sprimagazine

02/10

The customer magazine of Sprimag Spritzmaschinenbau GmbH & Co. KG

www.sprimag.com

A New Approach for Rubber to Metal Bonding Applications
» **Page 2**

UV Coatings in the Cosmetic Industry

Scratch resistance, environmental friendliness and reduced lead times — what makes UV technology that attractive

» p. 3

OVERVIEW

Dear Readers,

After a successful trade show season for the first half of 2010, Sprimag is now turning our attention to preparing for K 2010. The K Fair is the premier show event for plastics technologies. From October 27th till November 3rd the world's largest show for the plastics and rubber industry takes place in Düsseldorf. With 3,000 exhibitors from over 50 countries the K is the most important information and business platform of this industry. Exhibits filling 19 halls include products and services showcasing current technology solutions and cutting edge applications will be presented.

During the K Sprimag's exhibit focuses on flexible machine designs adapted to customer specific requirements. At our booth we will present compact coating solutions with robot applications illustrating several processes. The flexibility of coating robots enables precise application of the coating material on most different geometries of plastic parts or also for applying rubber to metal bonder. Please see also page 2 of this **sprimag**azine showing a new approach for a robotic machine design for rubber to metal bonder application.

Please visit Sprimag in hall 04 booth A15, at the K. We will be happy to welcome you!

Michael Anger Philippe Nollet

Michael Anger und Philippe Nollet, Managing Directors of Sprimag, are looking forward to the K 2010 in Düsseldorf

Orders for Packing Machines Remain Very Strong

Internal Coating Machines Ensure Demand Boom

Following right behind an excellent spring 2010 Sprimag continues to show its strong market leadership role with several orders for midyear. These orders illustrate Sprimag's flexibility in internal coating machines for aluminum tubes and cans. Along with the positive information on the number of orders are the varied locations of the customers and the variety of technologies requested in the orders.

In September 2010 the first internal coating machine for aerosol cans utilizing the newest HIL-70 system (internal coating machine with a choice between wet paint or powder paint) is being delivered to our customer in the Czech Republic. A second similar machine will be installed in the same facility near the end of 2010. In North and South America to both market leaders Sprimag could meet customers requirements for well-developed and reliable working machines by the supply of further internal coating machines for aerosol cans being equipped with a HIL-64 as core unit. Also by these customers we have already been awarded with follow-up orders for 2011.

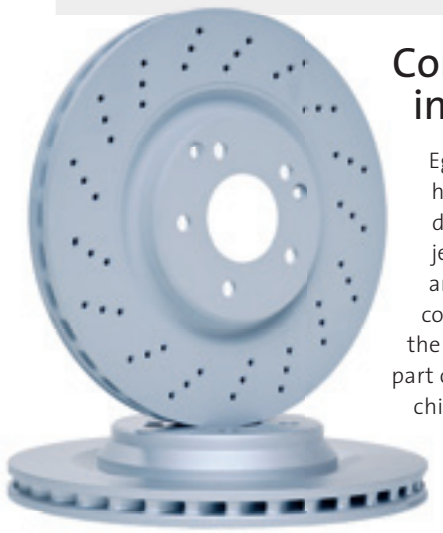
The aluminum tube market is providing increased demand for Sprimag as well. Customarily the global market for this area supports orders for one or two new systems per year. Fortunately Sprimag has already received two new orders for delivery in the middle of this year. One of these machines is designed with a part cycle of 200 for a customer in Eastern Europe for delivery in April 2011. As this will be a new reference machine for Sprimag.

The flexibility of our designers and our installation fitters allows us to meet this increase in orders without extra long lead times. "The strong volume of orders for 2011 provides a great start for the coming business year. However, we are still in a position to stay on schedule within usual delivery lead times and provide our customary renowned high quality", said sales manager Joachim Baumann.

» **Joachim.Baumann@sprimag.de**

First HIL-70 for internal coating of aerosol cans, either with wet or powder coating, was delivered.

