

A Question of Design

Thanks to Sprimag coating machines, Audi brake discs remain stainless

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Michael Anger and Philippe Nollet, Managing Directors of Sprimag, are looking forward to the spring fairs

Dear Reader,

Metal packaging is commonly used around the world. Whether salve from the pharmacy, beer from the supermarket or hair spray from the drugstore, every day we have contact with various types of metal packaging. To protect the contents of an aluminum can or tube, the container is coated with Sprimag Internal Coating Machines. Just last year Sprimag introduced an innovation to the metal packaging market. The HIL-70 makes it possible to coat the inside of tubes and cans with either wet paint or powder coating. The dual-use system allows easy conversion of the machine from wet coating to powder, thus ensuring a smooth transition to the new technology without the associated investment risk.

If you would like to experience this environmentally friendly process innovation, visit us at Metpack in Essen, Germany. There we will present the new HIL-70 for the first time to the general public.

We are especially pleased this year that from May 10th to the 14th there is once again: "Welcome to the World of Metal Packaging" METPACK 2011. See us in Hall 3, Stand F35.

We look forward to your visit.



Michael Anger

Philippe Nollet

Improved atomization, low air consumption

The S-7S offers a new nozzle generation

The S-7 spray gun system is used around the world in many machine configurations. The knowledge gained from this experience led Sprimag engineers to develop a new generation spray gun the S-7S.

The modular design of the S-7S with stitch-line operation or material circulation up to the needle (for sediment rich coatings) is no problem. Various color sections are available to ensure the appropriate results.

Depending on the nozzle set chosen, atomization is carried out by using innovative RP® (pressure reduced high pressure technology) or HVLP (High Volume Low Pressure) technology. Both RP® and the HVLP atomization is improved significantly when the new nozzle set is used. Air consumption can be reduced by about 20%. The spray jet of the new S-7S is even wider and softer

than its predecessor, yielding more reliable results. Alignment is improved between the air cap and paint nozzle by switching to a ball centering method. Due to improved alignment the spray jet provides optimal material distribution which in turn results in improved atomization.

The modified air cap thread is resistant to soiling and the need to tilt the air cap when screwing it on is a thing of the past. A simple and fast change of the air nozzle is ensured. The material transfer rate has been increased over previous models. Strict guidelines requiring transmission rates higher than 65% have been met.

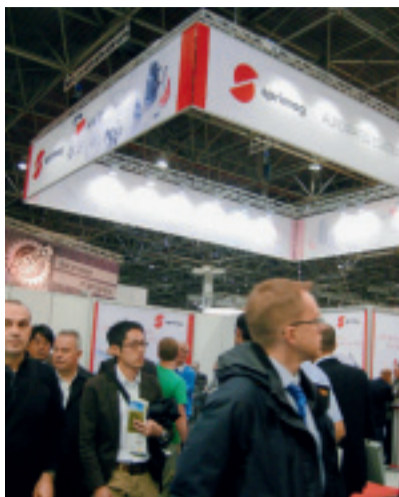
The modular design of the S-7 series allows retooling of the S-7 spray gun to the new S-7S by simple exchanging the color part.

» Achim.Simon@sprimag.de



S-7S: Easy to use along with the best spraying results

NEWS + FACTS



Record attendance at the K 2010

Every three years experts from the plastic and rubber industry come together for the industry meeting K in Düsseldorf, Germany. At the K visitors learn about the latest trends and new products. From October 16th to the 23rd Sprimag exhibited and broke all former Sprimag attendance records in Düsseldorf. Visitors came from over 30 countries to the Sprimag booth in Hall 4 to get information on the latest Sprimag coating solutions.

Hannover Messe

From April the 4th to 8th 2011 Sprimag will exhibit together with the VDMA at Surface Technology at the Hannover Messe. This time it's all back to the subject of energy efficiency. Sprimag would like to advise you and develop together with you an eco-friendly concept, tailored to your needs. Come to the show and experience yourself the latest trends live. Sprimag's booth is in Hall 6, Stand F13/8.

For a free entrance ticket send an e-mail to: Marketing@sprimag.de



Beautiful fragrance – nice coating

Before the year 2010 ended Sprimag obtained an order for a coating machine to coat glass flacons. The customer is HEINZ-GLAS, which specializes in production and refining of glass bottles. These containers are used for perfumes and cosmetics. Sprimag is looking forward to this project for a customer with nearly 400 years of tradition in the industry. The system will be implemented by mid-year.

