



What will tomorrow bring?

New market developments in plastic coating cause an increasing demand for flexible system concepts

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Dear Readers,

The start of September marks the end of the traditional vacation season, and many of our customers both within Germany and abroad are – much like us, of course – picking up the pace once more and are already setting a course for the end of the year. The fall is also our prime time for trade fairs. By presenting our company at the K trade fair, we can look forward once again to welcoming our customers from many countries around the world to our booth at this important industry trade fair.

The internationalization of our business both in the *Surface and Packaging* divisions has continued to increase this year as well. We are, of course, delighted with this progress, especially as it means that we have been able to compensate extremely well for the continued weaknesses in the domestic market. At the same time, as a medium-sized company, we can also see that we need to continually respond to these complex changes, together with the needs of our customers relating to the peripheral requirement areas such as communication, accessibility over time zones, availability on site, etc.

Overcoming technical challenges is practically part of our day-to-day activities. Most of our systems deal with a large number of customer-specific special solutions, and very few can even come close to being duplicated. This is where our strengths continue to lie. This issue of the Sprimagazine also provides



Joachim Baumann,
Geschäftsführer der Sprimag

you with examples of how Sprimag deals with customer-specific issues.

The demand for flexible system concepts for coating plastics is increasing thanks to a change in customer requirements such as a wider range of variants, shorter product life cycles and smaller batch sizes. You can find out about Sprimag's vision of a highly flexible concept for the future on page 3. We are also presenting an innovation in this issue on page 2: Following on from our testing machine for aluminum tubes, we will shortly be bringing a new testing machine for monobloc aerosol cans to the market – the LRP-30.

I hope you enjoy reading this issue of the magazine.

Joachim Baumann
Joachim Baumann

Diffusion-inhibiting coating

The Sprimag flow gun allows partial application of substances which provide protection during curing, even on parts which are difficult to coat

In gearbox manufacture, gears and shafts need to be partially protected in a way that prevents any unwanted carbon or nitrogen uptake in these areas during the curing process. This is done by applying diffusion-inhibiting coating agents such as Condursal to the areas which are to be protected.

However, precise application using conventional methods is often difficult in the case of rotationally asymmetric components, surfaces located inside the workpiece or partial coatings. The Sprimag flow gun meets these demanding challenges and enables targeted application of highly viscous coating agents with a large coating thickness.

It applies the curing protection substance in the shape of a trail (without atomization) onto the surface area to be coated. Large surface areas can be coated by laying the trails next to one another

and allowing them to flow into one another. The use of small robots or x-y axis systems is preferred here in order to position the flow gun above the part, which rotates slowly. Following the flow procedure, the curing protection substance is allowed to gel or dry. This prevents undesired running. This process is facilitated using camera systems which determine the position of the surfaces to be coated before the flow procedure begins. They can also be used to check the coating quality after the flow procedure has finished.

» Axel.Bolowich@sprimag.de



NEWS



The international canmaking congress "Cannex" took place in the Colorado Convention Center in Denver

Cannex

Leading representatives from the canning industry met once again at the international congress for can production and filling from 27-29th April. This year, Cannex & Fillex took place in the Colorado Convention Center in Denver. Sprimag also took part, presenting our range of coating systems for beverage and aerosol cans. At the heart of the event were the in-depth discussions about ongoing projects, current industry developments and future collaborations. Cannex will next take place in China in spring 2018.

» Marketing@sprimag.de



The Sprimag booth at PaintExpo – the leading international trade fair for industrial coating technology

Sprimag at PaintExpo

PaintExpo, which took place this year from 19th to 22nd April, once again brought together exhibitors and visitors from every area of the industrial coating technology sector. The trade fair, held in Karlsruhe, received more than 10,500 visitors from the industry, an even higher number than in previous years. The Sprimag trade fair booth – in hall 2, stand number 2418 – also welcomed a large number of visitors and our representatives were able to establish multiple new contacts, share ideas about current trend predictions and discuss specific projects. Among other things, we focused on topics such as integrated process control, UV coatings and our special applications.



In the spotlight: Coating machines with integrated process control

We would like to extend our sincere thanks for visiting us and look forward to seeing you again at the next PaintExpo in two years, which will be spread across three exhibition halls for the first time.

