**Restructuring from series production to batch size one:
Office furniture manufacturer Hali implements a complete rethink of its order, purchasing and production process**

Fantastic variant production in Europe with a 15-day turnaround

More than 48 million product variants making up the complete Hali product portfolio are manufactured and delivered using an unmanned order, procurement and production process right from the specific customer request to the finished article in a maximum of 15 days. Working together with the HOMAG Group plant specialists, Austrian office furniture manufacturer Hali has succeeded in achieving the service of a bespoke joinery outfit at conditions more likely to be associated with an industrial mass producer. A 30% increase in capacity using the same workforce size and the world's shortest resetting gap say it all: Hali is right on track for continued success.

At Hali-Büromöbel, the focus is on supplying customized products coupled with high-speed manufacture and delivery at standard product prices. Working in cooperation with HOMAG Group Engineering, this enterprising furniture producer has established one of Europe's most up-to-date production plants in Eferding near Linz. This impressive new facility is designed to address the clearly evident trend towards globalization and individualization and is totally in step with future market requirements. This new concept underpins Hali's aspiration to provide totally unique products, and takes the company a huge step closer to its declared aim of becoming "innovation leader" in terms of order processing and production technology.

Even before the financial crisis hit, those responsible at the Austrian

furniture manufacturer Hali were in no doubt that the way forward lay in a complete restructuring of the company's order process and production technology. And this is precisely what they have achieved. Having weathered the financial downturn, Hali is now back with renewed vigour and a brand new market concept: A pledge that every individual customer will receive their complete finished order for millimetre-precise office furniture or room furnishing systems within just 15 days at standard production costs.

"This may sound incredible to outsiders", explains Hali-Büromöbel's Head of Production Albert Nopp, "but we have been giving a lot of serious thought to this issue for some time, considering a number of concept variants and churning the figures backwards and forwards. We knew that our vision was capable of implementation." Anyone visiting the Hali plant in Eferding today cannot help but agree – even if the very last machine investment is yet to be installed. The contract to carry out this major manufacturing investment was awarded to HOMAG Group Engineering.

The new self-learning BARGSTEDT chaotic 2-level panel storage system, waste piece storage facility and two HOLZMA panel saws with downstream multi-level buffer station have already been in successful operation since 2009, and the new HOMAG sizing and edge banding line for batch size one production since 2010. "We will be driving our plans forward in 2011/2012", continues Nopp, "by installing a BARGSTEDT multi-level order picking storage system and a WEEKE drilling line – the orders have already been placed."

In total, implementation of the overall concept has entailed an outlay of 10 million €. For a medium-sized enterprise with a workforce of 230, this represents a pretty hefty investment. But the concept made perfect sense, and, as Nopp explains, "renovation of the existing machine outfit was on the cards in any case, with some of the machines between 15 and 20 years old. Hali's new owners, Dr. Siegmund Gruber, Christoph Königslehner MA and

Engineering Graduate Jürgen Holler, had the insight to throw their full weight behind this ambitious project, signalling their commitment to safeguarding future of Eferding as a producing location".

Fantastic variant production in the joinery with 2000 parts per shift

"We started seriously considering the shape of the future back in 2006", recalls Nopp, looking back to the start of the project. "We asked ourselves what we would be asking for if we were our customers". It did not take long to come up with the answer: Every customer wants an item of furniture which complies with their own specific needs without paying the earth for it. After all, no two offices are quite the same. If the cabinet could be just 37 mm narrower, then the whole wall could be effectively used instead of resorting to an unsatisfactory "half cabinet" standard solution generally offered in catalogues. Gradually the vision of Hali's management team took shape: "We aim to supply any product our customers ask for in the dimensions of their choice, within a short delivery period and at standard prices." Or as they like to put it: All the services associated with "fantastic variant production" from a bespoke joinery at the conditions you would expect from an industrial production outfit.

No manual intervention – from order configuration through to product assembly

Albert Nopp and his project team quickly realized when they launched the project back in 2006 that they not just were investing in new and flexible plant and machinery, but would have to sign up to a whole new order processing structure. Consequently their first step in 2007/2008 was to launch a new ERP/MRP system from the Swiss company Borm. Seamless from the order entry stage through to dispatch of the finished products, this system offers absolute variant capability. Completely cutting out the production engineering stage, it creates bills of material with dimension variant capability, work plans, job calculations and purchase orders for

suppliers, and also generates the data required for variant-capable machine connection. Nopp explains the Hali vision: “The idea was to implement order-specific day-by-day variant production, do away with the intermediate storage of finished parts and still be able to supply any dimensional variant requested by the customer within 15 days.” For the economical production of batch size one orders to work, orders naturally have to be optimized into larger production units on an automated basis to ensure efficient collation – one day at a time – of the greatest possible number of identical decor parts with the same thickness. Another key aspect is the absence of any manual intervention right from the original customer-specific order configuration process through to product assembly. Neither the data nor the production parts are seen by the operators or touched by human hand. This is the unmanned order process that Albert Nopp had originally envisaged at the outset of this ambitious project.