» Wolfgang.Stiborsky@sprimag.de



By inner coating of party kegs Sprimag ensures good taste

And the party continues!

Sprimag ensures good taste from popular party kegs

Easy and fast to the fresh taste of beer, whether at home on the balcony or at a garden party - especially at events like the Soccer World Cup a party keg is a welcome guest. To improve the taste of beer for amateur tappers, packaging manufacturers around the world have pushed developments forward. "Draw beer like a pro" is the motto here. Thus, for example, a few years ago, the integrated tap was introduced as a popular innovation. The latest trend is the ability to integrate kegs with a fresh CO₂ cartridge. Thanks to this new technology, the beer stays fresh up to 30 days after opening. Sprimag contributes to these new market demands with the HIL-36 for the right taste.

On the Sprimag machine, up to 80 kegs per minute can be internally coated. This is a so called "refinishing" step where the keg shaped pre-coated panels are recoded to cover any potential damage.

The barrels are sent through a feed screw to a turntable, this prevents contact between barrels and thus, damage such

as scratches and bumps can be avoided. Transfer of the kegs from the first to the second spray station is accomplished using a vacuum enabled rotation device. Each keg is coated in two steps; first the inner wall followed by coating the inner bottom.

On the HIL-36, up to 80 kegs per minute can be internally coated

A highlight of the system is the ability to individually control the rotation speed during coating. The speed can be adjusted for each spray station independently.

After coating, the kegs are transported via a discharge transfer star on a conveyor. By utilizing a mechanical cam-driven motion, a highly reliable and simple control method is ensured. The user easily operates the system via a touch-panel featuring visualization.

Quick and easy cleaning is possible due to its dry exhaust system. Depending on exhaust air requirements an air cleaning filter can be retrofitted. The HIL-36 is easily adaptable to individual customer requirements and thus, can support rapid market developments.

» Matthias.Allar@sprimag.de

BY THE WAY...

We drink **86** million hectolitres of beer per year

In Europe there are **2800** breweries

The recycling rate of a party keg is over **91%**

On average, every German over **15** drinks 1 bottle of beer per day

In **1972**, the world's first party keg was developed

The first party keg with integrated tap was produced in **1998**

In vitro curing

Sprimag is active as a pacesetter for a better environment

In natural sciences the phrase "in vitro" (in Latin, inside a glass) is associated with experiments which are carried out in a controlled artificial atmosphere outside a living organism. Sprimag's target was a comparable approach inside the life cycle of a coating when developing a new procedure for drying and curing UV paints.

Sprimag joined a mutual development project with Hartec, a well known manufacturer of a first class PVD technology, a paint manufacturer and a manufacturer of UV lamps to develop coating layers which appear similar to chrome brilliance on plastic automotive exterior parts. The project titled "Challenger AMP1" (Advanced Materials Processing) has Sprimag, as the

coating machine manufacturer, taking responsibility for the coating process development." Especially the curing of the UV coating is the focus. This curing process is carried out under nearly

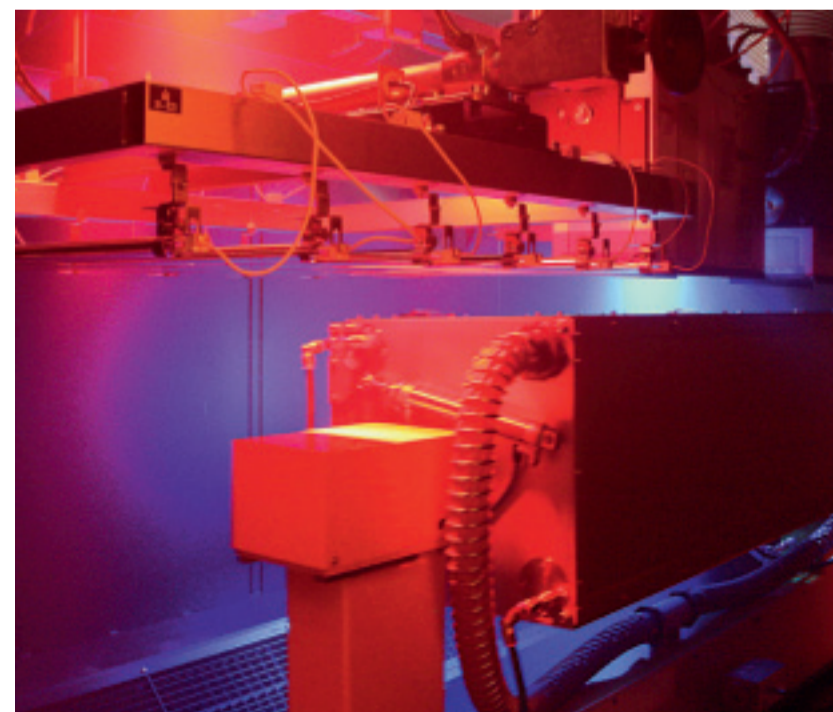
The curing process is carried out under nearly 100 % controlled conditions