» Marketing@sprimag.de

NEW PRODUCT

Leak detection doubled

As a result of the line-oriented machine design, the new leak/crack testing machine for monobloc aerosol cans can be integrated into virtually any system concept

After the successful development of a leak/crack testing machine for aluminum tubes in various versions (as reported in detail in Sprimagazine 02/2015), Sprimag has taken the next logical step in this systems sector – which is becoming increasingly important in terms of the end customers – and has developed an extremely interesting testing machine for monobloc aerosol cans based on an overpressure/leak rate measurement – the LRP-30. Just like the LRP-20 testing machine for aluminum tubes, it was developed in collaboration with Bonfiglioli, an Italian company of the global TASI Group, specialized in testing machines. The main advantage of this collaboration on the LRP-30 is that all the testing technology is based on extremely proven technology of steel can testing machines.

As a result, Sprimag and Bonfiglioli were able to focus entirely on the development of the mechanical part of the machine. This involved adopting an entirely new approach. The machine itself has little in common with the testing machines from the steel can industry, such as those widely offered by well-known European manufacturers as WILCO alongside many imitator companies from Asia. The goal of development was to provide a line machine optimally adapted to the entire manufacturing process for monobloc aerosol can production.

At first glance, the LRP-30 appears to be very similar to the necking machine normally located upstream of the testing process. Unlike in machines used to test welded steel cans, the test plate, equipped with 30 testing heads, is supported above a large, horizontal

shaft by a two bearing support of the shaft ends. When the system is in operation, the cans are transferred from the outfeed conveyor system of the necking machine to the infeed conveyor system of the LRP-30, which has been deliberately kept short and compact. A vacuum transfer starwheel picks up the cans and transfers them directly to one of the 30 testing heads. The number of testing heads results in significantly longer testing times and therefore much more precise test results compared to the machine concepts previously used for monobloc aluminum cans. It is now possible to detect holes up to a diameter of 0.04 mm with a high level of reliability. After testing, the cans are transferred directly to the outfeed conveyor system of the testing machine and then on to the downstream packing machine, a pallet-

izer or a robotic packaging solution. The compact overall design, the optimized width of the machine and the line-oriented transfer in and out of the machine mean that the LRP-30 can be integrated into any line system concept.

In addition to optimized floor space requirements, a great deal of attention during the development of the machine was spent on an easy machine handling and a quick size part changing. The entire machine, together with the infeed and outfeed conveyor systems, is driven by a single servo drive. This avoids unnecessary complexity and susceptibility to failure – an important basis for high availability even for more simple organized customers.

The can length adjustment for other can sizes can be managed in between a few seconds via a single user command on the HMI. Another benefit of this machine concept is the identical system accessibility of the machine corresponding to the upstream necking machine and the downstream packaging machine. Thus at the end of the production process, as requested by the customer, all three machines can be optimally operated by just one person. The final touch to the sophisticated machine concept is the high-quality, industrial designed machine cabin based on the design of tool manufacturing machines.

There has already been initial interest in the new testing machine by Sprimag from some customers who have been looking for alternatives to existing machine concepts for a long time. The new Sprimag LRP-30 will make its first trade fair appearance alongside its little sister – the LRP-20 – and other new machine innovations at METPACK 2017.

