

> One by one

Every batch produced efficiently

From MDF to the finished bathroom furniture front – without manual support by staff. This vision became reality for Sanipa. In corporation with Wemhöner the Bavarian company creates a fully automatic and completely cross-linked production. In addition this investment increases the manufacturing capacity considerably.

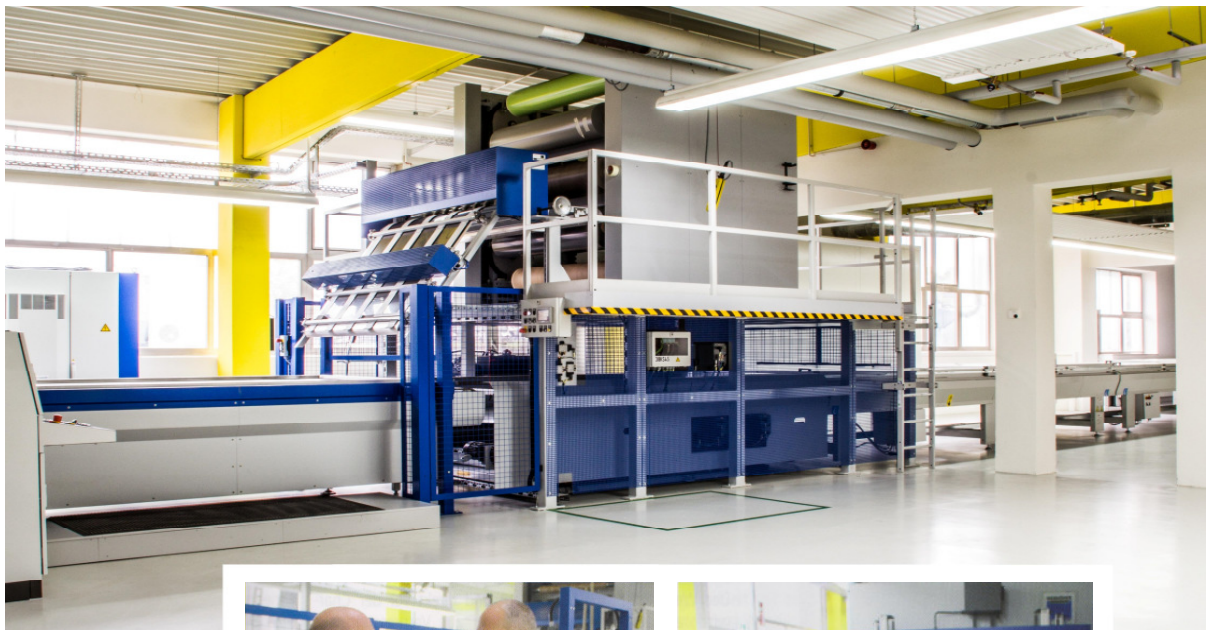
Hold the balance between batch size one and serial production is the common challenge for Sanipa. Apart from this fact the company Sanipa, adopted by Villeroy & Boch in 2008, produces bathroom furniture for the parent company which they distribute in sanitary specialist shops in Germany, Austria and Switzerland. These furniture are named after Sanipa and everything exported to the international market is named after the parent company. Furthermore Sanipa produces exclusively furniture for the parent company which is distributed by the sale channels of Villeroy & Boch. The bathroom furniture specialist is a batch size one producer, manufacturing customised products for individual customer projects. Superordinated the company produces different product lines, but in real they produce special furniture according to the customer's requirements, both with regard to the colour, but also to the length, width, height and length of the furniture. According to this, highly efficient processes are necessary.

Until lately, the manufacturing process of fronts was a technical bottle neck – an investment was essential for Sanipa. The vision: to lay-up a raw MDF board on a product line and get a finished front at the end of the production line became close to reality. In between only a visual inspection is made, the other sequences work automatically. The project in which Sanipa invested about 4 Million Euros was implemented with Wemhöner as a project partner throughout the whole plant. "We had already a good contact to Wemhöner because of another project. So the Herforder team had a good starting position with regards to of 3D lamination of fronts. Together we evolved a solution which was not realized in this way before," explains Michael Wiesbeck, Plant Manager at Sanipa. The Wemhöner project aims absolutely towards batch size one. The production was also individual before, but the production scheduling was not as deep as it is today. Another aspect was the small capacity Sanipa had before – which was one of the main reasons to invest.

The investment is already paying off, currently Sanipa produces 250.000 furniture fronts per year in only one shift with five working days. In the past they needed seven work days with three shifts to produce the same amount. The core of the new front production line is the Wemhöner membrane press with paternoster system for 16 reels, turn-over system and an automatic trimming of finished components. The storage magazine, the automatic cleaning unit, the glue robot and the multi- daylight oven in front of the other equipment are important as well. Today the production flow is as follows: for a period of about one week all orders are collected within the ERP system, afterwards the optimization process starts to find the best way to arrange the different batches in consideration of time and foil type. Within this optimisation process, a certain lay-up pattern number is generated, which is retransferred to the ERP system. The following step is to transfer the order to the cutting optimisation for an ideal cutting via nesting.

> bottom left: the storage magazine after the board cutting.
middle: building of batches for pressing.
right: the spraying robot first glues the edges, afterwards the surfaces and finally again the edges.





