping Days, Pforzheim:
19 – 21 September 2007

Productronica, Munich:
12 – 16 November 2007

SF-China, Shanghai, China:
21 – 23 November 2007

AURUNA® 312

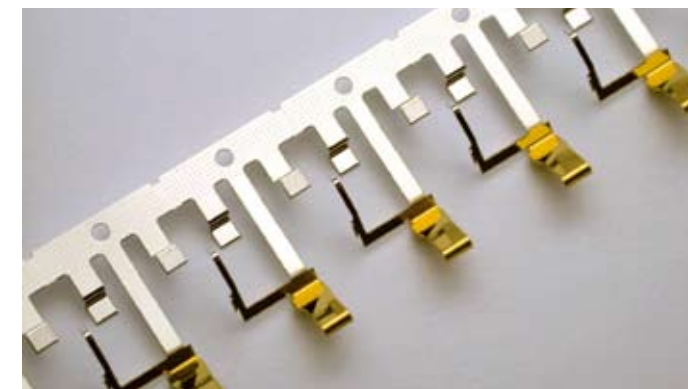
New electrolyte with uncritical R+S classification.

The further development of the well-established AURUNA® 311 gold electrolyte aims at an uncritical classification as to R + S phrases. The newly developed electrolyte does not have to be classified in category R49 any longer. Its primary field of application is – as before – the adhesive gold plating of passive stainless steels, nickel and alloys based on nickel. This is made possible by the excellent activating power of the strongly acidic gold-cobalt electrolyte. Its excellent throwing and covering powers are particularly advantageous. A specific field of application is the strike gold plating of strip material in reel-to-reel lines. The electrolyte is currently being successfully used for this purpose.

PALLUNA® 469

Palladium-Nickel increasingly used for connectors.

From the new, non-chloride PALLUNA® 469, wear-resistant layers up to 15 µm/min are deposited under high-speed conditions. The coatings from the electrolyte are especially ductile and low in pores. The alloy composition is 80 % palladium and 20 % nickel. Due to the low pH-value, considerably less ammonia is liberated.



Connector coated with palladium-nickel and gold-cobalt.

PLATINODE® 167 in MIRALLOY®

Umicore Galvanotechnik recommends: Usage of MMO anodes with MIRALLOY® electrolytes.

In the MIRALLOY® electrolytes, graphite anodes are used as a standard. Umicore now also recommends the usage of PLATINODE® 167. This version is an expanded metal anode of titanium coated with mixed metal oxide (MMO). Anodes of mixed metal oxides are produced by applying dissolved precious metal compounds on expanded titanium metal. These compounds are subsequently converted into an adhesive, catalytically active layer during a thermal transformation process. The precious metals iridium and ruthenium are preferably used in these cases.

The MMO coated expanded metal titanium anode PLATINODE® 167 offers the user the following opportunities and **advantages**:

- cost-effective
- robust
- surface area can be freely determined by different mesh sizes
- dimensionally stable
- good exchange and flow-through of the electrolyte
- potential energy savings
- low space requirements
- three-dimensional geometries are available
- simplified contacting
- low maintenance requirements

More information:

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New brochure "Precious Metal Plating"

This new brochure gives a comprehensive overview of the most important precious metals used in electroplating and the processes required. The essential properties and application fields of the metals gold, silver, platinum, palladium, rhodium and ruthenium are described. The most important applications in the technical as well as decorative fields are showed by illustrations and described in detail. Information about selected electroplating processes of Umicore Galvanotechnik rounds off the contents.

If required, order the brochure by e-mail via galvano@eu.umicore.com or download the file from the internet at www.umicore-galvano.com
Have you already visited our new website?



MMO beaker anode



The visible Holospot® security information can best be viewed with the help of a magnifying glass under direct light.

Discover the Holospot®

Original Umicore quality at first glance!

A Holospot® security mark is a multilayer label with a small data field containing several visible and invisible security features, comparable to the counterfeiting protection of your passport. The manufacturer identification is produced on the product label in the form of a hologram. Each hologram is unique. It is produced using state-of-the-art technology and regarded as absolutely forgery-proof at the moment. To make sure that a product is an original, as of now it will sufficient to identify the 4-digit serial number.

For more information, please see the brochure: Discover the Holospot®. You can find the file on Umicore's website www.umicore-galvano.com at "Current Offers".