100% controlled conditions. The goal is to produce great looking surfaces that fulfill all technical requirements. A secondary objective is protection of the environment by making efficient use of human, material and energy resources.

The pilot system put into operation at the end of 2010, provides visualization of proprietary processes allowing each step to be clearly defined and scaled up to production requirements. "Early Adopter" automotive industry companies have recognized the benefit of this technology and are supporting the Challenger AMP1 program. The pilot machine is based on a highly automated Sprimag robot shuttle system.

Supporters of the program who are part of the team when advancements occur will be able to utilize the new technologies in their own project to see for themselves how their processes may be improved.

» Tasso.Karsch@sprimag.de



The control area for radiation curing inside the laboratory is very compact, as is typical for Sprimag machines

Purely for aesthetic reasons,
brake discs are coated
with a corrosion protection

No braked coating

"With the Sprimag machine our brake discs are coated even more precisely and efficiently, thereby we save not only coating and waste costs, but also significantly reduce the CO₂ emissions!" according to Reinhard Mayershofer, Technical employee of carriage components manufacturing at AUDI AG

Since the invention of the aluminium rim several automotive manufacturers have started to work on the appearance of brake discs. Aluminium rims tend to reveal more and more of the components on and around the brake disc. Previously these components were simply functional. Especially on a new car rusty brake discs would catch the eye and detract from the shiny aluminium rims. Brake discs are manufactured from cast iron, which begins to corrode in just a few hours. Automotive manufacturer Audi solved this issue by coating the brake discs with a layer of corrosion protection. Since recent trends increasingly are going away from steel rims to aluminium versions, the Audi facility in Ingolstadt again invested in an innovative new Sprimag coating machine.

More economic & eco-friendlier

The decision to invest in a new coating system grew from a project to combine brake disc assembly at the Ingolstadt factory. Initially Audi considered moving an existing Sprimag machine, commissioned in 1998, into the new facility. After a detailed review it is discovered that a new machine would be substantially more economical but also eco-friendlier. Therefore Audi in Ingolstadt decided to invest in a new Sprimag machine to coat brake discs. Together with Sprimag a completely new approach was developed. By combining the experience of Audi and the expertise of Sprimag a completely new concept emerged. Sprimag was one of the first coating system manufacturers to develop and produce a machine to coat brake discs. Since that time more than 60 Sprimag disc coating machines have been delivered worldwide. "Audi trusted the many years of experience of Sprimag in the brake discs area, as Sprimag is the market leader in this industry," confirmed Bernhard Kerner, production planner vehicle chassis at Audi in Ingolstadt.

To achieve constantly a high coating quality, optimal conditions before

coating must be provided. As the coating stage is directly integrated in the manufacturing process, the brake discs are transferred straight from the mechanical assembly line. The parts therefore have a temperature (depending on which process) of between 20°C and 40°C. The temperature of the parts has an effect on the coating process. Thus the temperature of each brake disc is measured before coating and heated to a defined temperature in the preheating zone by IR-radiators. This insures that all brake discs have the same temperature in the coating zone.

Energy-saving drying

One of the notable improvements in the new concept compared to the old machine is the drying process. The new machine includes a circulation air dryer instead of an induction dryer. This change provides a substantial energy

saving and also adds the advantage of lower disc warping which saves rework. "By using the circulation air dryer as well as a heat recovery system we will save approximately 130,000 € in energy costs and reduce the CO₂ emissions to approximately 640 tons per year. These data were the deciding factors for the new investment of the Sprimag machine!" states Mr. Kerner, Audi.

