

Painting

Case study: Mirrors, FICO, Spain

Application

- Flaming & painting

ABB Products

- IRB 580
- IRB 5400



When plastic automobile mirror specialist FICO Mirrors needed to improve efficiency, it turned to robots. Not only did the new production line save 15 percent in cycle times, 10 percent less paint was used.

Mirrors reflect robot efficiency

The FICO Mirrors factory in Soria, northern Spain, has seen important changes in recent months. Part of the FICOSA Group, a multinational corporation, present in 19 countries, it manufactures systems and parts for the automobile industry. FICO Mirrors' specialty is making handles and rear-view mirrors for a wide range of customers, including VW, Ford, Honda, BMW, PSA, and many others.

Painting the mirrors is a complex process, and the paint line was upgraded in February of last year. FICO invested in ten ABB robots which have brought about marked improvements in terms of efficiency, paint transference and in the reduction of cycle time and man hours. This all translates into reduced costs.

One of the main challenges for the paint line is the number of customers FICO serves. Alfredo Ciriano, the Paintshop Manager at the factory explains:

“With so many manufacturers, each with its own range of models, we have to paint around 70 different types of mirror, employing a range of almost 400 colors. Every model presents its own difficulties, as does every color.”

Currently FICO paints 50,000-60,000 pieces daily, a figure which could easily reach 70,000 or more in a buoyant market. With that volume and the variety of pieces to be painted, the system has to be highly flexible, so time is not lost when changing from one model and color to another.

As well the company needs to maximize efficiency in paint transference, to keep paint wastage and rejection rates at a minimum. The system FICO had been using was, Ciriano says, “two years past its productive life, causing us to lose competitiveness throughout that period.” Now they are able to make up for lost time.

The ABB logo, consisting of the letters 'ABB' in a bold, red, sans-serif font.

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Cleaning before painting

The mirror cases come off the plastic mould injection production line and are placed manually on racks, ready for painting, but must first pass through a four-stage washing process to prepare the surface. They are then dried at 90° celsius, cooled to room temperature and pass into the first booth on the paint line, where the primer is applied. Here, currently, there are two IRB 580 model robots working, though FICO plans to increase capacity with the addition of two IRB 5400 robots in May 2009.

Three primers are used: two gray primers, one of which is a conductor for the ABS (acrylonitrile-butadiene-styrene), the other for the polyamides - and one white primer, which is a conductor for both. The grays are the easiest to apply, though the conductor is more complicated, but the white needs a thicker coat to cover the black plastic. The robots are pre-programmed to apply the required thickness, depending on the model and color required and savings can be made here by choosing the right type of brush for each coat.

Software for easy modification

It is here where many of the advantages of the new system are evident, especially when changing models and colors. Rubén Valdenebro, the Paint Master, says: "The new software allows me to make any modifications I want by simply touching the computer screen. The cycle time of the previous solu-

tion meant we lost seven seconds of paint flow with every changeover, now it's only two, which means a considerable savings in paint."

Valdenebro also recalls when the line was only partially robotized with much painting still done by hand and stresses the advantages of automation: "They don't get tired like people used to. We had high absentee rates because of that. Now it's completely automated." People who might once have stood painting for hours now control the process by computer.

Future improvements to the system include adapting it to enable water-based primers to be used in compliance with environmental legislation. This is a challenge for ABB to solve as, Ciriano points out, "the customer is creating the need." In addition, FICO are looking into ways of employing robots to place the pieces on the racks, prior to painting and, possibly, the use of robots with artificial vision to carry out quality control tasks.

> FACTS

About FICO Mirrors

- Founded in 1949 by Josep Maria Pujol y Josep Maria Tarragó in Barcelona
- Produces components and spare parts, including security and lock systems, doors, seats, command and control systems and under hood systems
- Commercial offices in 19 countries throughout Europe, north and south America and Asia
- The Soria factory produces handles and rear-view mirrors for VW, Ford, Honda, BMW, PSA, Skoda and Mercedes Benz
- Paints 50,000-60,000 pieces per day, capacity for 90,000; between 12 and 14 million annually

Benefits of Robotization

- Return on investment less than ten months
- Scrap rate reduced by 33 percent
- Saving of 10 percent in paint consumption
- Reduction in cycle times of 15 percent