New gold wire-bondable surface

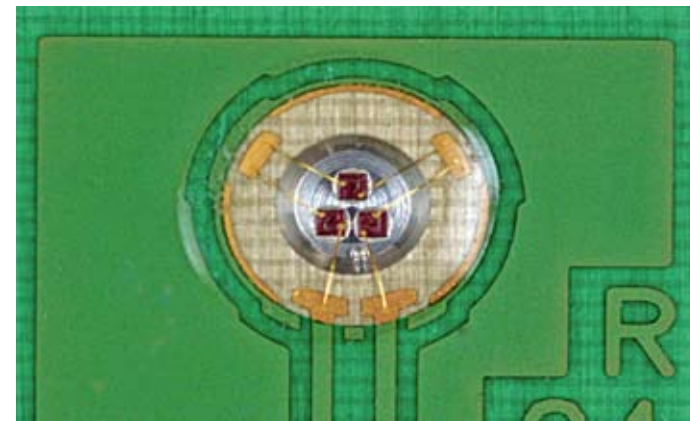
Umicore IP – this new and cost-effective process is particularly suitable for producing bondable connections with gold wire.

With the Umicore IP gold surface, which comprises a barrier layer of immersion palladium between nickel and gold, excellent results are achieved in gold wire bonding. This process opens up an excellent alternative to the well-known reductive and electrolytic gold processes.

In addition to cost savings, complicated contacting is not required. With integration density increasing, the developer has more freedom when determining the printed circuit board layout. The Umicore IP process also considerably reduces the loading of the solder masks due to lower process temperatures and shorter process times. Bondability and solderability reach a forward-looking multifunctionality with the Umicore IP process.

Asetronics AG in Bern, a Swiss manufacturer of printed circuit boards, produces customized printed circuit boards and complete electronic assemblies. After a brief conversion phase, Asetronics could successfully integrate the Umicore IP process into the existing fully automatic vertical line in close co-operation with the chemistry supplier Umicore and the equipment manufacturer STS.

For Asetronics (www.asetronics.ch), the investment in the new key process nickel/gold was of great significance. This means future advantages primarily for COB technology.



Compared to electrolytic processes, hindering connections are not required on the new Umicore IP gold surface.

SEMITOOL and Umicore

A strong symbiosis in the semiconductor industry.

The semiconductor industry demands the highest standards in its production processes in terms of quality and reliability. In the chipfactory of an important European semiconductor manufacturer, copper conductive pattern are plated onto silicon wafers to connect the "intelligent functional units".

While these copper structures are being plated the wafer has to be electrically contacted. Since the contacts have to work in the copper electrolytes, there are particular requirements in regard to corrosion resistance and transition resistance on the contacts.



Umicore Galvanotechnik received a supplier award from SEMITOOL®.

Semitool Europe Ltd., Cambridge, is an important manufacturer of coating systems for the semiconductor industry. In the past the contacts needed for copper plating, did not have the required service life, they were not reproducible and were thus subject to considerable, incalculable fluctuations. In a joint project involving Semitool and Umicore, the specific requirements for these contacts were analysed and solutions were found. With coordinated improvement steps and by using the unique Umicore technology to deposit platinum from the salt melt (= HTE) it was possible to increase service life by a factor of 3-4. This has resulted in enormous reductions in the costs for maintenance and contact replacement.

In July 2006 Umicore Galvanotechnik was presented with the prized SEMITOOL® Supplier Award. 50,000 wafers had been copper plated with one platinized contact ring from Umicore. An absolute record!

CIP: Small steps – big effects

Umicore Galvanotechnik started to integrate CIP (Continuous Improvement Process) at the beginning of 2006.

The fundamentals of CIP are based on the Japanese "Kaizen" process (change for the better), with which the Japanese automotive industry has achieved considerable success in improving product, process and service quality. In small, achievable steps employees recognise waste in operating processes by themselves and initiate the appropriate measures for improvement.



CIP Symbol at Umicore Galvanotechnik

Over many years the industry has proven that the introduction is worthwhile and that employee motivation can be improved when staff is integrated into the process. Every improvement is rewarded at Umicore Galvanotechnik. In addition to an amount of money that the respective CIP team is given for a department-internal purpose, a defined share is also foreseen for a social purpose, which is suggested by the team itself. This creates a high level of personal commitment and voluntary obligation among all the employees.

