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APO Small Parts Coating GmbH is specializing in decorative and functional coatings with modern lacquer systems.



**FOCUS ON TECHNOLOGY**

## **Growing from a Garage Operation to a Coating Specialist with State-of-the-Art Machinery**

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Ever since it was founded as a small parts coating specialist, APO has relied on the Rotamat coaters from Walther Trowal and today is running ten units of this machine type. From modest beginnings this proverbial garage start-up developed into a coating job shop with, worldwide, the highest number of Rotamat coaters in operation. They work so cost-efficient that APO can easily compete with suppliers from low-wage countries. Today the company coats about one billion parts per year.

APO Small Parts Coating GmbH is located in Alsdorf (Germany) and is specializing in decorative and functional coatings with modern lacquer systems. From its foundation in 2002, the company carefully analysed which machines for coating of mass-produced small parts were available in the market. At that time drum coating was only available as a hot process for placing a coating on metal components. It was still unthinkable to coat plastic parts with water-based lacquers. However, APO quickly recognized the high potential for this process and decided to invest in drum coating equipment: Shortly after it was founded, the company purchased a R90 Rotamat from Walther Trowal – a German company which manufactures standard and special machines for surface treatment - which quickly became an essential part of its coating operation. With the increased utilization of water-based lacquers Walther Trowal and APO jointly improved the technical features of the Rotamat units, now allowing the coating of not only metal components but also of plastic parts. Since then drum coating has become the generally recognized standard coating procedure for non-metallic materials.

**The APO history**

Antonio Pozo founded the APO Small Parts Coating GmbH in 2002 in Alsdorf, Germany. The company name reflects the company philosophy. It stands for "Absolut perfekte Oberflächen" ("absolutely perfect surfaces"). In addition, it is engaged in cleaning of work pieces covered with contaminants that interfere with the lacquer adhesion. To this end APO utilizes a patented plasma technology. The APO Small Parts Coating GmbH and the APO industrial painting GmbH, located in the same building, employ 27 highly trained people. A quality management system, based on the planning tools APQP and FMEA, guarantees a high quality of customer consultation, production planning & control and delivery. The consistent management of the chemicals



The new production facility is equipped with ten Rotamat coaters from Walther Trowal.

for a cleaner and safer environment along with a comprehensive occupational safety program are proof of the importance of safety and environmental responsibility in the company. APO is certified per ISO 9001 and ISO 14001. Moreover, the company was awarded the quality seal "Safety achieved with a systematic approach" by the professional association Wood and Metal (BGHM).

**The partnership with Walther Trowal**

Today APO handles a broad spectrum of small parts made from metal, plastic, rubber and wood. This includes components for such diverse industries like automotive, cosmetics, writing utensils, toys and hardware for shoes and clothing, but also sealing and dampening components.



APO is engaged in cleaning of work pieces covered with contaminants that interfere with the lacquer adhesion.

Over time, driven by its increasing business volume APO purchased nine additional Rotamat units. Today this company, located in the former coal region around the city of Aachen, Germany, operates the worldwide highest number of Rotamat machines in a single plant and coats more than one billion parts per year, around half with water-based lacquers.

A major focus is the coating of components – for example sealing rings – with a dry coat lubrication lacquer. This reduces the adhesion tendency, eliminates friction and facilitates the assembly.

### **Integrated into the interlinked production system**

Today APO operates ten Rotamat coaters: Eight R 90 units (usable volume up to 50 l) and two R 90C models (usable volume up to 75 l). All are controlled with touch panels neatly visualizing the entire process. For pre-treatment APO uses a new, patented low-pressure plasma system that significantly reduces the costs by shorter cycle times. This is especially true for sealing rings. All coaters are linked to the central computer and completely integrated into the company's production control system. Recipes and other process parameters – for

example the coating material flow volume and the spray pattern – are stored in the system and automatically assigned to the respective production orders. This ensures a high process repeatability and stability, batch after batch. All data regarding the actual production status are available in real time throughout the whole plant. They can be easily called off per tablet or smart phone from practically any location. The shift leaders supervise the machines and only intervene in case of special circumstances, for example, when a spray gun is plugged. For new components APO conducts free-of-charge processing trials to determine the operational parameters like air volume, air temperature, drum RPM, the amount of coating material to be applied, optimum batch size and the inclination angle of the drum.

### **The coating process features**

During the entire coating process filtered and heated air is conducted into the rotating drum. This heats up the small parts to a temperature that is perfectly matched to the material type and geometry of the work pieces and the coating material. The work piece temperature is constantly monitored and, if required, the inlet air temperature is adjusted. This contributes to a strong adhesion of the lacquer on the work piece surface and allows a quick drying cycle after completion of the coating operation.

The automatic HVLP spray systems generate a minimum of spray mist and overspray. A sensor combined with an electropneumatic valve at the spray gun precisely regulates volumetric flow of the spraying media. This ensures that the specified quantity of coating material is applied on the work pieces at any time. The result is a highly homogeneous surface coating, a precise coating thickness and a long-term stability of the applied coating material. Upon request the machines can be equipped with two spraying systems. This is very useful, when work pieces must be coated with two materials in the same drum, for example with base and top coat or primer and cover. Some lacquer systems require a quick, even abrupt, cooling of the work pieces after the coating process. For this reason, the new Rotamat units are equipped with a bypass for the inlet air circumventing the heating unit and thus allowing the injection of ambient (cooler) air into the drum. This generates a pronounced cooling effect with the result that the work pieces can be discharged from the machine without sticking to each other. The overall outcome: A much higher yield of parts in first-class quality.



**A detail of the APO's paintshop.**



**Visual inspection of a part after coating.**

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**APO coats about one billion of small parts per year.**

The work pieces are coated in the closed Rotamat drum with an easily adjustable negative pressure. This prevents hazardous vapours from escaping into the environment. Each Rotamat coater is equipped with a 4-stage exhaust air system including a Papp labyrinth filter, a filter mat and two pocket filters. This permits running the Rotamat systems with a minimum of emissions.

### The right investment decision

The decision to purchase the Rotamat coaters turned out to be a full success. They allow handling the complete APO product range, produce high quality surface finishes, require a minimum of maintenance, even with 3-shift operation, and are extremely dependable. The first machine, installed 18 years ago, still works reliably and will continue to so. The Rotamat exchange drum program, only offered by Walther Trowal, has also proven to be an excellent technical feature. This program offers a high flexibility for different batch sizes. In addition, very small batches – for example, for sample processing – can be run under actual production conditions.

Of course, besides quality and reliability, the operating costs of the Rotamat coaters are also an important reason for the success APO enjoys in the market: Because of their low “total costs of ownership” the coating in Rotamat systems is so economical that APO can easily compete with suppliers from low-cost countries. Comprehensive coating know-how, easy and fast communication with the customers and on-time deliveries allow APO to continuously enter new markets with the Rotamat coater.

No doubt, the Rotamat units have made a significant contribution towards the success APO enjoys. Other aspects are certainly the APO know-how with the development of new lacquer materials and the close, open communication with Walther Trowal. The history of the Rotamat at APO represents a convincing example as to how intensive cooperation with supplier and user can profit both. ○



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