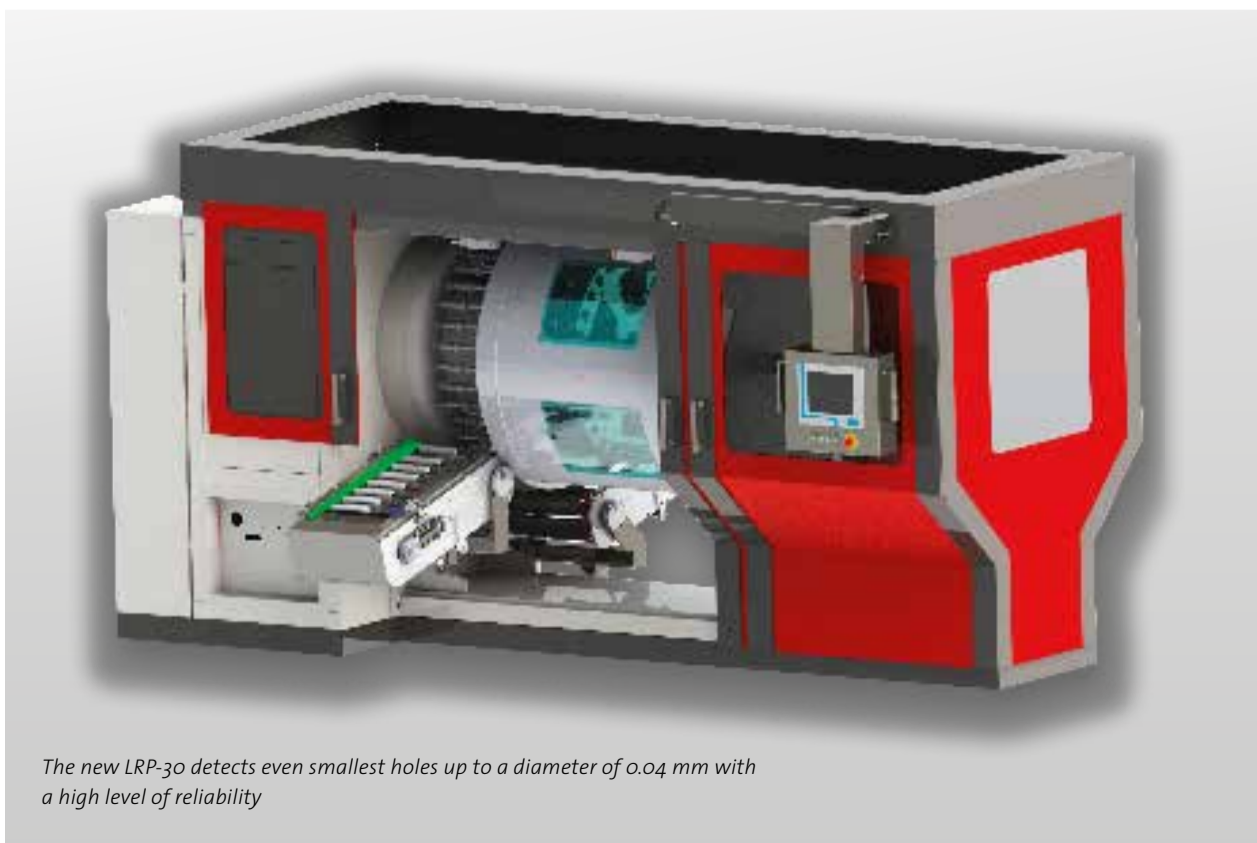
» Joachim.Baumann@sprimag.de

TECHNICAL DATA
LRP-30:

- Production speed: up to 250 cpm
- Standard diameter: Dmin 22 mm, Dmax 66 mm
- Standard length: Lmin 65 mm, Lmax 280 mm
- Testing heads: 30 pcs



The LRP-20 for aluminum tubes is already available in the Sprimag range for more than a year



The new LRP-30 detects even smallest holes up to a diameter of 0.04 mm with a high level of reliability

What will tomorrow bring?

Flexible system concepts for plastic coating enable us to be ready for future market developments

Customer requirements have changed dramatically in recent years. What is particularly critical here is that product life cycles are growing ever shorter, because it means that customers are also demanding significantly shorter response times. At the same time, the range of variants is growing steadily, while the actual batch sizes are shrinking. Furthermore, increasing demands on coating quality and efficiency are leading to a variety of different coating materials which will need to be processed in coating systems in the future.

This poses completely new challenges for system manufacturers – in the past, this requirement hardly needed to be taken into consideration as systems were typically designed for just one specific purpose. Highly flexible and closely customer-focused production is almost impossible in this kind of system. But how does Sprimag envision a highly flexible concept for the future?

Conveyor technology

The choice of conveyor technology has a decisive influence on the flexibility of coating systems. For example, continuous conveying systems such as chain conveyors or belt conveyors may represent a cost-effective solution, but their flexibility is limited. Discontinuous conveying systems such as pallet or power & free systems offer a far higher degree of flexibility. Although they are more expensive, they can replicate a variety of different coating scenarios.

For years, Sprimag has been successfully implementing pallet conveyor technology at its customers' sites in or-

der to carry out highly flexible horizontal coating on plastic parts. The conveyor system consists of various elements, such as curves, lifting and lowering stations, conveyor sections where parts can and cannot accumulate, etc. These elements make it possible to establish a flexible material flow concept which can include bypasses, junctions and switches. The workpieces are conveyed through the coating process on a pallet which is not fixed to the conveying system. Both "stop and go" and continuous modes of operation are available in the coating system, with different process speeds.