At Umicore CIP stands for innovation, efficiency, customer and employee satisfaction as well as pleasure at the workplace. It creates the basis for securing the future of the company.

If you are interested in this experiences relating to the introduction and handling of CIP, Umicore will be pleased to provide you with further information: alexander.kurz@eu.umicore.com

DECOLINE umicore

The easy-to-use electroplating programme for goldsmiths

Ready-for-use precious metal electrolytes (1 litre each) for coating carat jewellery, costume jewellery, watches, spectacle frames and so on with gold, rhodium, platinum and ruthenium. Additionally offered are pre-treatment processes and anodes.

More information at www.umicore-decline.com
Sales at:

Allgemeine
D-75175 Pforzheim
halbzeug@allgemeine-gold.de
www.allgemeine-gold.de

OEGUSSA
A-1234 Wien
office@oegussa.at
www.oegussa.at

ITALBRAS
I-36100 Vicenza
info@italbras.it
www.italbras.it



New: Umicore DecoLine electroplating programme for goldsmiths



Golden ideal heads - modern and classical side by side.

3D ideal head gold plated

Umicore Galvanotechnik gold plated the ideal model "male head" with AURUNA® 311. The electrolyte provides the required gold colour and was ideally suited for plating the base material.

Using a digital 3D process Andrej Barov, a Munich-based artist, created a male head designed according to today's ideal model which was placed side by side with a classical ideal head. The mask was produced with a special production process called Rapid Prototyping by Alphaform AG in Feldkirchen. The golden head was exhibited in the Museum für Abgüsse Klassischer Bildwerke [Museum for Casts of Classical Statues] in Munich under the heading of COLOUR MATRIX – Digital Art Installations and is now touring through many European museums.

Andrej Barov is regarded as one of the outstanding exponents of digital art. As a brilliant expert in digital media techniques he works on new and expanded concepts in the field of artistic digital photography and designs new images. His work interacts with visual perceptions and gives the observer completely new sensory impressions. More information can be obtained at www.barov.de.

IMO shines

IMO - Ingo Müller Oberflächentechnik in Königsbach-Stein, not only has Europe's largest range of systems for plating precision parts. The versatility of its coating processes is also second to none. In its own research and development department the company continuously produces innovative surfaces for selective or full coating of reel-to-reel products and single parts.

The successful family-owned company was founded in 1973 by Ingo Müller as a plating shop for industrial bulk materials. The electronics industry's increasing needs for plated components resulted in a rapid development of the plating technology in the ,70s, but it also posed many new challenges. The growing demand for selectively plated contacts encouraged Ingo Müller to put reel to reel plating lines into operation. However, the company soon realised that the technologies available on the market were not entirely suitable for IMO's precision and handling requirements. Because of this predicament in 1990 Ingo Müller and his son Bernd founded a separate plant construction company, MSA Müller Sondermaschinen und Anlagenbau GmbH. Over the years the company has grown into a highly equipment maker company for surface, environmental engineering and reel to reel technology. The versatility and innovative power of the company is also reflected in the technology centre which it occupied in 2000. The entire building was designed for maximum space. Production is split into the reel to reel and single part plating segments. The way the system is structured - from goods receipt through production to shipping - guarantees a smooth flow of materials.



IMO Management, Bernd and Ingo Müller

Already well anchored in the operations since 1980 and having been managing director for many years Bernd Müller took sole control of IMO in January 2005 and continues to develop the company and its around 300 employees with determination.

Solutions for many industries

Over the years IMO has specialized in plating precision parts such as reel to reel products and single parts for the automotive, electrical engineering, telecommunication and medical technology industries. The automotive industry in particular places very high demands on its suppliers: process reliability, lead-free requirements, traceability of batches and full process control are just a few of the challenges facing suppliers like IMO.

At IMO these challenges were met with the development and implementation of new and more rationalised coating solutions to satisfy customer requirements. On high-tech equipments, which can very flexibly be set up for individual requirements, IMO pro-

duces surfaces with precisely defined functional properties and areas. The entire range of systems is equipped with advanced technologies from MSA. The company now has 28 reel to reel plating systems, two Micro Precision Plating (MPP) systems and a cleaning system as well as a frame system, a selective plating system and three ultra-modern fully automated machines for barrel, rack and vibration technology.