NEWS + FACTS



Corrosion protection for brake discs

Combining two systems increases efficiency

Egyptian German Automotive Co. (EGA), has invested in a second Sprimag brake disc coating system. The goal of this project was to combine common functions of an existing system with a newly designed coating unit. The drier and cooling zone of the new unit is a completely independent part of the new system. The new coating machine is positioned beside the existing unit. The drier and cooling zone is situated in front. The loading area is organized to enable both units to provide parts in mixed operation.

» **Ralf.Wiens@sprimag.de**

New Coating Machine for Metal Parts

Sprimag has been awarded with an order from Willi Elbe Gelenkwellen GmbH in Tamm, Germany to provide a fully automatic coating system to coat steering shafts. The unit is designed to coat the outside of steering shafts with solvent free UV protection paint. A reduced need of space was a very important argument for our customer when deciding to buy the UV technology.

More detailed descriptions will follow in future issues of **sprimag**azine.

» **Wolfgang.Stiborsky@sprimag.de**

Minimization of overspray by using coating robots

Environmentally Friendly Coating

The new double coating machine for brake discs is equipped with a multi-decoupled conveyor system in order to operate with different temperatures efficiently and cost effectively. Considerable energy is saved by using exhaust air from the drier via a heat recovery unit. When a fully automatic baffle plate spray station is included, exhaust filters for each booth are no longer required, another environmental plus and cost savings. Altogether a very up to date and environmentally conscious investment in the future.

» **Ralf.Wiens@sprimag.de**

Round Table Coating Machine for rubber to metal bonding parts alternatively also available with coating robot

Reduced Change Over Times = Reduced Costs

A New Approach for Rubber to Metal Bonding Applications

For many years Sprimag has produced proven manufacturing machines to apply adhesive layers to metal parts. These parts are then bonded with rubber to create rubber to metal vibration absorbers. This technology is now facing added requirements.

While insisting on using the normal proven process used in high quantity production runs, manufacturers are striving for new efficiencies. Today's market requires smaller production runs, with less set up, change over and down time, all the while improving process adjustments and reducing overspray to improve quality. Our approach is to combine a compact coating robot; automatic cleaning brush and Sprimag spray equipment.

The solution includes using the newly developed Sprimag S-7 spray gun with quick change device. No time is spent readjusting the spraying position because the spray gun body quickly and easily releases from the base for cleaning or replacement without changing its position. Incorporating the robot also reproduces spraying positions instantly while limiting overspray issues. Additionally the robot will present the gun assembly to the technician in a convenient position for service.

These technology improvements result in very user friendly machines. Non-productive time is considerably reduced while quality is increased. With readjustment no longer necessary the improved efficiency in turn lowers manufacturing costs and ultimately each component costs less.

Sprimag also provides many options for energy efficient integration in central exhaust systems. Whether as integrated solutions or standalone circulation systems with fine filters to change, or fully automatic clean off filter systems.

The standalone circulation system may also be of interest for customers who already have a system in operation for coating rubber to metal bonding, because this system can be retrofitted.

Please contact Sprimag to allow us to work out your optimal spraying process and by doing so help you to save time and money.

» **Uwe.Ginnow@sprimag.de**

Two Paint Systems for Toyota

Sprimag Inc., USA, Supplies the Largest Coating Machine in Sprimag's History

Sprimag, Inc. recently installed two paint systems for a newly formed company in Tupelo, called APMM (Auto Parts Manufacturing Mississippi). APMM is the name of Toyota Auto Body. The larger of the two systems was originally designed to paint Toyota Highlander bumpers. The smaller system is intended to paint Toyota instrument panels (IP).

The load area of the bumper unit is at the work deck located on the first floor of the building. The conveyor carrier traveling through the load area is continuously moving. At the end of the work deck, the conveyor carrier is transferred to a fast speed chain. This fast speed chain transports the carrier up an incline to the wiping booth. The carrier stays at the same elevation through the paint spray booths, preheat and cooling enclosures, and the setting tunnel. The wiping booth, spray booths, preheat and cooling enclosures, and the setting tunnel are located on the second floor of the building. A blow-off, to remove airborne contaminants, is located at the entrance of the wiping booth. Conveyor stops are located inside the wiping booth to allow the parts to be wiped while the carriers are not moving. A blow-off, equipped with static neutralizing bars, is located at the exit of the wiping booth.

