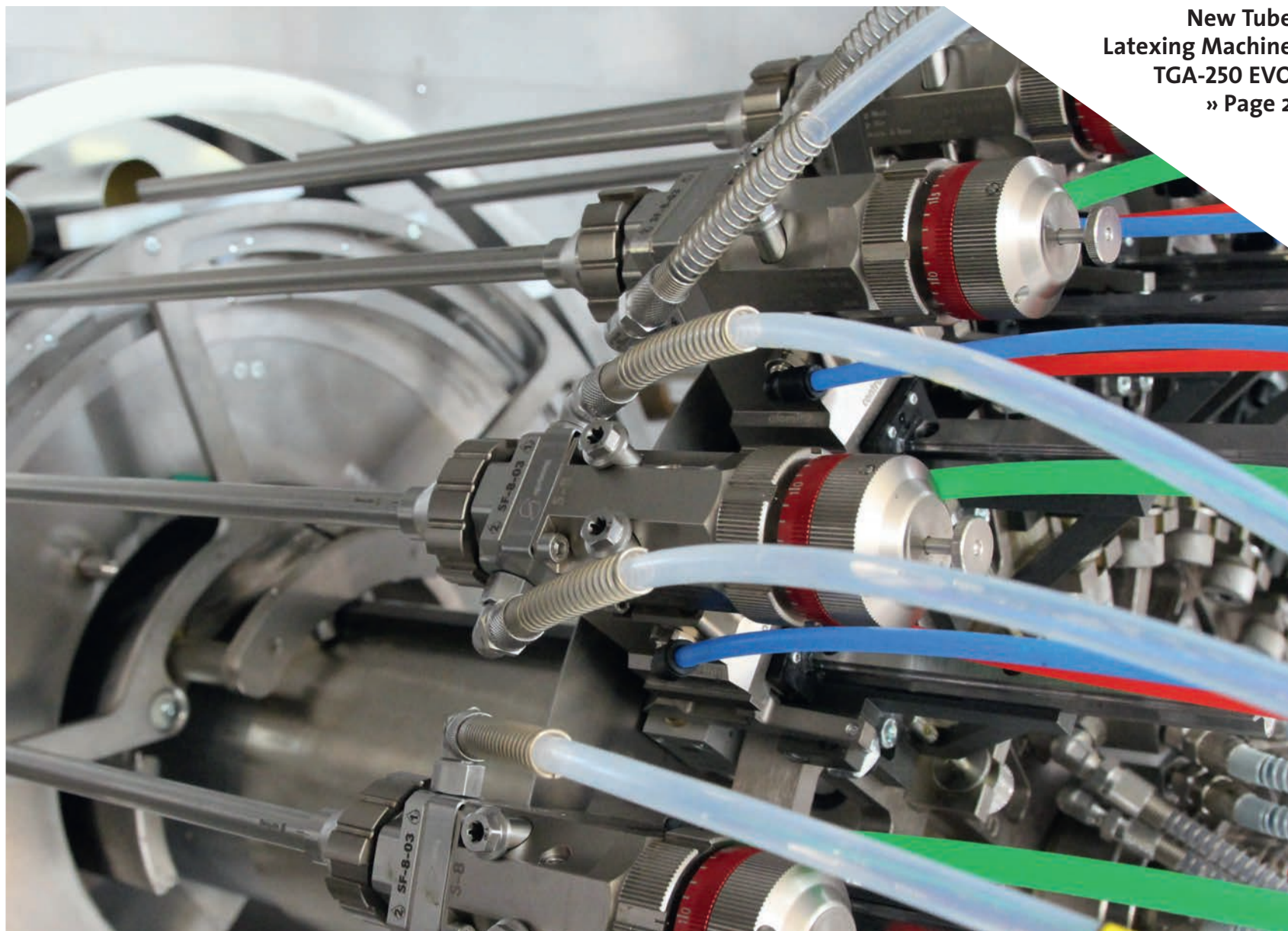


2023

Sprimag
Spritzmaschinenbau
GmbH & Co. KG

www.sprimag.com



Two Steps Ahead.

Sprimag showcases the latest technologies for internal coating of tubes and cans together with strong end-of-line solutions.