90 m reel to reel equipment for selective coating

Perfect process engineering for optimum layers

For the selective plating of stamped or plain metal strips the company uses process technologies such as controlled immersion plating and wheel and belt techniques. In more specific processes, such as the brush technique, precious metals are plated very precisely only in the functional area of the components. The spot technique is the most accurate of all technologies. The material is finished precisely where the precious metal is required. The MPP technique is the latest patented process from IMO and is mainly suitable for parts that have to fulfil special requirements in terms of individual surface definition.

For the plating of individual parts customers are also offered many different techniques. In automated barrel systems even parts with a complicated geometry can be processed economically. In the selective system the company mainly processes „preproduction runs“ very accurately for subsequent reel to reel plating. The Vibro-bot process is used for very sensitive small components. The rack systems are used to plate components which cannot be plated in a barrel due to their geometry.

Plated layers of precious metals still play a very important role. They provide important properties in regard to wear resistance, solderability, corrosion resistance and conductivity and thus provide reliability and ensure a long lifetime of the products. Umicore Galvanotechnik is a reliable partner and has provided innovative plating processes for many different applications to IMO for many years.

IMO building in Königsbach-Stein



Fully automated plating of bulk materials

Tried and tested processes from Umicore

In reel to reel plating the gold electrolyte AURUNA® 8100 has been used in conventional processes such as brush, wheel and immersion techniques for selective plating for many years with outstanding results. In terms of analytics and bath monitoring this hard gold electrolyte - consisting of 99.8% gold and 0.2% cobalt - enables easy process management. The deposits correspond to the ASTM B488 and MIL-G-45 204 C I C specifications.

Recently in reel to reel plating IMO also began plating with MIRALLOY® 2841, which has already proven its worth in barrel and rack processes. This process guarantees a very constant plating result, no discolouration of the individual layers and enormous process reliability. Another electrolyte, which is used in both reel to reel and single part plating lines is NIPHOS® 966. This two-substance alloy, made from approx. 89% nickel and 11-13% phosphorous, is used mainly because of its corrosion protection and its outstanding electrical contact properties. With gold or silver as the final layer it offers an excellent diffusion barrier. The fine gold electrolyte AURUNA® 558 is also used in single part plating. The process produces excellent, reproducible properties in terms of bonding and soldering. After the barrel or rack plating process Antitarnish 614 can be applied if required. This product has very good sliding properties without affecting solderability or contact resistance.

Umicore - an innovative partner

The increasing demands placed on surfaces have also seen an increase in the need for advice. IMO offers its customers advice as early as the project planning stage and later, in the planning

Bulk material parts plated in automatic barrel systems



and construction phases, advises them of the possible processes they could use as well as their advantages and disadvantages and potential risks. Just as important is the cooperation and advice from the electrolyte manufacturer. Umicore helps IMO choose suitable processes, their specific properties and areas of application.

Sustainable environmental protection and process reliability

Speaking of environmental protection IMO plays a leading role. The company has invested millions of euros in ultra modern wastewater and air treatment technology. For IMO conservation of natural resources, saving water and reducing chemical usage are important contributions to environmental protection and sustainability.

Just like their environmental policies the company's quality policies are also firmly anchored in the corporate philosophy. All quality relevant issues are taken into account already at the time initial discussions with customers. Influenced by increasing requirements from the electronics industry and specific demands from the automotive industry, in October 2004 IMO - as one of the few companies in this industry - received the ISO/TS 16949:2002 certificate with an excellent audit result.

This year the company once again expects to experience strong growth. Additional plating systems are already being planned and a 6,500 m² extension will be completed at the Königsbach location by July 2007. Another milestone in the company's development is the start of a production plant in China at the beginning of 2007 with two reel to reel plating lines. By taking this step the company is ensuring its global market leadership in the field of precision part plating.

More information at: www.imo-msp.de

Application example for the connector industry



Reel to reel products - selectively coated



Umicore PLATINODE®

A quality name known for platinized anodes – now even more!