The bumpers are painted inside three downdraft waterwash paint booths (prime, base, and clear) with automotive type scrubbers. Stops are located inside each booth to allow short part travel times and long paint application times. The clean room for each paint booth is located on the second floor next to its respective paint booth. The clean rooms allow good viewing of operations inside the spray booths. A preheat tunnel and a cooling tunnel are located between the spraying booths.

A setting tunnel, following the clearcoat booth, allows the coated parts to flash off before oven curing. A second fast speed chain, located inside the setting tunnel, takes the conveyor carrier up an incline to the oven and down a decline to the oven cooler. The second fast speed chain then goes through part storage and down another conveyor decline prior to unload. The second fast speed chain ensures that the chain that has been painted stays in the spray booth.

After cure, the parts are ambient cooled, before they reach the storage area. Parts are manually unloaded on the work deck located on the first floor.

At the time of writing, Toyota Corolla parts have been designated as the parts to be painted at the APMM facility. Start-up and commissioning of both systems are planned for early 2011.

» **Felix.Ampon@sprimag.com**

The bumper system is designed with a working area on three levels with a length of 65 meters

Removes paint contamination from tools, chucks and spray guns

A Clean Business

The New Sprimag Ultrasonic Cleaning Unit UR 4/1

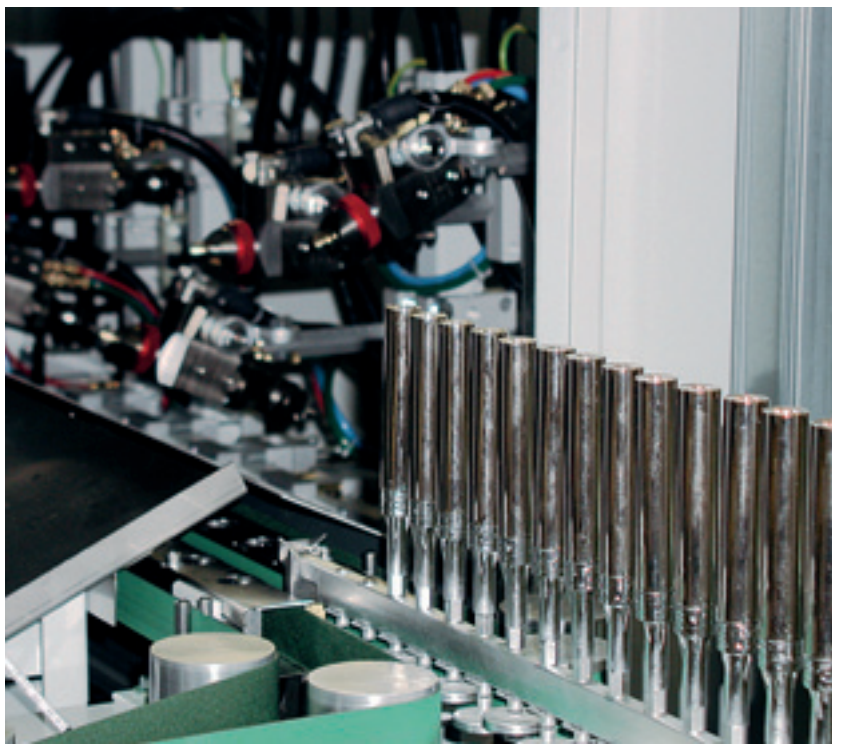
In coating machines contamination of tools, chucks and spray guns cannot always be avoided. For efficient and easy cleaning of these items Sprimag has added to its product line an ultrasonic cleaning unit. The Cleaning Unit UR 4/1 is a fully automatic ultrasonic supported cleaning system. In the active washing bath powerful 2.0 kilowatts ultrasonic cleaning unit is included. Its generator is integrated in the control cabinet. The dipping oscillator is positioned inside the cleaning tank. The bath tank is heated and functions in automatic or manual operation modes via the control panel.