Pretreatment

CO₂ snow blasting, as an alternative to wet-chemical pretreatment (power washing), is becoming more accepted among OEMs and in the supply industry. In combination with ionization and activation processes (e.g. flaming), this forms the set up for flexible plastic component pretreatment before the actual coating process. If any process steps are not required for an order, the pallet conveyor system can simply pass straight through them.

Coating

With regards to the coating process, there are various approaches to system design which provide the highest possible degree of flexibility when responding to current market conditions. One possible approach which we have already successfully put into practice at Sprimag is the use of two spray cabins which can be used in different ways. This means that they can be operated in

both single-layer and double-layer coating applications. The second cabin can also be retrofitted at a later time.

In **double-layer mode** you can choose between "wet on wet" or "dry on dry" operation. Both options involve spraying with a base coating in the first spray cabin and with a clear coating in the second.

In "wet on wet" mode, the pallets holding workpieces which have been sprayed with the base coating are conveyed directly to the next spray cabin after an intermediate evaporation step, where they are sprayed with the clear coating. In "dry on dry" mode, however, after the base coating, the pallets are conveyed past the second spray cabin to the evaporation zone, the dryer and the cooling zone. Only after this stage are they conveyed via a short transfer section to the second spray cabin, where the clear coating is applied. In both modes, the pallets are then conveyed to the evaporation zone, the dryer, the cooling zone and finally to the unloading station.

If a particular project requires the use of **single-layer mode** for the coating, however, both spray cabins can be used at the same time – each cabin can spray a different paint, or both cabins can apply coatings of the same paint, in order to increase production capacity.

Drying

Different drying methods need to be used depending on the coating applied – this is made possible thanks to a flexible system concept. In this way, multiple drying methods can now be carried out by one system, such as evaporation with or without infrared drying, convection drying and UV drying. Individual process steps can then be combined using a bypass. For example, when using Dualcure UV coating systems, a thermal drying method is combined with UV curing. When changing to a Monocure UV coating system, for example, the flexible conveyor technology simply conveys the parts past the thermal drying process.

» A flexible coating system primarily relies on a coherent overall concept, i.e. interaction and cooperation between the system control system and the conveyor and process technologies. «

Coating supply and application

Coating supply is becoming more and more important because of the variety of different coating systems available. The right equipment ensures process reliability in single- or multi-component coating systems based on water or solvent as well as UV coating systems used alternately. Autonomous paint supply or integrated paint change systems guarantee the flexibility which is required in this sector.