All dimensionally stable Umicore electrodes are sold under the registered brand name PLATINODE®. PLATINODE® denotes those refractory metals, e.g. titanium and niobium, which are coated with ultrapure platinum as well as the ones coated with mixed metal oxide. The electrocatalytic functional layers of platinum or different precious metal oxides are used almost everywhere in the electrochemical industry.

The platinum is deposited by high temperature electrolysis (HTE). During this process, Umicore deposits the platinum from a molten salt of cyanide and platinum at temperatures between 500 °C and 600 °C. The functional platinum layer produced in this way exhibits excellent adhesion in addition to high ductility and extremely high purity.

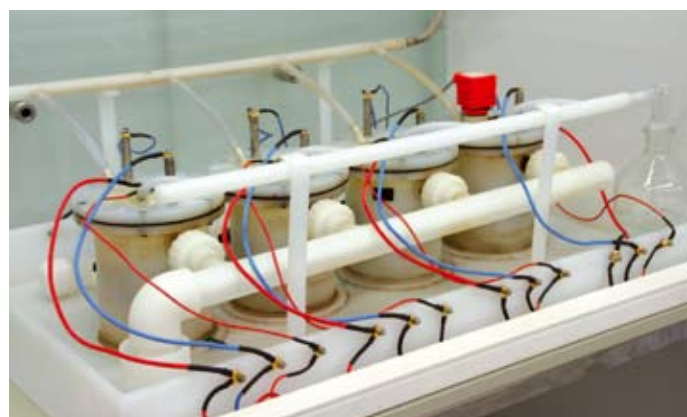


PLATINODE® – for chromium regeneration

The selection of the coating – whether platinum or MMO – as well as the determination of the necessary layer thickness depends on the customer's application. With three decades of experience, Umicore can competently advise you on advantages and drawbacks as well as economic efficiency.

Besides modern production facilities, all necessary methods are available to jointly develop innovative system solutions. These resources in particular are the research facilities of the Umicore group which is active world-wide or selected research institutes. At the Schwaebisch Gmuend location, modern test equipment is operated to simulate your application and to gather wear-off data in this way.

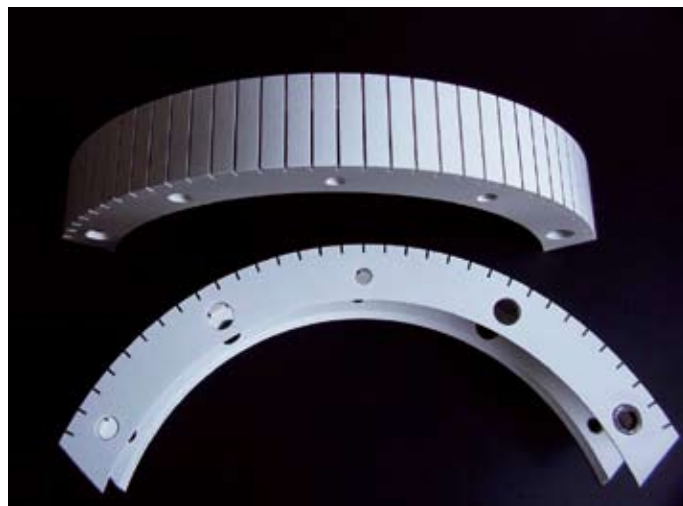
Test bench for testing the lifetime of anodes



Assembly of an anode

In addition, all common analytical processes of our extensive chemical field are available. Best pre-conditions, therefore, for quickly finding an efficient solution.

The substrates for manufacturing a PLATINODE® usually are refractory metals such as titanium, niobium, tantalum, molybdenum and tungsten. Different alloyed steels are used as well. Expanded metals, sheets, round materials, pipes, bars, ribbons and wires of many different materials and measurements are available. Umicore only uses qualified base materials of well-known manufacturers. A large stock of either coated or uncoated materials ensures short delivery times.



Anode for reel-to-reel applications

Umicore Galvanotechnik GmbH
Division High-Temperature Electrolysis (HTE),
will gladly advise you on planning, selection or conversion:

Thomas Ebert (Division Manager HTE)
Telephone: + 49 (0) 7171 607-259
e-mail: thomas.ebert@eu.umicore.com

Frank Friebe (Sales HTE)
Telephone: +49 (0) 7171 607-292
e-mail: frank.friebe@eu.umicore.com

New analytical laboratory

In May 2006, the Analytical Laboratory moved to another building with new, pleasant and spacious rooms.

