

Script for SMP Automotive

SMP Automotive is a leading expert in plastic technologies and a system partner to the automotive industry. A Specialist in cockpits, door panels, bumper modules and innovative plastic vehicle body parts, SMP has successfully established a footprint in Europe, China, Mexico and Brazil. In 2014/15, the company generated external revenue of 2.5 billion euros.

SMP's 10,000 employees around the globe are dedicated to meeting the complex demands of both today and tomorrow's automotive industry in terms of quality, safety, aesthetics and economic efficiency. Global networking guarantees benefits to the whole group, including highly successful processes and vast industry expertise.

SMP is a member of the Samvardhana Motherson Group, which has more than 75,000 employees and is

one of the 50 largest automotive suppliers.

In 2015, SMP Automotive announced plans to expand their operations to Tuscaloosa, Alabama. The plant, which will employ upwards of 650 people, will produce bumpers and interior door panels for a variety of vehicles produced in Vance Alabama

This video was shot at various SMP plants in Germany. While the processes and equipment will be similar, there will be some changes in the Alabama plant.

The first process we will look at involves the production of the bumpers. This process uses injection molding to create the bumper. Let's first take a look at injection molding, which in its simplest terms means that melted plastic is INJECTED into a mold cavity and allowed to cool in the shape of the mold. The resulting form is usually a finished part that is ready to assemble into the final product.

The molding process starts with plastic pellets. The most frequently used materials, such as polypropylene and high-density polyethylene will be delivered in bulk truckloads and stored in large silos outside of the plant. The low usage materials will be delivered and stored within the plant in large cardboard boxes called gaylords. A complex vacuum system pulls the raw material from the silos or gaylords to the designated machine where the molding process occurs.

The process starts with the mold being clamped shut inside the press. The liquid plastic is forced into the mold through a feed channel called a sprue. The part is formed in only a few seconds, but it remains inside the mold long enough to cool. Channels, which have been cut into the steel mold, allow chilled water to circulate within the mold. Although the water never comes in contact with the part, the cool steel absorbs the heat from the part. The parts are now ready to be removed from the mold. The press opens the mold and then

ejects the parts. In most cases, a robotic arm, using either suction cups or mechanical grippers, will take the parts from the mold and run them over a gas fired flame which will prepare the pieces for further assembly and painting. Once flamed, the robotic arms deliver them to a conveyor belt, where an operator removes excess material called flash. Next, the part is transferred to a heat staker for assembly. This automated process adds various parts as required by design. After processing, the part is removed from the machine and transferred to the painting area for the next step in the process.

In the painting area, the parts are thoroughly washed and cleaned to remove any debris that may have accumulated during the production and holding process. After cleaning, the parts travel through an automated drying and painting process. Robotic painters, thoroughly cover the bumpers as they travel through the paint booth. Once painted, they travel

through another automated drying process before being removed from the conveyor system.

The parts are removed and visually inspected for flaws. If a flaw is discovered, the part is discarded as scrap. At SMP, all plastic scrap is reground and sold to an outside vendor for recycling. No scrap material is recycled for use in the plant.

If the part is inspected and found to meet standards, it is moved to the final assembly area in the plant.

In the final assembly area, each bumper has a build sheet. This indicates the precise vehicle the bumper is built for. It includes every added item that needs to be assembled onto the painted bumper including sensors, cameras, lights and grills.

Based on the build sheet, a team member will prepare a kit for each bumper by going through the supermarket.

The supermarket is an area with the individual parts for creating the completed bumper. Using a shopping list, the team member pulls the specific parts on the list to create the bumper. A series of lights on both the cart and the shelves indicates where a part is and if it has been pulled correctly and placed in the correct spot. This efficiency leads to less potential parts mismatches.

After the kit has been created, the bumper and all the parts are transferred to a workstation where another team member assembles the bumper. The bumper can be completed in 20-30 minutes, normally.

Once the bumper is assembled, it is transferred to an inspection station where all of the electrical and sensor components are tested. Upon passing inspection, the bumper is moved to a viewing station where the last visual inspection is performed. Then the bumper is determined to meet or exceed our customer's

standards, it is transferred to shipping where it is loaded onto a truck for delivery to our customers.

In the next process, we will look at the assembly of interior doors. To begin this process, we need raw materials. The raw materials are supplied from outside vendors. In the first step of the process, interior panels are laminated with a specific fabric, usually leather, depending on the customers orders. Fabric will arrive on rolls. When needed, the fabric is loaded onto an uncoiler where an adhesive will be applied. For continuous operation, each new roll of fabric is attached to the old roll through an automated stitching process. The new roll of fabric is attached it continues through the adhesive process and re rolled at the end. Once the fabric has been treated with adhesive, it is moved to the next process.

Here, injection molded plastic parts are loaded into trays. These parts will be produced in-house through

the injection molding process covered earlier. The part is loaded, it begins the process. The first step is a gas-powered flame is passed over the part multiple times to help ensure that the adhesive and fabric will stick to the plastic part. Once the part has been heated, robotic arms move them into a spray booth area where additional adhesive is applied. The adhesive is applied, and the part moves to the lamination process where it is placed into a mold and then is pressed into the fabric from earlier above. Pressure is applied for a few moments and then the part is released. From here team members remove the part and briefly inspect it, before sending to a final inspector. Next the parts are loaded into a machine that does the final trim work and adhesion on the part. From here team members will trim off any excess fabric or plastic. They will inspect the parts and then load them into transport crates for the next step in the process.

The assembly process of the door panels can be quite complex, although not as complex as the bumper systems.

Here as with other parts, the process begins with raw materials. The raw materials for this operation are the door panels from earlier as well as wiring harnesses, handles and other parts to make a complete door panel.

In the first step a team member uses a specially designed cart to assemble all of the pieces needed to form a kit. A kit is formed to make sure all the parts needed to assemble the door panel are correct for the specific panel. Using a series of coordinating lights on the cart and in the supermarket a team member will pull the parts. Once this is done, the kit is transferred to the assembly line.

Now, the door panel begins to take shape. In this process, different pieces of the panel are assembled.

Here any necessary holes are punched before moving onto the next process. In this step, the individual pieces that make up the inside structure of the door panel are attached using a heat staker. Additional pieces are added using a screw gun.

Next, additional cosmetic pieces such as inlaid wood panels are added.

The wire harnesses are added and connected to the components such as the power door lock switch and the power window buttons. Once all the parts have been connected, the door panel moves to an inspection station where a team member visual inspects the part. Upon passing this visual inspection, the part is loaded into a transfer case and moved to the next location. E

In the next step, the part is inspected again and a digital picture is taken for records. After the picture is made, sound-dampening pad is installed on the panel. At this

point, the panel is complete and is loaded back into a carrier for transport to our customer.

Although every effort has been made to safeguard our employees from hazards, it is still important to remember that we must think before we act. Safety is a responsibility of everyone and we all must look out for the safety of our team members and ourselves.

All employees will be required to wear some type of Personal Protective Equipment or PPE, including steel-toe boots, safety glasses, ear protection and gloves. Management may require other PPE for specific jobs. This Personal Protective Equipment is intended to safeguard our team members from any potential hazards within the work place.

While the SMP Automotive processes may seem complicated, they are reachable; they do require a highly skilled, motivated and active Team Member. A

superior attention to detail and quality manufacturing by our Team Members allows SMP Automotive to remain one of the premier automotive suppliers in the world.