>top: the heart of the new plant, the Wemhöner membrane press.
At the right: Michael Wiesbeck plant manager at Sanipa (left) and Detlef Hanel from Wemhöner

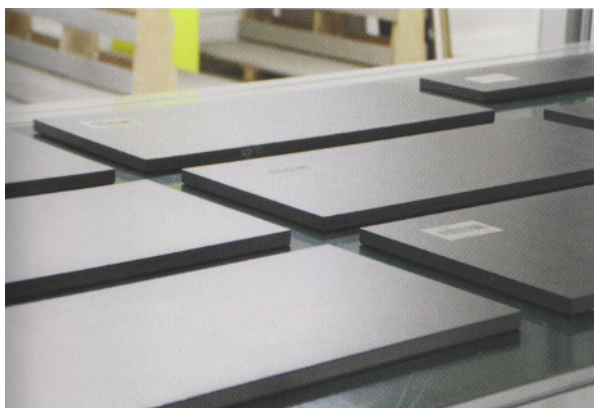


The start of the production process depends on the delivery week. Three days are calculated to load products. So the beginning of the manufacturing process depends on loading time. Prefabrication starts one week before loading. Normally an order is delivered after three weeks. After the kick-off for the manufacturing process and cutting of the fronts, the work pieces get a barcode with information for the following process and will be carried into the storage magazine. This "buffer" is able to carry the workpieces to the Wemhöner plant, if an efficient lay-up arrangement of workpieces

is completed. Within this process a support by human is not necessary. The manufacturing process works completely automatic. After pressing, the fronts are turned and cut automatically as well. At the end of the production line, the front is scanned, as the quality inspection by an employee decides, if a work piece is incorrect and which component completes an order. Supported by "Way-Point", every workpiece sends a feedback and may be found within the whole production line. The barcode provides all important information, such as type of foil, the size, the glue application or

similar information. The system stops automatically, if settings are changed manually – to change the foil or other things. After the employee confirmed the adjustment, the machine continues the production process. The new production line is followed by a storage for semi-finished-products, so that at the end the whole customer order can be brought together. The corpus of the bathroom furniture is built in Treuchtlingen as well. Before the targeted loading date, all elements are assembled to build a ready piece of furniture. The Wemhöner machine is able to process materials with a thickness

of 8 to 38 mm and sizes of 80 x 80 mm up to 1.250 x 2.540 mm and up to 1.050 elements during one work shift. But there is also a special feature: On a separate station behind the press, the press is able to process for example special curved geometries with heights up to 120 mm. "The biggest challenge was to program the software of the plant – a completely linked manufacturing plant is definitely not usual", explained Detlef Hanel, product manager at Wemhöner, who accompanies the project from the beginning. "Moreover we had to find a solution for individual problems.



>at the left: these are the finished fronts after cutting. To cut the fronts, they need to be turned around. Apart from this fact the fronts are lying on the front side and the barcode is on top.
On the right: quality control through an employee



>It does not care which size, colour or form: with the new plant Sanipa is able to produce every kind of bathroom furniture with a batch size one. With a high output and a high capacity

For example the transport of single parts. Normally drawer units will be transported with the longest side first, but it does not work because of the transition between the different manufacturing tables. So we had to develop a process to turn the drawer unit first and to turn them back directly before pressing to allow for an optimal pressing." Another important aspect is to avoid time losses because of a foil exchange. "16 different foils are always available in the paternoster". High-gloss films dominate our production process, 60 % of them are white. The other percents are distributed between 18 other colours or foil types. Change the foil type after every charge is not efficient. But we have to consider the missing parts as well. If a rejected piece has to be produced again, the efficiency is less important", explains Wiesbeck. Currently about six percent missing parts are recorded by Sanipa, but they try to reduce this quota together with Wemhöner. Wiesbeck goes on: "With the old system we had reject rates of more than 10 percent. High gloss surfaces

are a special challenge, although after glue application we transport the fronts protected by covers to avoid the intrusion of dust. But a high gloss surface excuses nothing." To keep the pressing efficient and save material even in case of rush jobs, Sanipa invests in a membrane press with "Variosize". Similar to a modern trunk cover in a car, the pin system only can be opened as much as it needs to. "Wemhöner is the right partner. We enjoy a permanent support and if we have a problem the team develops a solution really quickly", summarizes Wiesbeck. "On the one hand we have increased the productivity and on the other hand the employees are relieved considerably, because they do not have to concentrate on handling matters but only the production of components. The whole company is more relaxed, whereas during the years with three shifts operation the manufacturing process was always at the limit." At the end a convincing aspect was the short time from project planning, implementation and the commissioning of the plant. The first conversation took place in October 2013 at Sanipa, four months later Wemhöner and Sanipa had already created a final concept. This inspired everybody - particularly the technical director of Villeroy & Boch Jürgen Kehling. The integration of the plant into the consisting production hall was the next step to follow depending on room height and other outline data. This was a big challenge and took about three months. After the placing of order, the delivery time was six months. According to Wiesbeck the installation of the line was comparable to an "open heart surgery" because it took place during the old manufacturing machine was still working. Because of this aspect,

only parts of the production hall could be prepared for the new plant. In March 2015 they put the new plant into operation and removed the old one. After finishing this process the glue roboter and the brush station were delivered and afterwards the plant was linked to the storage manager. Very impressive: It took only a few weeks until the full capacity was reached. "Meanwhile we have already reached the performance of the agreement" tells Wiesbeck. "And we got additional scope for the further projects if the productivity grows."

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