After the building had undergone extensive renovation, the laboratory furnishings were completely renewed. A state-of-the-art ventilation system and safety-relevant equipments were installed. The laboratory space grew and functionality could be considerably increased by optimizing sample logistics. Moving took only a very short time so that work in the laboratory could go on almost without interruption. Increasing tasks combined with more staff and more analytical equipment had come up against certain limitations in the old laboratory rooms. The move has opened up new capacities for further growth.

As part of the Umicore services offered, bath samples from customers are analysed in this laboratory. Further tasks are, for instance,



Measuring place for atomic absorption spectrometry



Polarographic measurement



Workplace titration

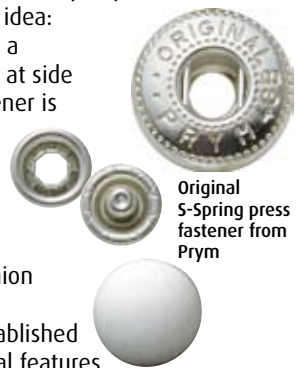
the quality testing of Umicore products or analysis during the development of new products. For these purposes, the laboratory is equipped with a wide range of instruments: atomic absorption spectrometry with ICP and AAS, spectrophotometry, chromatography such as HPLC or IC, automated titration equipment, electrochemical measuring methods and so on.

100 years of Prym's press fastener

MIRALLOY® - a bronze alloy process of Umicore Galvanotechnik – used in the barrel-plating of Prym's press fasteners for three years now.

Prym is Germany's oldest family company and the inventor of the press fastener. Since 1642 headquartered in Rhenish Stolberg, the international company now employs a staff of approx. 4,000 worldwide. It was Hans Prym who in 1903 decisively improved the function of the small button with a brilliant idea:

A rustproof bronze wire in the shape of a double-S-spring was inserted into a slit at side of the upper part. Today the press fastener is produced with the help of computer-controlled automatic manufacturing machines in all possible shapes and colours. 15 million items every day.



Original S-Spring press fastener from Prym

For approx. three years now, Prym Fashion has been plating press fasteners with MIRALLOY® – one of Umicore's well-established white bronze electrolytes. A few special features of the copper-tin-zinc coating: It is non-allergenic, diamagnetic, abrasion- as well as corrosion-resistant and has a white coating colour similar to silver and so on.



Fully automatic surface centre at Prym Fashion



Your Gold connection:
+49 (0) 71 71 / 6 07 - 2 99

Simone Zaremba will provide you with the current Umicore daily prices for precious metals.

e-mail:
simone.zaremba@eu.umicore.com

Employees retiring from Umicore Galvanotechnik

Three Umicore employees with a total of 87 years experience in electroplating have been seen off.

There was a certain amount of melancholy as the management and about 180 employees of Umicore Galvanotechnik bid farewell in the well-earned retirement to Willi Müller, Sales Manager (32 years of service with Umicore), to Gerhard Steinhilber, Division Manager of Platinized Products (also 32 years of service) and to Klaus-Peter Beck, Sales Representative, at the end of October 2006 after 23 years of service. Over the years connections and personal relationships have been established which are far beyond the day-to-day business. All three still young retirees have made a great contribution towards the company's current success.

After completing an apprenticeship as an electroplater with WMF in Geislingen **Willi Müller** joined Schloetter in Geislingen. He then continued his career in the electroplating field with a great deal of success. First he completed an advanced training course at the vocational school in Schwäbisch Gmünd to become an electroplating technician. A master of technical business administration followed. This gave him the qualifications necessary to continue his professional career at Umicore Galvanotechnik GmbH (formerly Degussa Galvanotechnik) in Schwäbisch Gmünd, which he joined on 1st April 1974.

Mr. Müller started as a technical consultant in the sales team in the field. He also performed special tasks in neighbouring foreign countries and later also in Asia. Because of his excellent skills, he was appointed as head of the sales department in 1979. Willi Müller fulfilled this job so outstandingly that the company gained many new customers and could introduce new products to the market. He was held in high regard by all business partners who saw him as a competent and reliable partner for service and support in German and European countries.



Left to right: Gerhard Steinhilber and Willi Müller, two new young retirees.

