USER REPORT

Fig.1: decorative trim strips in real wood or carbon fabric with plastic support panels and PUR surface finish upgrade automotive interiors.

Premium ambience through *MacroPower*

In the pioneering days of automobile engineering, all vehicles had bodies with wooden frames and wooden dashboards, and they were premium products crafted individually and by hand. Today, the motorcar is a mass product made in different quality categories. But the premium-class models are distinguished from the standard versions by luxury extras, primarily in the interior. These include above all decorative parts with real wood veneer surfaces or carbon fabric with special surface finishes, even going as far as piano lacquer finish. In spite of all mechanization, the production of such parts still requires a high degree of skilled craftsmanship. The market leader in this domain is the German company Novem Car Interior Design GmbH. For the production of these wood/plastic and/or carbon/plastic composite parts, Novem has decided to invest in the new *MacroPower* injection molding machines from Wittmann Battenfeld. With their ergonomically designed clamping units, these machines offer optimal conditions for an effective combination of machine operation with plastics processing.
Process technology for over molding lacquer film or decorative film has frequently been in the focus of professional reporting in recent years, above all in connection with applications for automotive interiors. Interested observers could get the impression that the future belonged exclusively to the admittedly more and more perfect imitation prints of natural material surfaces and their automatic processing into decorative parts. But this impression was very effectively refuted by a visit to the German automotive supplier and surface specialist Novem at its Slovenian facility, since decorative film does not take the center stage here, but rather exquisite precious wood veneers from all parts of the world, or carbon fiber fabric, as well as the skills and craftsmanship required to process these materials (fig.1). The impression of superior quality is enhanced still further when these decorative parts are embedded in an environment of equally valuable leather or textile applications (fig.2). Such up market decorative parts can be found in the premium models of the middle-class and upper-class series of virtually all car manufacturers. And there is a noticeable trend towards offering such premium decor as an option also for small and medium-sized vehicles.

But premium requires first-class workmanship. In spite of all modern technology, it takes a considerable number of production steps and highly skilled craftsmanship to produce a ready-to-install decorative part from the raw veneer (fig.3).

**Battenfeld injection molding technology meets craftsmanship**

Both veneers and fabrics have a life or their own in spite of most meticulous preparation. They are of course stabilized by preparatory steps such as trimming, compression-molding and lamination with liners prior to being processed on an injection molding machine, yet their insertion into the cavity of the mold requires the experience and sensitivity of a machine operator. Experience is vital, because the veneer parts change their form slightly, depending on the environmental conditions, and therefore require sensitive adjustment while being inserted and positioned inside the mold. Having this task handled by robots would be excessively costly. The programming and adaptation work would be just as excessive in view of the great variety of models. Another special characteristic of the Novem production is that the most ergonomically suitable working conditions inside and around the clamping unit have a higher priority in the machine specifications than full utilization of the clamping force. Peter Ade, Head of Application Technology at Novem, comments: “For us, it is crucial to have compact machines. This applies above all to the working environment around the mold. The reason is that the machine operator is required to enter the clamping unit during every production cycle. Our demand was that this should be possible on a level, horizontal plane and without contorted movements. There should be no obstructions to the insertion process, which is vital for product quality. In this connection, I would like to specially emphasize the excellent cooperation with the Battenfeld engineers and their creative contributions towards further optimizing the machines’ ergonomic qualities, which were already outstanding to begin with.” (fig.4)

Following an extensive selection process, the actual decision at Novem was made in favor of Wittmann Battenfeld MacroPower 1100 / 3400 machines. With a 1,450 x 1,100
mm distance between tie-bars, the clamping unit of these machines provides the necessary space for insertion and movement. In contrast to the generously dimensioned clamping unit, the smaller 3,400 model with a 65 mm screw was selected as injection unit. This is in keeping with the generally light shot weights of the decorative parts.

Model changeover made easy

Another, highly specific benefit of the Wittmann Battenfeld large machine concept is the extremely short length of the tie-bars. It is the result of integrating the four clamping devices into the structure of the moving platen, instead of placing them on the outside of the platen, as is most frequently the case. By carrying out the full platen stroke right down to the end position at the end of the machine frame, a free space opens up between the ends of the tie-bars and the machine platen, which can be used for changing molds with oversize platens from above as well as from the side. In this particular case, the free space between the tie-bars and the platen was extended to 1000 mm by a 400 mm lengthening of the machine frame, an invaluable advantage for lateral mold change in view of the production hall’s low ceiling.

Summary

Novem’s production is an outstanding example for the significance of an ergonomically designed interface between a machine and its operator. This is how Peter Ade sums up the situation, adding: “After a break of several years, we have become a Battenfeld customer once more, because the new MacroPower machine concept was able to completely fulfill our specific requirements, and with its comparatively compact dimensions helps to keep the requirements for valuable production floor space small, too (fig.5). The actual injection molding performance was not our most important consideration, since it is a given anyway.”

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WITTMANN BATTENFELD, a company of the WITTMANN group based in Kottingbrunn, Austria is a leading manufacturer of injection molding machines for the plastics industry. With its own sales and service companies as well as representations in about 60 countries, WITTMANN BATTENFELD provides optimal support to its customers in all matters concerning injection molding technology. Its innovative strength, highest precision and strong focus on maximum customer benefit make WITTMANN BATTENFELD a valuable partner for its customers.

About Novem

Novem is a global supplier of high-quality decorative parts and decorative functional elements for automotive interiors. The automotive supplier based in Vorbach/Upper Palatinate, Bavaria is the number one worldwide in the market for decorative parts made of precious wood. In addition to its well-established line of processing precious wood, Novem has established innovative plastics and metal technology and has thus become a full-range supplier.

Thanks to its program management, Novem is also able to function as a system supplier of all decorative parts required for automotive interiors. Leading automobile manufacturers and automotive suppliers in the premium segment rely on the excellent design and development performance from Upper Palatinate. The Novem customer base includes all well-known automobile manufacturers. Novem currently employs 4,800 associates at its ten production plants. www.novem.de

Illustrations:

Photo: courtesy of Porsche Austria GmbH & Co OG
Fig. 2: example of a styling set with real wood veneer surfaces in the interior of a premium vehicle, consisting of a center console panel, dashboard inserts and door handle panels.

Fig. 3: Peter Ade, Head of Application Technology at Novem, demonstrates the raw materials for the surface finish of the decoration sets to Gabriele Hopf, Communications Manager at Wittmann Battenfeld. The materials exclusively used for this purpose are carefully selected precious wood veneers or compounds made from such veneers.
Fig. 4: In conversation with Gabriele Hopf, Communications Manager at Wittmann Battenfeld, the application technology engineer Peter Ade points out the importance of the ergonomic working environment for the efficiency of the production process, which is a combination of operator function with machine function.

Fig. 5: Since the available production floor space at Novem Slovenia is fully taken up, compact machine dimensions were a top priority on the list of specifications for the replacement investment. The compact dimensions of the Wittmann Battenfeld MacroPower 1100 contributed substantially to its top score in the selection process.