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Imprint

Dear readers,

As a long-time exhibitor we are looking forward to finally seeing you at the METPACK trade show again after a long six-year break. Not only has the world changed a lot in recent years, Sprimag products have evolved as well. Some new ones have been added, while others have been continuously developed. At the same time, in addition to our core business of internal coating, we have dedicated ourselves to completely new areas in the production line.

Our CIM-12 camera inspection machine, for example, has become a success story that is equally valued by customers, with over 20 machines sold. Sprimag now also offers impressive alternatives in the field of fully automatic, robot-assisted packaging systems.

As a company whose founder invented the world's first automated spray gun over 100 years ago, the continuous development of application technology remains a key focus of our work.

We now equip every new internal coating machine with the newly developed S-8 spray gun.

We are looking forward to presenting this varied line-up of Sprimag products at our booth.



Joachim Baumann,
Managing Director of Sprimag

After a long break, we will once again have the opportunity to present our new products and projects to all of the visitors to our booth at the METPACK leading trade show and to discuss your ideas and projects together with you. Our METPACK special will give you a taste of what's in store for you.

We can't wait to see you there!

Happy reading!

Joachim Baumann

Joachim Baumann

New system for growing markets in the beverage can sector



The latest generation of the Sprimag HIL-34, an internal coating machine for beverage and food cans, impresses with its high reliability and enormous flexibility.

In order to serve the growing beverage can market even more effectively, Sprimag has enhanced the HIL-34 internal coating system. The system stands out from the crowd for its flexibility, since beverage cans and food cans, for instance, can be processed on an identical basic machine. As such, the basic machine serves as a kind of modular system; depending on the customer's requirements, a "stand-alone" version or a "table-top" version can then be designed. Both variants share many common parts.

The machine housing ensures optimum accessibility to the machine, as the hood can be opened upwards with pneumatic assistance, making the inside of the system fully accessible for cleaning or maintenance work.

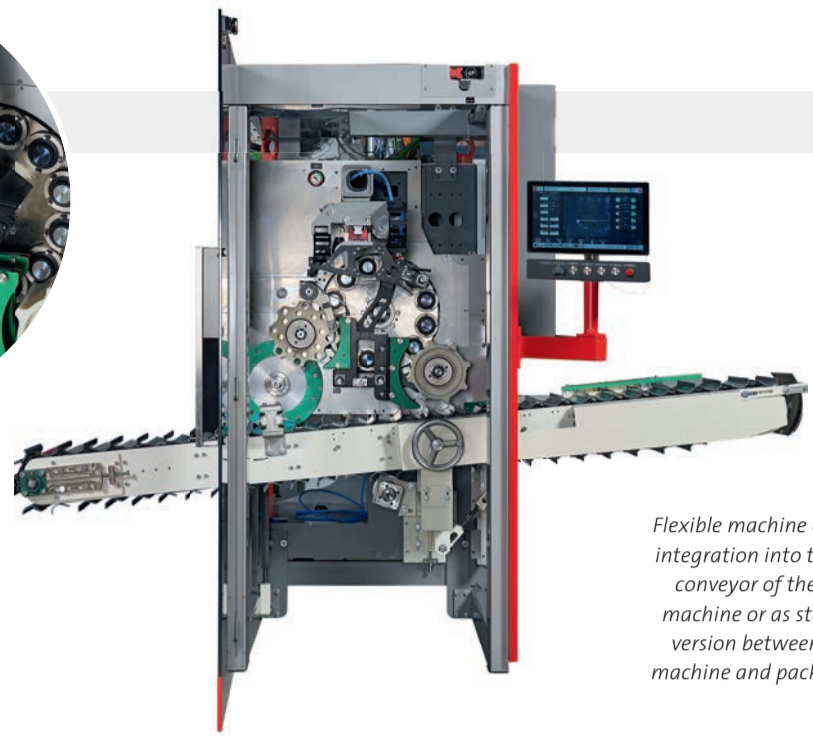
In addition to new mechanical features, the system also incorporates some new and interesting func-

tions in the electrical equipment. For instance, the new generation of HIL-34 can be operated by a servo drive system if required. Furthermore, a cutting-edge, robust HMI replaces the previous switch buttons, opening up new possibilities in terms of visualization.