System control using identification system

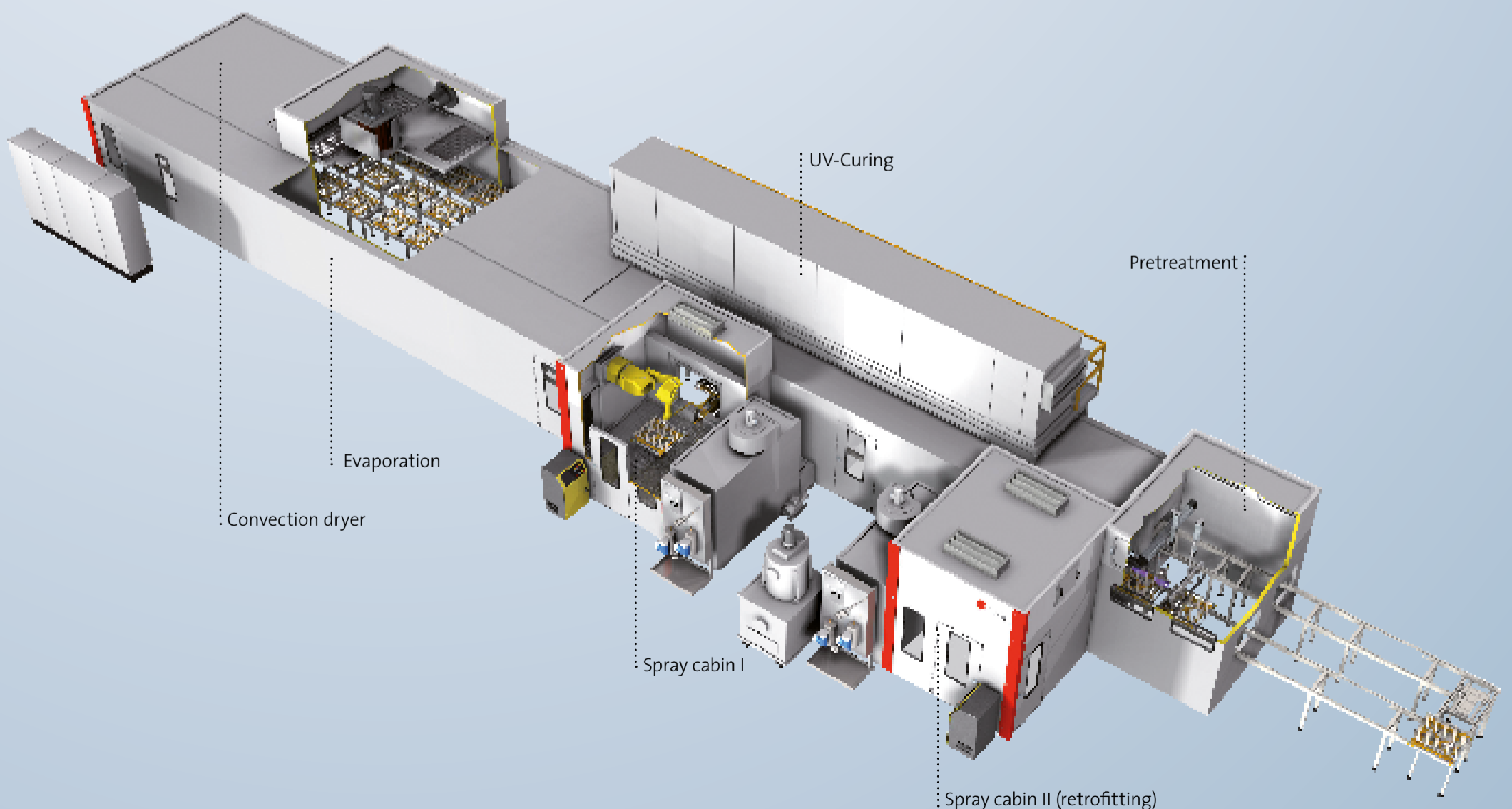
Such a high degree of flexibility can only be achieved using an identification system. Read and write points are located at various points within the coating system. They can request or store information from the pallet data carrier. Depending on the stored mode of operation, the pallet is conveyed to the required process steps.

Flexibility takes many forms

It goes without saying that the examples described here represent merely a selection from the wide range of available options. The individual needs will determine which of your process steps require a higher or lesser degree of flexibility.

A flexible coating system which is able to implement the idea of a single-part flow primarily relies on a coherent overall concept, i.e. interaction and cooperation between the system control system and the conveyor and process technologies. These flexible systems are particularly useful for contract coating specialists who need to respond quickly and directly to constantly changing markets, as their product variants and customer requirements change more often and at shorter notice.

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Variety is key

Over 1000 different customer-specific and application-specific extension sets in our parts range

Sprimag is a specialist in interior coatings – as is also demonstrated by our broad range of extension set products. Glass flacons, packaging containers, brake disks, anti-friction coating bowls, sleeves, pipes, tubes and cans have one thing in common: They are all coated using a specially developed interior spray gun. Such a broad range of applications requires individual solutions in the area of nozzle extensions.

By modifying a conventional spray gun and adding a nozzle extension, Sprimag is able to implement customer-specific and application-specific solutions for applying interior coatings. Sprimag has already developed more than a thousand different extension sets for this purpose in order to achieve the best possible coating results for the wide range of shapes found in hollow parts.

The most important criterion for ensuring a precise coating is the shape of the jet. This corresponds to the direction of the spray jet as it leaves the nozzle. Angles of 0° to 110° enable the coating to be sprayed both on the bottom of a can directly in front of the nozzle and on the curved surface of the can. This technology is mainly used in the packaging industry. However, other branches of industry also rely on perfectly and precisely designed extension technology.

The Sprimag range currently includes two different interior spray guns: The S-7 and the S-233. The S-7 is mainly used in the automotive industry. It features a separately regulated deflection air supply. This additional air connection can be controlled via an electric proportional valve, while the pressure data can be saved in a recipe data set

and reproduced in subsequent operations. This enables various deflection angles to be used during robotic spray coating of components. The S-233 is primarily used in the packaging industry for applying interior coatings to tubes and cans. The interior spray guns are mounted on a multiple support system for this purpose. This enables up to nine cans to be coated with three layers each at the same time.