After completing his apprenticeship as toolmaker, **Gerhard Steinhilber** worked in this occupation at a metal working factory in Tuebingen. Parallel to this he attended evening school to gain the entrance qualifications for engineering college. In January 1971 he started his studies at Aalen Technical College in the metal finishing and materials science field and completed them in 1974 with an engineer degree. This provided Gerhard Steinhilber with the necessary qualifications to begin his successful professional career with Umicore on 1st April 1974.

Initially Gerhard Steinhilber started in the applied technology unit of the precious metal laboratory and moved to the support and development team for the plating with reel to reel systems in 1980.

Beginning from 1990 he worked in the high temperature electrolysis (HTE) department, of which he became Head of the Department in 1994 due to his outstanding professional skills.

In the HTE department Umicore produces platinized anodes based on a unique molten salt process. With his strong commitment Gerhard Steinhilber helped Umicore Galvanotechnik and its platinized products to gain an outstanding reputation in the international market. Quality and reliability of the services were always his top priority.



From right: In October 2006 Albert Klotz says farewell to Klaus-Peter Beck.

After completing his apprenticeship as chemical laboratory technician with a company in Wanne-Eickel, **Klaus-Peter Beck** had his first experiences in an analytical laboratory with a company in Herne. During this time he became familiar with the development of electroplating baths and processes and was already working in the field of customer service and support.

From 1972 to 1974 Klaus-Peter Beck attended an electroplating technician course at the technical college for metal design and metal technology in Solingen. In addition to his work in the laboratory over the following years he was also entrusted with customer support in Germany and abroad. Between 1980 and 1990 Klaus-Peter Beck worked as a sales and support representative for Degussa Galvanotechnik (now Umicore). Initially he was responsible for supporting customers in North and West Germany as well as Belgium and the Netherlands. Since 1987 he also managed the sales office in Pforzheim.

After a brief interruption Beck returned to the company in 1994 working in the field as sales Representative and was especially responsible for the area of Southern Germany. Because of his good technical skills and experience as well as his high level of commitment Mr. Beck was a very popular adviser among his business partners. He was especially valued for his flexibility to work abroad and his distinctive professional competence.

ZOG annual programme 2007

for vocational training and continuing education in electroplating and surface technology (in German language)

If you have not yet received the new ZOG annual programme for 2007 please request a copy at info@zog.de or phone +49 (0) 7171 607-314.

More information at www.zog.de



Knowledge is power

On the occasion of the 20th anniversary of the founding of the Zentrum für Oberflächentechnik Schwäbisch Gmünd e. V. (Z.O.G.) [Surface Technology Centre] the founders, partners and friends of the organisation came together in October 2006.

The large number of well-known guests of honour made it quite clear that in the last 20 years Z.O.G. has become an important provider of vocational, further and advanced training in the field of electroplating and surface technology in German-speaking countries. By imparting sound and specialist knowledge in seminars, presentations and special events the association has grown into a very important partner for the industry.



Ceremony in "Prediger" Cultural Centre in Schwäbisch Gmünd.

Thomas Engert (ZOG Chairman and Managing Director of Umicore) made an interesting speech at the anniversary ceremony – "An ox and a red cat – electroplated layers: the finishing touch on innovative and attractive products". He spoke about the possibilities of surface technology. The most important process for applying metal coatings is plating, which originated two hundred years ago. Today, as in the past, surface technology – and in particular electroplating – have made a considerable contribution to the production of attractive and innovative products for all areas of our lives. The title "An ox and a red cat" – anodes oxidise, cathodes reduce – is a way of remembering the electrochemical processes that occur in plating.

In the afternoon the guests visited Gmünd facilities such as the Ott-Pauser factory, the technical colleges for plating and PCB technology, Umicore Galvanotechnik and the fem (Forschungsinstitut Edelmetalle & Metallchemie [Research Institute for Precious Metals and Metal Chemistry]).



Left to right: Elif Özalp, Atamer Özalp, Uwe Seber (Umicore), Mustafa Göktepe and Thomas Engert (Umicore) in front of the new shop.

Galtek A shop right in the centre of Istanbul

The Turkish Umicore representative Galtek Nadir opened its first shop at the end of November 2006 right in the heart of Istanbul to gain a strong foothold in an important European jewellery market.

Umicore products for decorative surfaces – such as RHODUNA® – are selling extremely well.