The latest generation of the HIL-2 expands on the basic machine design, which has been extremely successful for almost 30 years, and combines technical innovations with tried-and-tested system engineering. For example, the system can still be fitted with two or three spray guns, as required, in order to be able to apply different layer thicknesses to different sections of the can while keeping lacquer consumption to a minimum. The fine adjustment of the angle position of the spray gun is also retained, so that spray gun positions can be reproduced exactly.



SYSTEM TECHNOLOGY



Flexible machine concept for integration into the outfeed conveyor of the necking machine or as stand-alone version between necking machine and packaging area

Camera-based end-of-line inspection for monobloc aerosol cans

After many years of intensive development and now more than 20 delivered customer projects, Sprimag has established itself as the market leader for camera-based end-of-line inspection machines. In the meantime, with the most recently developed CIM-12 MAX, the portfolio covers all diameter ranges up to the inspection of large cans with a diameter of up to 80 mm.

The beginning of the development was actually a coincidental product based on a specific customer request for the modification of an internal coating machine to an inspection machine. Subsequently, the first camera inspection machine developed specifically for this purpose was built for the customer Moravia in the Czech Republic. Based on the initial experience, the concept was refined further and further, and today the current version CIM-12.4 can be easily integrated into all conceivable system configurations in terms of

upstream and downstream machines, and provides valuable services to all customers in the detection of faults upstream of automated packaging systems.

Even in its fourth generation, the CIM-12.4 is designed as an open platform, which allows the use of different camera systems from different manufacturers. In addition to the inspection of the curl and the complete shape inspection of the can body, the new generation of the machine also allows a "full body" inspection, in which the can can be completely ejected from the chuck and inspected

down to the can bottom. There is also an additional option of integrating a light tester for leak/crack detection.

The CIM-12 inspection machine ensures cans are transferred from the upstream necking machine to the subsequent system components and simultaneously serves as an installation platform for the camera systems. Once the cans are transferred, they are firmly fixed to a 12-station turntable by means of a vacuum and mechanical support and set in rotation for the 360° inspection. During the inspection, the exact rotational speed is determined by means of rotary en-

coder and passed on to the camera system. All defective cans identified by the camera system are specified via a shift register and subsequently blown out depending on the error.

The machine was developed as a modular concept and can be integrated into the line in various ways. Depending on the respective upstream/downstream machine, the cans can, for example, be taken directly from the outfeed conveyor of the necking machine and, after inspection, also be transferred directly to the infeed conveyor of the packaging machine. Furthermore, it is possible to transfer the

cans via an additional infeed/outfeed conveyor; with this band, the position of the can transfer can be flexibly adjusted. The third option is a continuous conveyor belt, which can be used both as an infeed/outfeed belt and as a by-pass.

Recent years have shown that end-of-line inspection systems are becoming increasingly indispensable in the aerosol can production process. With a wide variety of versions and the general compactness of the machine, the CIM-12 can be integrated very easily almost anywhere, even in existing production systems.

New TGA-250 EVO tube latexing machine with optional inspection units

The name of the new TGA-250 EVO was by no means coincidental – Sprimag regards the machine as an EVolution in the latexing of tubes when combined with upstream and downstream inspection units integrated into the machine concept.

In addition to the main task of precision latex application, this involves ultra-precise leak/crack inspection as well as camera-

based inspection for defects in the latex and the internal coating.

The tubes are fed via a pin chain and infeed drum, making the design extremely flexible for a wide range of line integration options. The tubes are then transferred directly to the optional leak detection drum.

In the first inspection unit, upstream of latexing, 24 testing heads inspect the aluminum tubes in a two-stage pneumatic process to check for leaks and cracks down to a minimum leak/crack size of 0.05 mm. If defects are detected at this point, the first parts are ejected into an appropriately sized collection box.