Best cleaning results are achieved by two different automatic cycles. With normal contamination cycle 1 is applied with a ten minutes period of cleaning, in strong contamination of the parts cycle 2 is elected with a program of 25 minutes. The powerful Cleaning Unit, complete of stainless steel, cleans intensive in the active washing bath by optimal combination of ultrasonic, temperature, detergent and oscillation. The modular design of the UR 4/1 allows it to be applied to satisfy nearly every customer's requirements.

» **Design: Dietmar.Ramminger@sprimag.de**

» **Service: Carsten.Woischnik@sprimag.de**

The integrated conveying system with the flexible carriers support the advantage of the short process times of UV-coat application



UV Paint Application: “A metamorphose in a Time Lapse”

UV Coating Machine for the Cosmetic Industry Sets the Highest Capacity Standard

For the last 3500 years everyday items have been improved with coating processes. Only after a mostly liquid material is properly applied and via curing changes its state to a solid, are they truly appreciated. It’s in this final state that the everyday items durability, true intrinsic value, and last but not least its grace is revealed.

By changing a coating’s aggregate state, as in the morphology of coating agents, which for common paints is connected mostly to long drying and interlacing phases, might be performed comparatively rapid with UV technology.

The advantages of UV paints become evident not only when coating large relatively flat surfaces. Faster drying time is an advantage in many industrial coating processes for mass production or series processes.

The market share of UV paint application is growing Pushed by increased quality technical features and scratch resistance requirements, continued increases in capacity standards of mass market production and materials, tighter environmental requirements to reduce solvent emissions, finish quality standards from the automotive and consumer products industry reached.

Since its introduction in the 1960’s UV paints have grown to a market share of approximately six to eight percent. Beginning in the 1970’s Sprimag manufactured the first industrial coating machines for three dimensional parts coated with UV materials. Sprimag carries on its leadership role in UV technology with current projects.

UV Coating Machine for the Cosmetic Industry In the cost sensitive cosmetic packaging industry Sprimag supplies UV coating machines with high capacity capabilities. In this example the capacity requirement is for approximately 15,000 parts per hour. This coating system complete with an integrated conveying system and flexible carriers takes advantage of the short process times of UV coat application to provide the required capacity. Sprimag customers need to be able to react quickly to market requirements. With increased efficiencies and production runs of 45,000 to 90,000 parts per order now flexibility is possible like never before. The long drying cycle time for conventionally painted parts, creates production lots typically of 5,000 to 7,000 parts. Today’s UV cure cycle time is so fast that production lots can be reduced to 100 to 120 parts. By including improved carrier systems and technology like an intelligent control design that identifies the exact part being processed, virtually interruption free production is also possible. This example’s complete process includes a primer line, a PVD (Physical Vapor Deposition) unit and a top coat line. In as little as 20 minutes raw parts are processed into cosmetic flacons. The parts are quickly and efficiently transformed from an “ugly duckling to a beautiful swan”.

> *» UV coatings offer cost reduction and improve quality simultaneously. «*
>
> *Tasso Karsch*

Compact Machine Design Another positive for UV cure systems is their total floor space requirement. Sprimag designs single line UV solutions which require only 90 to 100 square meter compared to conventional paint solutions which require approximately 160 to 170 square meter of valuable floor space. Pretreatment of the parts with ionization, a flaming station, a mechanical brushing station, primer pre-coating, intermediate flash-off and final primer coating as well as IR-evaporation zone and UV drier with a cooling tower are included in this compact machine design.

The complete design combines a primer line, a PVD unit and a top coat line and allows complete coating of the raw parts to cosmetic flacons in 20 minutes. A sort of transformation from an “ugly duckling to a beautiful swan” in a time-lapse

Other design requirements for this machine are the common UV product six minute flash off cycle and exposure of each surface of the part to UV for five seconds. This compares with typical flash off and drying time of approximately 17 minutes in a conventional drying oven.