Over time, a standard range of deflection shapes has emerged for the

S-233 and S-7 systems. The extension sets have so far been implemented with spray nozzle diameters of between 0.3 mm and 3.0 mm and lengths of between 30 mm and 1200 mm. "The wide range of applications of Sprimag interior spray guns in various sectors for diverse part geometries has resulted in synergies that provide

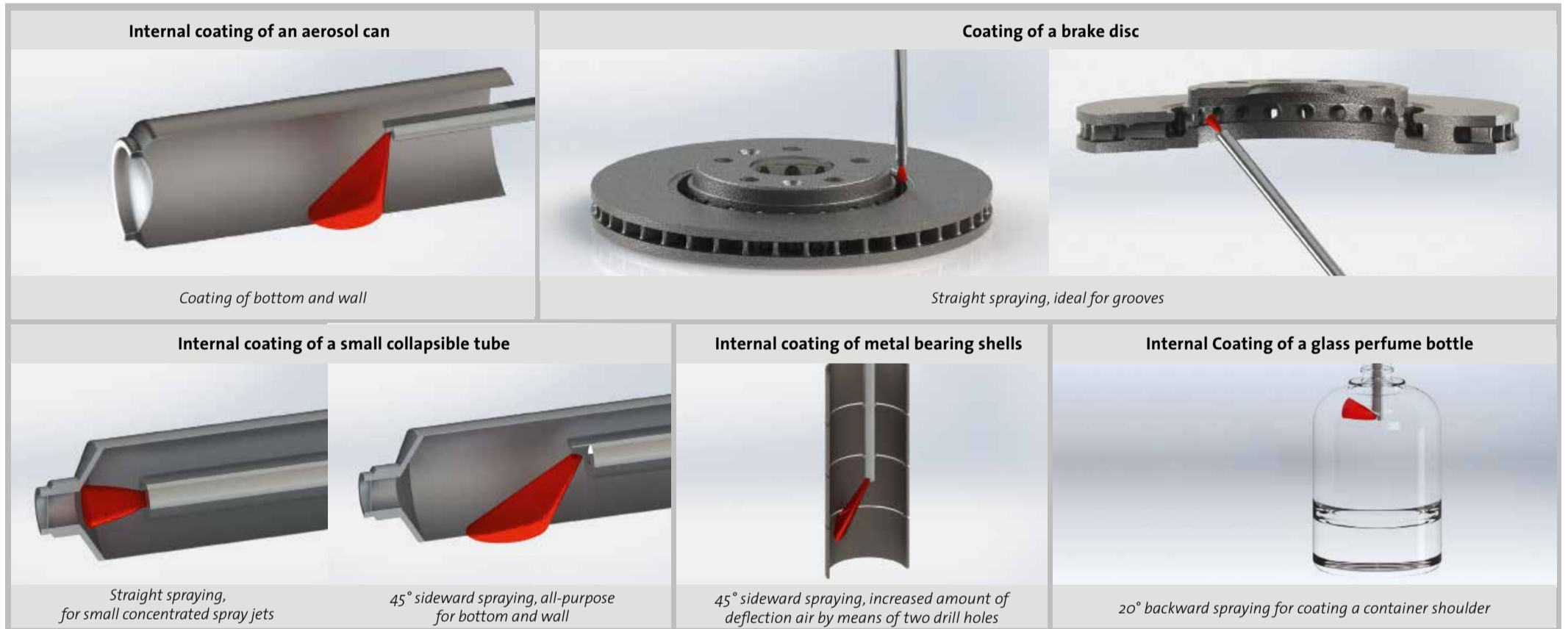
» Our mature extension set product range now enables us to meet almost any requirements in the field of spray coating «

Bernd Körner

benefits for our customers. This is one of the great benefits of the wide variety of machines that we offer. Our mature extension set product range

now enables us to meet almost any requirements in the field of spray coating," explains Bernd Körner, customer adviser and specialist in application technology at Sprimag. In-house manufacturing of all application technology, from the smallest nozzle to diaphragm pumps, in specially acquired machining centers enables Sprimag to quickly test and implement new developments in this field at any time.

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CALENDAR 2016/2017

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Sprimag thanks all of these employees for their many years of service and for their long-standing relationship with the company.

IMPRINT



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