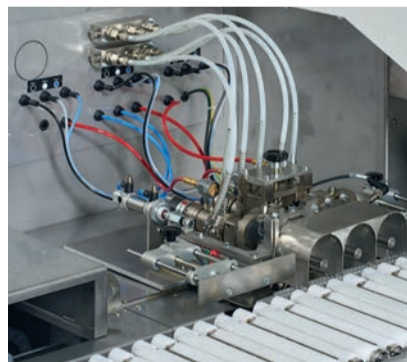
The tubes are then transferred to the horizontal vacuum conveyor and precisely aligned for latexing. Latexing is performed by three S-540 centrifugal guns with adjustable stroke. The use of three centrifugal guns in combination with a sophisticated lifting/swivel mechanism ensures maximum latexing times and, in turn, ultra-precise results.

After the latexing process, the tubes reach a driven rolling track. As an option, a servo linear unit can be integrated in parallel with this rolling track. This serves as an open platform for mounting a wide variety of camera

inspection systems for inspecting the inside of the tube. The machine design also incorporates the option of an automated single sampling ahead of the transfer to the downstream machine.

Finally, the tubes are transferred to the packaging machine by a precise vacuum transfer drum. At this interface to the packaging machine, there is another parts ejection which, firstly, ejects the

tubes identified as defective after the optical inspection and, secondly, protects the downstream machine from damage caused by falling tubes in the event of vacuum failure.



Equipped with 3 highend centrifugal guns S-540



Optional leak detection unit





Fully automatic robotic packaging solutions for monobloc aerosol cans

With its sophisticated robotic packaging solutions, Sprimag is positioning itself as the best problem solver for the fully automatic, robot-assisted packaging of aerosol cans. From the very beginning, Sprimag has been able to draw on almost 30 years of experience in the use of a variety of robot systems for complex painting and handling tasks, thereby providing in-depth technical expertise from a wide range of professionals.

When it comes to the packaging process that rounds off the manufacturing of aerosol cans, a variety of different approaches exist. While packaging is still sometimes carried out manually in countries with low wage costs, there are a few producers in Europe that have already been relying for some years on assistance from robotic solutions for packaging aerosol cans. Approaches between those two extremes include semi-automatic or linear guided packaging systems that provide automated strapping solutions. The main disadvantage of these existing solutions lies in their technical complexity and the susceptibility to failure that this brings. Moreover, the systems can be relatively inflexible, which results in a large amount of effort required when it comes to conversions. Up to now, the packaging of complete layers (full-layer palletizing) has not been possible with these solutions.

Thanks to the flexible packaging systems from Sprimag, it will be possible in future to switch between bundled and layered packaging without the need for complex conversion operations, depending on the level of configuration.

The core components of the Sprimag systems constitute FANUC robots that have been specially designed for handling tasks in packaging solutions, as

well as combined grouping and strapping units from MOSCA that can be used to strap all required bundle sizes. The addition of various feeding units with buffer and storage functions and a grouping table forms the basic equipment of a flexible packaging solution from Sprimag. Sprimag has thus conceived the complete design as an expandable, modular system with flexible speeds.

The system designation FPS-01 represents the entry-level configuration. Together with a FANUC grouping robot with line gripper, a grouping table and a servo-controlled Mosca strapping unit, the customer is already choosing a fully automatic robot packaging solution for the familiar bundling of aerosol cans. The system is designed for a line cycle time of up to 200 cans per minute. At the same time, the system is already designed in such a way that it can also be expanded to the full configuration level of FPS-02 at any time.

This option for expansion will play an important role for can manufacturers in scenarios where contracts are time-limited and customers vary. Consequently, it is possible to get started with full-layer packaging and palletizing at a reduced investment cost, whilst retaining the option to expand to the combined solution of bundled and full-layer packaging at any subsequent time.

The core components of the Sprimag packaging systems are complemented by optional peripheral units such as:

- Automatic pallet dispenser
- Cardboard and covering board magazine
- Fully automatic tray forming unit
- Pallet transfer rails and pallet turntables
- Vertical pallet strapping unit
- Stretch wrapping unit
- Robot labeling unit

In light of this, Sprimag has already established strategic partnerships with the leading component manufacturers in the market. Naturally, all complete system solutions incorporate a comprehensive safety concept that allows for safe operation of the complete unit.