Twin machine reduces down times

To minimize the risks of down times Audi decided on the concept of a twin machine. The Sprimag machine separates the brake discs into two coating cabins via an in-load belt. The in-load belt includes a part identification system, which forwards part detail infor-

system Sprimag met the requirements of Audi, to keep the down time as low as possible and to ensure process safety," says Ralf Wiens, Project Engineer, Sprimag.

Paint supply guarantee

A further highlight of the delivered Sprimag machine is concealed in the paint room. The conditioned room offers a complete automatic coating supply. The focus is exclusively on Sprimag manufactured

"The addition of Sprimag application technology, which has been optimized with the current system technology, achieves constantly high coating results."

DECISIVE ARGUMENTS FOR THE NEW MACHINE

- Energy savings of 130,000 EUR per year
- Reduce CO₂ emissions by about 640 tonnes per annual
- Lower cleaning effort
- Minimize the overspray, thus saving coating and waste costs
- Reduce rework costs

mation to SPS. So at any time the control knows, which type of brake disc is on which spindle. This control system allows brake discs to be coated in a mixed process.

The parallel coating cabins are each equipped with 4 compact coating robots. Each coating robot is equipped with a Sprimag spray gun, which coats the disc according to its type. Due to the small, flexible robots and the exact, fully automatic adjustment of the spraying position, as well as the pressure, a very precise quality coating is applied. The overspray is minimized to nearly 10%.

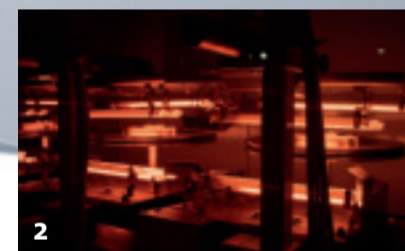
In addition, with the selected dual system, a paint booth can be serviced without shutting down the entire production process. "With the delivered dual

components, for example diaphragm pumps, material pressure regulators, and filter units. The fill levels of paint tanks and the speed of mixing arms are controlled and adjusted automatically.

The Sprimag machine is provided with a continual paint supply. If a tank empties, the paint supply will automatically change to the next tank. Thus, a continuous paint supply is guaranteed. In order to ensure process safety an automatic viscosity control was integrated in the paint supply. This can be utilized both on line and manually.

With the delivered Sprimag machine it is possible for Audi to coat more than 2 million brake discs per year in an eco friendly and economical way.

» Ralf.Wiens@sprimag.de



1 With this Sprimag machine brake discs can be coated precisely 2 For the constant high coating quality the parts are preheated by IR-radiators 3 Positioning of brake discs onto the loading belt of dryer 4 Precise and overspray poor coating by robots 5 The Sprimag diaphragm pump enables a gentle coat supply

"The machine design is a crucial aspect"

UV Curing Technology has been used in the printing ink industry and to coat plastic parts for a long time. Using UV-Coatings for metal parts is relatively young. Sprimag is using UV-Coating to coat parts made of metal, in a current machine design. We spoke with Siegfried Hiller, who is working with Wörwag GmbH & Co. KG, a leading manufacturer of UV coatings, about experiences and trends in UV-technology for the metal sector

What has Wörwag learned about the use of UV-Coatings on metal substrates?

The use of UV-Coating for metal parts is still relatively young. As UV-technology was originally from the printing ink industry and is nowa-

days often used for coating plastic parts, we had to start development for metals from the very beginning. Development of a UV-Coating for the metal sector began in 1998. For the first time in 2002 we were able to establish a UV-Paint to coat

hydro-coatings the passive corrosion protection is only possible via a compact paint film, which is generally achievable only with several paint layers.

Regarding active corrosion protection, it is no longer possible to produce coatings with corresponding protective heavy metals as they

are forbidden.

The UV-Coating provided the template to move in this direction. On one hand we could find UV-Coating systems with a 100% solid content, which are able to coat in one step, and on the other

hand the UV-Coating forms exactly the compact paint-film which we need for a passive corrosion protection. Due to the film density the paint is resistant against humidity and atmospheric oxygen, which is easier to reach with UV-Coating than hydro-coating.

In your opinion, what are the challenges in the application of UV-Coatings for the customer?

Compared to traditional coating with hydro-paints, coating with UV-Paints simplifies the coating process. Due to the elimination of several process steps, for example layer-forming pre-treatment, the coating process is less susceptible to interference and is able to be more flexible.

