



Painting

Case study: Painting bumpers at Venture, South Africa

Applications in Plastics

- Cutting/Finishing
- Glueing/Sealing/Dispensing
- Flaming/Painting
- Assembly
- Packing/Palletizing
- Inspection/Quality control
- Machine Tending

The nine ABB robots at work painting bumpers for Venture in Rosslyn, South Africa, boast many benefits: reliability, savings, better technology and greater quality control. Venture's bumpers can be found all around the world on cars exported from South African assembly lines.

PAMPERED BY PAINT ROBOTS

Mention "robots" in South Africa and people will think you are using the local slang for traffic lights on the city streets. But the ABB robots at the Venture plant in Rosslyn don't only look different, their mission is far classier: easing the flow of shiny, new BMW's off the assembly line.

Nine imported paint robots made their debut last June on bumpers and side-skirts manufactured by Venture for BMW's assembly line in Midrand, several kilometers away. "The decision to go to robotics was to make the process more consistent," says Venture plant engineer Dean Vernon. "It is absolutely precise every time – it is all about accuracy." Workers at the Venture plant took their new mechanized colleagues in stride – after receiving assurances that none of them would be fired due to the automation.

"It wasn't a big shock to them," says Vernon. "They just wanted to make sure they wouldn't lose their jobs."

Instead Venture trained the displaced workers at another plant using similar robots, so they would be ready for them once they were installed. As ABB staff set up the robots and trained Venture workers in their use, frenzied construction began for a new plant that would become their home. Eight months later, the nine robots were already producing painted bumpers for 150 cars a day.

The new plant has the super clean look of a hospital and the ambience of a spaceship. Posted on two long whiteboards in the spotless hallway were scores of complex statistical charts of temperature trends and paint colors. "It is like a surgery in there – we have temperature controls, stainless steel floors, and everything is extremely clean," says Vernon. A walk down the 100-meter corridor of the new plant offers views of the teams of trafficcone orange robots involved in a curiously graceful choreography of bends and bows as they methodically spray slow-moving racks of bumpers and sideskirts.

"Sometimes they look like they have personalities because of the way they move," says ABB engineer Pieter Prinsloo.

The first section is titled the "Flaming Room" where two ostrich-sized robots bend long necks at the plastic bumpers to spew an even blue flame to reduce surface tension and enable the paint to stick better to the surface.



Next is the "Prime Booth" where two bulkier robots spray red, grey or white priming paint to prepare the bumpers for the final color. Walls in each enclosed room are coated with grease to catch any stray mote of dust or dirt that might tarnish the paint-job. The robots tend to take from 25 to 30 seconds to paint each auto part, depending on its dimensions. Like an excruciatingly slow amusement park ride, the racks of bumpers then ease down into the "Basecoat Booth" where three robots wielding multi-pronged applicators focus on applying more colorful paints to the bumpers, such as "Japan Red" and "Monaco Blue."

Outside this room is another white board containing several weekly "defect analysis" charts, which pinpoint any problematic trends in a particular color. Ironically, the color that can cause the most problems is the austere Alpine White, a favorite among car buyers. "It is a very difficult color because you are working from a black substrate and if there is a problem the white comes out looking almost blue," says Neville Van Wyck, a Venture robot operator. Three basecoats are applied to each piece as they inch their way down from one robot to the next.

The final stop is the "Clearcoat Booth" which is a favorite because the two robots there apply that last final coat of clear shine that gives a new car that glimmery gleam. At this point the work of robots is done. Flesh and blood employees take over for the one final check of the finished product in the "Wet inspection room," and then the bumpers are ready for their next ride: the BMW assembly plant.

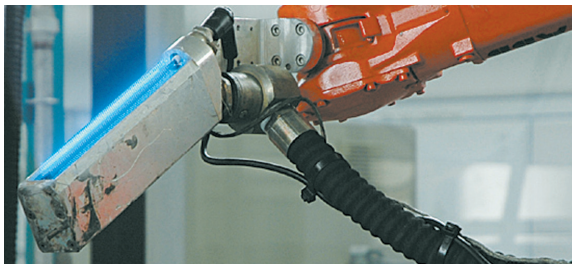
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About 50 cars are included in each color sequence, with an array of about 16 different shades to choose from. Yet the most popular colors tend to be the most conservative, with shades of silver, black and white leading the rest. Although the favorite paint colors don't change too much, the content of the paint itself has become more environmentally friendly in past years. The arrival of paint robots to the Venture plant also introduced the change from solvent-based paint to the less harmful water-based paint. abb has also supplied a "paint kitchen" to Venture where all the different arrays of paint are mixed and stored according to their specific temperature needs. In the past in a different factory, Venture set up robots and paint mixing section with two different companies, but found it too time consuming to juggle them both.

"ABB is the best at the automation side and they are good on the paint side as well," says Vernon. "We learned in the past how complicated it is to have different people on each side." Monthly troubleshooting meetings are held with ABB staff and there is also a person on call 24 hours should any urgent problem arise. With one less complication out of the way, the Venture staff plans to continue to fine-tune their new robots so that by August they will be supplying parts to 200 cars a day. "Right now we are trying to squeeze every last drop of juice out of them," says Vernon with a smile.



The nine ABB robots at work painting bumpers for Venture in Rosslyn, South Africa boast many benefits:

- **Reliability.** While the robot uptime is about the same as regular workers, their performance is smoother and more thorough.
- **Savings.** The focused and methodical spraying technique used by the robots saves on paint, with less messy spillage.
- **Better technology.** The paint flowing through the ABB robots becomes positively charged and therefore sticks more efficiently to the targeted bumpers.
- **Greater quality control.** Any irregularities in the bumpers painted by ABB robots can quickly be corrected as opposed to the unpredictability of human error.

Venture's vitals

Venture's bumpers can be found all around the world on cars exported from South African assembly lines.

- U.S.-based Venture entered the South African market in 1997 and in 1999 moved to consolidate and merge manufacturers of plastic components for the motor industry.
- Venture South Africa supplies bumpers and plastic fittings to all VW, BMW, Daimler Chrysler and Toyota exports from South Africa.
- Through a vigorous capital investment program, some 100 million U.S. dollars were invested over a four-year period in South African plants in Durban, East London and Rosslyn, Pretoria.
- Venture South Africa employs 250 workers.
- Turnover increased from 200 million South African Rand in 1997 to some one billion Rand in 2003

ABB and the Plastics Industry

ABB's wide range of plastics robots can handle most of the tasks involved in and around injection mould machines, regardless of required cycle time or size of the machine. Together with our partners, we provide automation solutions for most manufacturing processes in the plastics industry.