

# Cutting

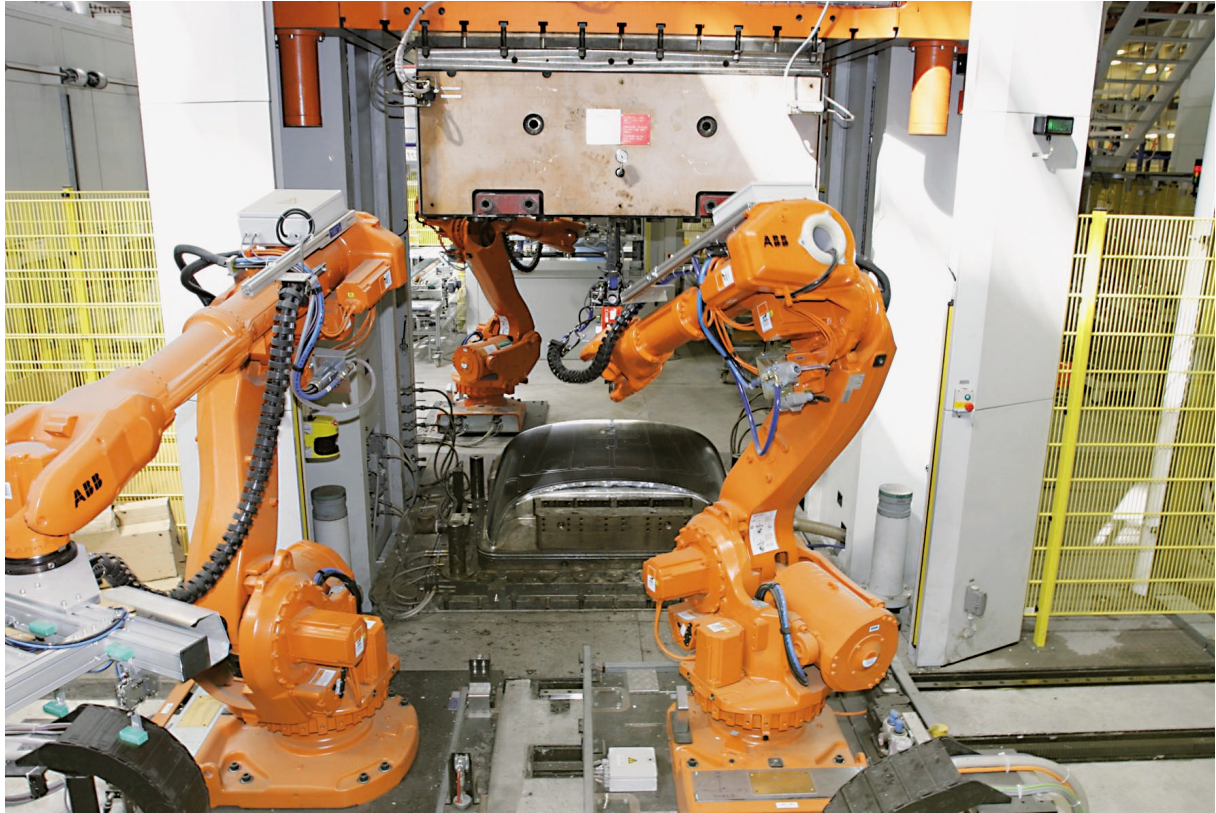
## Case study: Boots lids, Inapal Plasticos, Portugal

### Applications

- Handling
- Waterjet Cutting

### Products

- IRB 2400
- IRB 6600



At Inapal Plasticos, which supplies components for the VW convertible Eos, the top quality of the boot lids has become a job for two ABB robots working hand in hand with two Dieffenbacher high-performance presses and a flexible KMT waterjet cutting system. The success speaks for itself: VW has appointed the Portuguese company as first tier suppliers.

“In the last few years, the business model in the automotive industry has changed from mass production towards vehicle individualisation.” says Henning Wolf sales engineer with KMT Cutting Systems in Wetzlar. “Not mass production, not individual manufacture, but flexible processes that can reach a high degree of utilisation even in the case of fluctuating quantities and thus ensure profitability.”

The best example for the individualisation of vehicles, according to Wolf, are the convertibles with their fully automatic convertible roof. “With its convertible Eos, Volkswagen has decided on a boot lid made of the premium material SMC,

thus taking advantage of the enormous potential of this material,” according to Wolf.

### Highest know-how required

To manufacture auto body components made of this thermosetting composite material of the highest quality also requires very high know-how in process and system technology. With its close cooperation, the Portuguese components supplier Inapal Plasticos and its SMC supplier Menzolit-Fibron have persuaded the decision-making powers at VW with regard to their know-how.

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



“As a general contractor we supplied two fully automatic production lines for the manufacture of the boot lid components, while KMT contributed a highly flexible waterjet cutting system,” says Heinrich Ernst, section leader of plastic shaping technology with the press specialist Dieffenbacher in Eppingen, Germany.

### Fast, flexible handling

The fast, flexible handling is a job for six IRB 6600 robots provided by ABB. “Fully automatic systems were required. For a manufacturing structure of this kind, robots are of course first choice,” Ernst emphasises. “We can’t afford for anything to go wrong here. We have to reduce rejects in the SMC components and to keep the handling flexible.”

The subsequent trimming of the boot lid inner parts after the pressing – with over 150 holes and breakaway parts – is handled by a high-performance waterjet system of the type Cutting Box Original IV provided by KMT in connection with two IRB 2400.

To meet the high demands of cutting quality tolerances and cycle times, KMT developed a new

application software and measured and calibrated the robots with a special measuring system. Both robots guide the waterjet along the trimming edge on the component: “On account of their rigidity, the ABB robots have a high path accuracy in comparison to other robots, meaning they don’t start to sway, Henning Wolf explains.”

The objective of the installed measuring system was to bring the actual robot on-site as close as possible to an “ideal” robot. “With this calibration, the ABB robots come very close to the virtual ideal, which significantly reduces the revision costs in offline programming,” the KMT engineer explains in detail. In an ideal case, programs can be exchanged between robots of the same type without any adjustment whatsoever.

### Simply switch to small charges

Heinrich Ernst looks at the high-tech solution at Inapal Plasticos from yet another perspective: “Processing SMC material is not without problems, since the material has to mature for a while after the semifinished product has been created and the time of processing is about two to three weeks after its initial manufacture.” Because of this, the material may be subjected to influences that are not always controllable, which may cause problems in processing or varnishing.

This is why Inapal uses new developments that make reproducible component quality possible and clearly reduce waste as well as reworking or reject costs. As a result, for the first time the SMC semifinished product are delivered in Portugal as large coils. “This way a production shift can work without stopping the system, without having to adjust the manufacturing line for a different SMC charge,” Heinrich Ernst is happy to report. Path control systems in addition ensured minimal material loss in the SMC separating systems prior to the presses – pushing component weight fluctuations below 1% and quickly making the high investment costs for this installation pay for itself.

Inapal Plasticos is already enjoying the fruits of this manufacturing success: in the league of VW suppliers, the Portuguese company has risen to the ranks of first tier supplier.