Robots help IAC paint bumpers faster and with fewer flaws in La Rioja.

At International Automotive Components (IAC) in Logroño, in the heart of La Rioja, a region better known for its fine wines, great changes have been taking place in recent times. The factory, originally part of the General Motors Group, has been making plastic car components since 1982, among them instrument panels, door panels and, the chief line of business, bumpers. This activity began in 1986 with the Opel Corsa and other sports models. Painting, always a complicated process where plastic surfaces are concerned, was at first done manually but a second paint line, operating from (1994) was mainly robotized. This has now been completely replaced by the new “third generation” line which came into operation in October 2007. Constructed by Eisenmann and employing 20 robots, 16 of them supplied by ABB, the gleaming, state-of-the-art line meant an investment of 20 million Euros. Carlos Uyarrá, a manufacturing supervisor at the plant and one of the brains behind the project, explains the genesis of this exciting new venture. “The second paint line was robotized but needed constant upgrading as it was only designed for 500 cars daily. As demand increased, we ended up producing 2,000 cars and the line clearly limited, not compatible with environmental legislation and not competitive. There were quality control opportunities too”. So the new line was conceived and built in response to these demands. “The improvements are considerable”, continues Uyarrá, “the line is much bigger; it has greater capacity and can paint larger pieces, which is important as the tendency in the market is for bumpers to be ever larger. One of the objectives was that there would be no manual application of paint, that it would be totally robotized.” These improvements are obvious when taking a tour of the line. The bumpers come off the production line and are first given a thorough wash to remove any foreign bodies. They are then flame, to prepare the surface for painting. “With this” says Fernando Martínez, Operations Manager at the plant, “we guarantee a perfect adhesion of next primer coat.”
Then bumpers enter the first booth, where the ABB robots apply the primer, waterbased to comply with environmental regulations. Application of conductive primer ensures a good electrostatic application of base coat. In the color booth the improvements are also evident.

In the color booth, the next stage, the ABB software used to control the painting robots with the integration of Lactec application system, allows for a rapid changeover from one color to another and a paint recovery system ensures minimum loss, which is important considering that there can be up to forty changes of color a day. Electrostatic transference means paint loss has been dramatically reduced. “Everything is better now” says Pedro Santamaría, who operates the computers controlling the process, “it is easier to handle and the new system offers a great many more possibilities.”

When asked to comment on the surprising cleanliness of the paint booth he says “that is because electrostatic painting is more efficient, less paint gets spattered around than it did before.”

In the last stage of the process, the varnishing booth, where four robots are installed, transference is also extremely efficient, in terms of the solventbased clearcoat actually hitting the surface.

In Quality the improvement has been impressive. The number of pieces coming off the new line judged “OK at first inspection” shows a significant increase compared with the old system, which means fewer man hours are spent in polishing off small appearance defects on the painted surface. “Pieces are finished off much better now” comments Felipe Martínez whose job it is to polish imperfect bumpers, “there are fewer defects than before.” The scrap rate has also been reduced considerably, also the manual intervention and the downtime, important in a process in which bumpers are made and painted within a window of approximately five hours. This translates into considerable savings, making IAC more competitive.

Says Uyarra. “We chose ABB because of our previous experience of working with them, the exhaustive testing while designing the line and the close collaboration they offered. Cost was also a factor as was the guarantee of post-sale service and spare parts.”

As to the future, the line can be easily adapted to other makes of bumper and in fact SEAT, whose top-of-the-range Exeo bumpers are made by IAC, is a new customer. Other developments will be waterbased varnishes, adaptation to which will be no problem, and, possibly, the application of artificial vision systems to help with quality control.

**FACTS**

**IAC at a glance**
- IAC Group worldwide produces over 5.5 Billion US$ in annual sales at more than 75 manufacturing facilities employing over 29,000 workers, including 1,400 engineers in R&D and project management
- The Logroño plant has a capacity for 2,100 cars a day (4,200 bumpers), almost 1,000,000 per annum

**Benefits of Robotization**
- Substantial saving in man hours
- Better transference of paint to surface
- Cycle time reduction
- Touch up rate down
- Scrap rate reduced
- Downtime reduction
- Saving in paint loss during changeover of colors
- Healthier working environment

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