A reliable packaging process with robots accompanied by the inevitable elimination of human-based control mechanisms is only possible, however, if intelligent system solutions take over the method of product monitoring that has prevailed up to now.

The CIM-12 camera inspection machine, which has already been presented and successfully introduced to

the market, interlinks the collection and packaging process and combines both system components perfectly. By means of a comprehensive test, it allows a guarantee to be made for the first time that every individual, fully automatically packed aerosol can conforms to the quality requirements of the customer.

Sprimag will play an important role in this system segment in the future and considers itself optimally equipped to do so. In combination with a competent service division and its own electronics and robotics specialists, Sprimag is able to provide comprehensive service worldwide.



MOSCA grouping and strapping unit with gantry guide



Cardboard unit

The S-8 sets new standards in internal coating

The S-8 spray gun for internal coating of aerosol cans features an impressive twin-tube design and lacquer circulation right up to the nozzle, and is now installed as standard in internal coating machines

The beating heart of any coating system is the spray gun. And so, it is no surprise that Sprimag is also continuously developing and expanding its portfolio of spray guns. Whether it's the speed, the adjustment options, or the ease of maintenance and cleaning, the ever-changing market requirements are constantly driving research work in application technology. The S-8 spray gun is the answer to all the latest requirements for the internal coating of monobloc aerosol cans and will in fu-

ture also be used for internal coating of tubes. The S-8 spray gun is already supplied with the majority of Sprimag internal coating machines.

The standout feature of the S-8 is its twin-tube design in combination with lacquer circulation right up to the nozzle. Thanks to the innovative extended design with two tubes, the fan air and atomizing air are controlled separately and guided to the nozzle. Both air flows are adjusted externally, so that the strength of the deflection can be easily adjusted on the control panel by regu-

lating the pressure. This means operating staff no longer have to enter the spray booth to set the fan air or atomizing air.

Furthermore, the new spray gun features a lacquer flow circulation system. This means the lacquer circulates right down to the end of the nozzle. The main advantage of this is that the lacquer does not cool down should production be interrupted, for instance, because the lacquer is constantly circulating. As a result, waste is significantly reduced, lacquer is saved and it is en-

sured that components are of a high quality from the very beginning of the production run.

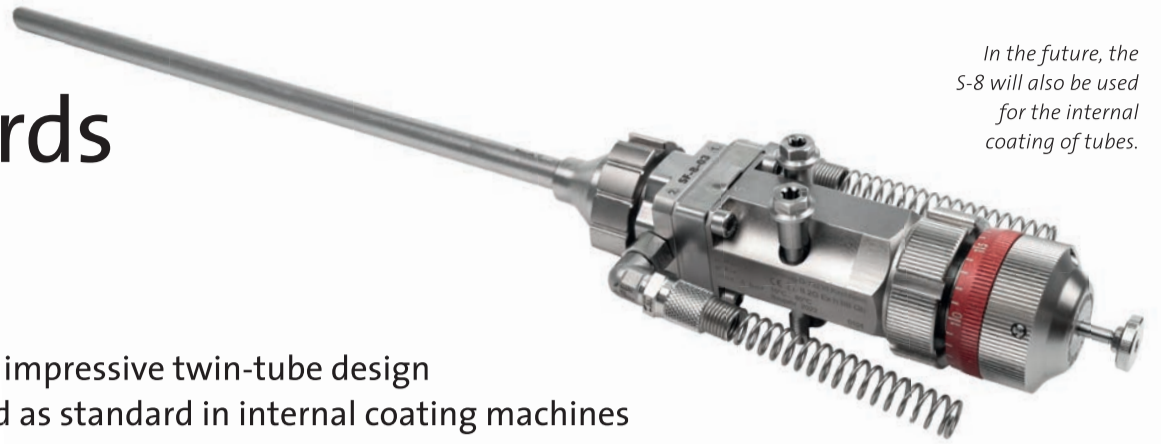
We were also able to simplify cleaning and maintenance of the spray gun by means of an air tube lock: The air tube locking system ensures that the air tube position is indexed once it has been optimally adjusted, so that the position can be reproduced exactly. This eliminates the need for time-consuming readjustment when the air tube is disassembled (for cleaning or maintenance, for example), thereby preventing qual-

ity losses due to incorrect positioning.