An important aspect to process UV-Coatings is, however, the system technology. It is absolutely required that the coating and the machine technology are compatible with each other. This is the only way we can reach an optimal coating result.

What is the trend of UV coatings? Could you please give us a preview?

In my opinion UV-Coating on metal parts will remain a niche market. Another application area is the coating process for massive aggregates, which cannot be coated with powder-coatings due to high energy costs. Or for parts that are not pre-treated with a wet chemical but must have corrosion protection.

A further trend is certainly coating with UV-Coatings in an oxygen poor atmosphere and with the involvement of UV light scatter. This offers the chance to coat complex 3D parts because hidden surfaces can also be cured.

Siegfried Hiller is the Manager of Customer Support Coating Technology for industry and test engineering areas with the company Wörwag



WÖRWAG COMPANY

Karl Wörwag GmbH & Co. KG, headquarters in Stuttgart, develops and produces high quality coatings for different industrial applications for nine decades.

ADVANTAGES OF USING UV-COATINGS IN THE METAL INDUSTRY:

- Fast curing
- Less required space
- Less investment costs for the system technology
- Reduced consumption of Coatings through recovery
- Saving Energy and CO₂ emissions
- Using traditional application equipment, the Sprimag application technology is also compatible for using UV-paint
- Better corrosion protection and resistance, which provides better quality parts
- Coating temperature-sensitive parts is possible

metal wheel hubs. This machine by Sprimag included the appropriate application technology, which was optimized for our UV-Coating.

In 2003 another customer followed with the same technology to coat diesel pumps. From this beginning it follows that Wörwag extended our laboratory and invested in several UV-laboratories. Nowadays we deliver a solvent free UV-Coating for seven different machines.

Wörwag has developed a new UV-Coating for corrosion protection of metal parts. A customer of Sprimag has been using this paint. What do you think, where are the key benefits?

The greatest benefit of UV-technology is fast hardening of the applied paint layers. This produces savings during drying of energy and time. It is very important for coating metal parts as corrosion protection to offer a coating with active and/or passive corrosion protection. In the case of



The new Hermle offers high-precision and economic production of parts

Flexible manufacturing ensures fast spare parts availability

Sprimag manufacturing capacity is expanded with a highly dynamic 5-axis milling machine

In the Sprimag own production up to 190,000 parts are produced annually. The production range includes spare parts of the application technology, as well as machine parts for the packaging sector. As the number of parts to be produced each year increases, Sprimag has invested in a new machining center.

Following the addition of a Gildemeister CNC lathe in 2010, Sprimag production is expanded again with a new 5-axis milling machine. Our goal is to keep delivery times short, even as spare parts requests are growing. "Therefore, in addition to the introduction double-shift operation and the expanded manpower, further machinery investment was the logical step," said Jochen Quattlender, Production Manager of Sprimag.

The new 5-axis milling machine is a Hermle machining center, which promises high precision and efficient parts production. Through the purchase of the new machining center, flexible production of

parts is possible. For example, we can respond quickly to customer requests, since the changeover times are very fast. The NC swivel rotary table with an integrated zero voltage system is just one of many highlights that the Hermle system offers. Through this clamping system, on which pallets can be positioned flexible and accurately, the setup time can be optimized by 30%. By matching precise positioning to 2 micrometer, a continuously high quality of parts is guaranteed.

Tool storage of nearly 130 tools enables many processes over the manufacturing spectrum. For this machine the production of complex 3D contours is no longer a challenge. The Hermle milled at a rate of about 18,000 revolutions per minute made possible by an integrated 80 bar coolant supply. These features help demonstrate that this investment by Sprimag includes the latest manufacturing technology available.

» Jochen.Quattlender@sprimag.de

CALENDAR



HANNOVER MESSE International Trade Fair for Surface Technology

Hannover, Germany
Hall 6, Booth F13/8
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

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FIP The Plastics Industry Exhibition in France

Lyon, France
May 24 – 27, 2011
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IMPRINT



Sprimag
automated coating
systems
Sprimag
Spritzmaschinenbau GmbH & Co. KG
Henriettenstr. 90
73230 Kirchheim-Teck, Germany
Phone.: +49 7021 579-0
Fax: +49 7021 14760
info@sprimag.de

Responsible for content:
Bettina Maier-Hermann

Design and production:
pr+co GmbH,
Martin Reinhardt
Fuchseckstr. 7
70188 Stuttgart, Germany

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