Reduced energy consumption Often reduced energy costs are sited when comparing a UV to conventional cure system. Although energy savings should not be the primary reason to move to UV cure systems, the savings generated cannot be ignored. The consistent, enhanced quality of a finished “Beautiful Swan” take center stage but the energy savings breaks down as follows. Energy for pure UV curing of the paint are up to 30 to 40 percent lower than interlaced paint systems with similar performance. When high gloss coatings and lower solids materials with solvent contents of 25 to 35 percent are utilized the solvent flash-off process must be considered as well. A heating source for heating exhaust and circulating air quantities is required. Finally the power loads of the IR-radiator used to strip out the remaining solvents of the UV interlacing have to be taken into consideration. In comparison to this connection load of approximately 150 kilowatts to be calculated for a heated air drier with performance of approximately 2.5 square meter per miuntes, it has been calculated with approximately 170 kilowatts for IR and UV at the capacity described above.

It should again be pointed out that for this customer the production capacity was clearly the most important issue driving this investment. This customer achieved the requested production levels and enjoyed the additional advantages and flexibility provided by UV paint.

Development Project The market shows indications toward increased use of UV paints in general industry as well as IT, cosmetics and automotive industries. Sprimag recognizes these potentials and is currently driving development projects pushing the strengths of UV paint coatings for high quality finishes. Sprimag technicians are developing new processes for three-dimensional UV drying technology including inert cure oxygen free possibilities and searching for solutions for curing in blind areas.

» Tasso.Karsch@sprimag.de

WHEN CONSIDERING A UV CURED PRODUCT PLEASE KEEP IN MIND:

In many fields **UV irradiation** may be an option in place of thermal interlacing methods.

UV drying might be used for 100 % liquid paints, water based UV paints, and double cure systems.

Physical characteristics of paints could be adjusted from soft to highly interlaced for most different substrates like metal, plastics or paper.

Drying of solvent free 100 % paints could be carried out at ambient temperature in some seconds.

EXPERT DIALOG

Kind to the Environment but also Tough

An Application Center as the one of Sprimag in Kirchheim-Teck Offers the Ideal Opportunity to Test Coating of Complex Parts With Practical Means of UV Technology, According to Holger Maier

In many cases outer coated surfaces have functional and decorative requirements at the same time. Along with those requirements, environmental aspects more and more have to be taken into consideration. This situation lays the ground work for UV cured paints which offer the possibility to combine environmental compatibility and high production capacity, as detailed in the following article.

Experts in the surface coating industry list UV curing as one of the three most important future technologies along with water based paints and powder coating. Paint systems cured by exposure to UV energy provide the best possibility to meet increasingly more strict EU environmental standards, explains Holger Maier, IST METZ, Nürtingen, supplier of UV systems, who as Sales Manager is responsible for special applications.

Favorable Characteristics of UV Paints From an environmental view UV technology offers the best opportunity for reduction of or avoiding VOCs (Volatile Organic Compounds). Compared to other coatings UV paints often feature superior chemical characteristics and mechanical traits. A very important advantage of UV coatings is their high resistance to scratching. For example a lip stick case with a scratch resistant UV cure paint layer avoids scratching of the surface for example when the case is carried in hand bags together with sharp edged objects like keys.

However, according to Holger Maier, UV technology may bring further advantages. Among other traits he mentions cost effectiveness due to high production speeds as well as quick further processing due to short drying times. Moreover drying in fractions of seconds helps UV coatings be less likely to become contaminated in comparison with other paint systems, which demand longer drying times in ovens. Also the footprint for a UV cure machine is considerably smaller than for conventional drying technology systems.

Wide Range of Use Hardness, speed, cost effectiveness and quality are some of the advantages UV coatings can provide. IST METZ has provided a great deal of UV systems for industrial applications. For example in the automotive industry for lenses and reflectors of headlights, trim, steering wheels, wood decors, wheel hubs or brake discs are all coated by a UV process. Other typical applications are the coating of plastic parts like cell phones. Also topcoat paints for display surfaces, demanding high mechanical properties, for example cell phones operated by a stick. Along with the discussed lip stick case and flacons in cosmetics, common commodities like sockets are coated with UV paints.