Another feature to assist with custom-fit positioning is the quick-change system integrated into the S-8 spray gun. The spray gun is separated from the quick change holder by loosening two screws.

The S-8 also offers advantages such as improved usability, easier maintenance, advanced and convenient adjustment options, and new features for quality assurance, making it a must-have within Sprimag's versatile range of application technology.

In the future, the S-8 will also be used for the internal coating of tubes.



The pneumatic lifting mechanism facilitates the exchange of the lacquer barrels.

A well-supplied internal coating machine: Sprimag lacquer supplies through the ages

Where a simple pressure tank was sufficient in the past, today highly functional lacquer supply systems with several control circuits and electronic control terminals for parameter setting are now being used.

>> From the pressure tank to the lacquer circulation system

Sprimag has been producing coating systems with pneumatic atomizing spray guns since 1925. And from the very outset, there has always been a need to find the right feed system for the lacquer.

With consumption volumes still manageable in those early days, and lacquers relatively easy to process, most systems were initially centered around pressure tanks. The lacquer is filled into a tank that can be tightly sealed, then pressurized air is introduced through the lid. However, as demand increased, work began to develop a lacquer circulation system to prevent sedimentation and to facilitate fast and thorough rinsing. At the same time, the lacquer heater became a must-have: Modern, automated processes required a consistent lacquer temperature. Plus, certain lacquers can only be applied at elevated temperatures. In order not to lose the heat introduced, a dual-circuit system was developed: The primary circuit supplies the spray guns with warm lacquer and circulates the return flow through the material heater back to the spray gun. The second circuit then conveys the consumed shortfall from the cooler supply barrel.

This system worked very well and reliably for decades. Lacquers and processes hardly changed during this period. Instead, the focus was on system technology, operating concepts and improving individual components.

>> Sophisticated technology for new lacquers

Over the past decade, however, increased demands placed on production speeds, lacquer film properties, environmental credentials, and process reproducibility have created a need for new developments in lacquers and their solvents. Consequently, the lacquer supplies also had to be adapted to these new lacquers and process requirements.

More and more requirements were introduced, such as digital temperature controls, circulation quantity recordings, homogenization of the lacquers in the supply container by means of highly effective agitators, level sensors as well as a consistent use of inert materials, which are designed to ensure residue-free rinsing. This meant there was a need for improved operating concepts. Electronic control terminals made parameter input and recipe storage possible, continuous process data storage took place on an inserted USB stick, and a pneumatic lid lifting device greatly simplified the way lacquer barrels are exchanged.

A special development objective was the triple coat remote control, whereby the standard nine spray guns were split into three hosing groups. This saw each layer of lacquer (base, top coat 1, top coat 2) being assigned to its own group and its own supply and return line pressure regulator. This made it possible to adjust each individual layer thickness without stopping the coating machine.

Gradually, Sprimag has implemented these sophisticated technical necessities. All enhanced features have already been tested in customer applications and are available in a new lacquer supply for the current series.

>> Clever improvements in a new design

With the technology having undergone continuous improvement, the lacquer supply itself has also had an upgrade. A new barrel transportation system, for example, made it easier to transport lacquer containers in-house. This optimizes transport logistics by eliminating the need for classic pallet truck or forklift transport. An optional enclosure for one or two supply units is also available. This compact coating room is designed so that it can still find a place next to the machine even when space is tight. An internal air exhaust system ensures that the solvent vapors generated are kept away from the production area.

>> Lacquer feeder for roll lacquer applications

Sprimag lacquer supplies are even used in other sections of aerosol can manufacturing lines for external decoration machines from other manufacturers. For this, a special dosing valve feeds the required lacquer between two rotating rollers, which then transfer the lacquer to the outer surface of the aerosol can. Conveying, filtering and control are carried out using identical components to those used in the

internal lacquer supply systems, in order to produce further synergy effects for the customers in terms of training and stocking spare parts.

IMPPRINT



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The different control circuits enable changing the layer thickness at the can bottom independently of the layer thickness at the can wall.