14 nations at the Soccer World Cup at Umicore

On the occasion of the 2006 Soccer World Cup in Germany Umicore came up with a good idea which follows the motto „A time to make friends“:

At the beginning of June 2006 business partners from 14 countries were invited to spend a week in Schwäbisch Gmünd at the Umicore World Cup Event. An extensive range of presentations and information was rounded off with the accompanying World Cup programme in the evening.

The guests were over the moon as a result of the enthusiasm, the friendliness and the multinational togetherness within the scope of the WM Arena in the heart of Schwäbisch Gmünd. In light of the many recent reports, what developed away from global politics, namely complete conviviality and sportsmanship in front of the large screen, could be regarded as a minor „Miracle of Umicore“. Wins and losses were experienced by the guests from the UK, USA, Ireland, Iran, Thailand, Japan, Syria, Egypt, Sudan, Saudi Arabia, India, Italy, United Arab Emirates and Spain. Seldom has the Schwäbisch Gmünd marketplace seen such an illustrious group of guests at once.



The "United Nations of Umicore" on the stage of the Schwäbisch Gmünd WM Arena.

Bronze for Umicore team

At the end of October 2006 nine colleagues from Umicore Galvanotechnik competed for the seventh time in the "16th Schwäbisch Alb Marathon" in the relay run in Schwäbisch Gmünd in perfect weather for running. The team achieved an excellent third place in 4 hours 13 minutes and 59 seconds, competing against 16 company relay teams. At approximately 1,100 metres above sea level in an idyllic landscape around Schwäbisch Gmünd the course crossed the "Drei-Kaiser-Berge" with a total distance of 50 km.

The happy Umicore team at the winning post.



Back to the future

Golden dreams came true with AURUNA® 311.

Special made cars are nothing unusual in the automotive industry. But a golden DeLorean (Model DMC 12) with stainless steel body and unique gull-wing doors remains unique in the history of cars to this day. The sports car was especially known as the "time machine" from the movie "Back to the Future".

The golden story began in 1979: while looking for a special advertising event for its Gold Card credit card company American Express approached DeLorean Motor Cars Ltd. in Northern Ireland. They decided to produce a series of no more than one hundred cars exclusively for American Express. As a special feature the bodies were to be given a 24-carat gold coating.

Gold plating the DeLorean DMC 12 car at Umicore

In the search for a suitable coating company they came upon Umicore Galvanotechnik (then still Degussa). The electrolyte AURUNA® 311 – for direct gold plating on stainless steel – had just been launched on the market. The deposited gold surface has very good adhesion qualities with no need for an intermediate layers which could be sensitive to corrosion. The deposit is non-porous and ductile and has an excellent brightness. Once the electrolyte type had been chosen the next issue, namely the large size of the body parts (up to 1.5 m²), had to be resolved, as the baths in the company's own electroplating shop were too small.

Umicore found a suitable partner in Karl Holder near Kirchheim-Teck, and rented a large plating plant for a week. Holder specialises in non precious metal processes for industries such as the automotive industry.



Measuring the gold layer



Reworking the brush coating



DeLorean "Gold Edition"

In September 1981 the DeLorean Gold-Edition project commenced. 2,500 litres of AURUNA® 311 gold electrolyte were produced for this purpose. The body parts were pre-cleaned manually and the areas that were not to be gold plated were coated with a stop-off lacquer. After the usual pre-treatment the brushed stainless steel parts were directly gold plated. The specifications demanded a 2.5 µm

gold layer; with eight body parts per car, this amounted to 800g of gold. During the test phase two DeLoreans cars and spare parts have been plated.

In 1981 American Express offered the Gold Edition in its Christmas catalogue. The car was only to be ordered and paid for with the Gold Card. Back then the price for the DeLorean car was \$85,000 (around twice as expensive as a Ferrari). Anyone placing an order had to make a down payment of \$10,000.

However, the company only sold two gold cars, which are now owned by the Snyder National Bank in Texas and the National Automobile Museum in Reno, Nevada. The third car was only produced from spare parts after the DeLorean Motor Company went out of business and was the last DeLorean to leave the production line in Northern Ireland in 1983. This car was the only one to be actually used on the road and has changed ownership several times over the years.



Your opinion is as good as gold!

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