According to industry experts, in the field of surface technology in UV-curing one of the most important technologies in the future.

Curing instead of drying When a customer decides to apply UV technology he learns about the change from conventional drying, or the evaporation of solvents, to curing of a layer by polymerization. Integrating UV cure painting into the production process requires expertise in the new technology. Questions will occur, for instance; what happens with overspray, which kind of waste removal is necessary, is it possible to recover and reuse UV paints, or which housing design provides protection from UV exposure?

In order to ensure long term effectiveness of UV technology, Holger Maier recommends regular cleaning and maintenance. Contamination of lamps and reflectors will lead to unnecessary output losses. Doping of UV lamps for example by gallium or ferrous material in addition allows adjustment of the UV system to a certain range of applications. Controlling cooling via temperature and air volume assures constant operating conditions inside the machine independent of performance.

To realize the full potential of UV technology, a close cooperation with relevant partners of the supplying industry is recommended. This will enable to take the best together in a complete system that is optimized with its different components for the desired application. In terms of UV, a company like IST METZ can take advantage of its decades of experience. The company was one of the pioneers in the UV-curing of painted wood surfaces in the 1970's.

An Application center as the one at Sprimag headquarters in Kichheim-Teck offers the ideal opportunities to test coating of complex parts in process with UV technology according to Holger Maier.

Industrial applications provide many opportunities to use UV technology. Expanding the technology further continues to provide technical development potential. According to Holger Maier, much discussed LED-UV-technology, an area where IST METZ designed its own UV system, will not be the focus for the industrial sector in the near future. He believes optimizing reflector geometry and technologies will provide near term improvements.

THE WRITER

Holger Maier is Sales Representative for coating applications at IST METZ GmbH. The technician and technical business administrator works for twelve years with the Nürtinger UV equipment manufacturer.

IST METZ is a UV equipment manufacturer and provider of UV systems. The IST METZ group of companies, with head offices in Nürtingen, Germany, was founded by Gerhard Metz in 1977. With more than 500 employees and 13 subsidiaries the company guarantees on-site customer support.

CALENDAR

K
International Trade Fair for Plastics and Rubber
Düsseldorf, Germany
October 27 – November 03, 2010
Hall 4, Booth A15
www.k-online.de

Hannover Messe
International Trade Fair for Surface Technology
Hannover, Germany
April 04 – 08, 2011
www.hannovermesse.de

Metpack
Leading Trade Fair for Metal Packaging
Essen, Germany
May 10 – 14, 2011
Hall 3, Booth F35
www.metpack.de

BrasilPlast
13th International Trade Fair for Plastics
São Paulo City, Brasilia
May 09 – 13, 2011
www.brasilplast.com.br

ANNIVERSARIES

10TH ANNIVERSARY

Sprimag Inc.
Harris, Susie
» Accounting Administrator
Vanden-Eynden, Joseph
» Managing Director Sprimag Inc., USA

Sprimag Germany
Brüss, Steffen
» Mechanical Design
Eigenstetter, Manfred
» Process Engineering
Künstle, Klaus
» Mechanical Design
Wahl, Rotraud
» Accounting Administrator

Sprimag would like to congratulate the jubilarians and thanks for their long solidarity to our company.

40TH ANNIVERSARY

Sprimag Germany
Brander, Willi (retired)
» Mechanician
Hoff, Franz
» Mechanician
Lippkau Wilfried
» Mechanician
Sommer, Peter
» Mechanician
Wahl, Rainer
» Mechanician

50TH ANNIVERSARY

Sprimag Germany
Horer, Ernst
» Customer Service

40th and 50th anniversaries: Rainer Wahl, Peter Sommer, Ernst Horer, Wilfried Lippkau and Franz Hoff (from left)

IMPRINT

sprimag
automated coating systems

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Picture credits:
AGE fotostock/Strandperle (Page 1),
IST METZ (Page 4)
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Repro and print:
Bertsch KG Medienproduktion
Friedrich-List-Str. 4
70771 L.-Echterdingen, Germany