Conjouring up the greatest possible number of “batch size one parts” to allow identical part production is the balancing act that Hali has to get right in its day-to-day production. This necessitates a state-of-the-art machine outfit capable of automatic high-speed resetting and with a control system allowing integration into the MPR system.

Shortest resetting gap in the world

One of the most exciting highlights of this high-tech plant is its record-breaking resetting time: For the very first time, HOMAG has succeeded in paring down the resetting time for all units to just 1.5 seconds. No matter what component format Hali is producing, the resetting gap remains the same. All the units reset simultaneously, even at a breathtaking feed rate of 28 – 30 metres. The sheer speed and flexibility of the plant at this performance level is currently unbeaten anywhere in the world.

Another challenge was production of the parts without using labels. “After all, applying 20,000 labels a week and then removing them again is

certainly not conducive to creating optimum value", comments the Head of Production. However, doing without labels calls for extreme machine process reliability (as there is no longer a bar code for scanning and assigning parts per machine) and smart software for plant control. The HOMAG Group came up with a solution which was highly satisfactory on both counts.

30 % capacity improvement without increased staffing

Hali's original target specification also stipulated a 30 % increase in capacity – without the need for increased staffing. Hali only requires 3 machine operators per shift to man the complex networked plant from the cutting stage through to assembly. And despite the declared aim of achieving a "30% capacity increased for future growth" Hali was equally keen not to increase its production footprint. "We succeeded in achieving both goals", reports Nopp with satisfaction.

As far as economic return on the overall investment of around 10 million € is concerned, the primary aim of the project has been to secure the future of the company. By providing bespoke production with a 15-day turnaround at standard product prices, Hali has set a whole new standard in the marketplace and may lay claim to offer a service which is currently completely unique. Offering a cautious insight into the calculation behind the production concept, Albert Nopp emphasizes that the company "had been operating with an ageing equipment outfit that would have required gradual replacement in any case." Also flowing into the equation was the fact that the whole restructuring project took place without any need for building conversion work, and that the 30% performance increase was made possible using the existing workforce. In addition, the changes have meant substantially reduced capital tie-up, "as we no longer stock finished parts and now supply the assembly department exclusively with order-specific component variants produced on a day-by-day basis."

HOMAG Group Engineering – hand in hand with the customer

The paths of Hali-Büromöbel and the HOMAG Group companies have coincided for a number of years. The responsible Project Manager at HOMAG Group Engineering, Norbert Läzer, likes to think of the whole process and the high-tech plant that has resulted as a total work of art.

“Satisfying customer expectations is something we are passionate about. Particularly when working with customers like Hali, who drive us forward to new technical achievements by setting ever new and more complex challenges”, says Läzer. Alongside HOMAG Holzbearbeitungssysteme GmbH, also playing a key role in the project were BARGSTEDT Handlingsysteme GmbH in charge of storage and stacking technology, HOLZMA Plattenaufteiltechnik GmbH and WEEKE Bohrsysteme GmbH.

“Excellent cooperation between those involved allowed us to meet the complex terms of reference, as well as achieving maximum flexibility and unmanned production.”

This positive take on the project is seconded by Albert Nopp: “I would like to take this opportunity to voice my appreciation to project managers Läzer and Müller as representatives of all those involved in the project from the HOMAG Group. Cheers, you did a fantastic job!”

Thank you!

Fig. 1:

Hali's Head of Production Albert Nopp and Siegfried Wipplinger, jointly responsible for project implementation, checking out the sizing line throughfeed situation at the monitor of the power**Control** PC 22

Fig. 2:

The BARGSTEDT two-storey panel storage system enables the quantity of storage slots to be doubled and reduces the time needed to access the 174 different panel types. On the right is the automatic waste piece storage facility.

Fig. 3:

The HOLZMA HKL 380 **combi**Line is an angular plant featuring a trimming unit on the rip saw which guarantees maximum cutting optimization using variable clamps

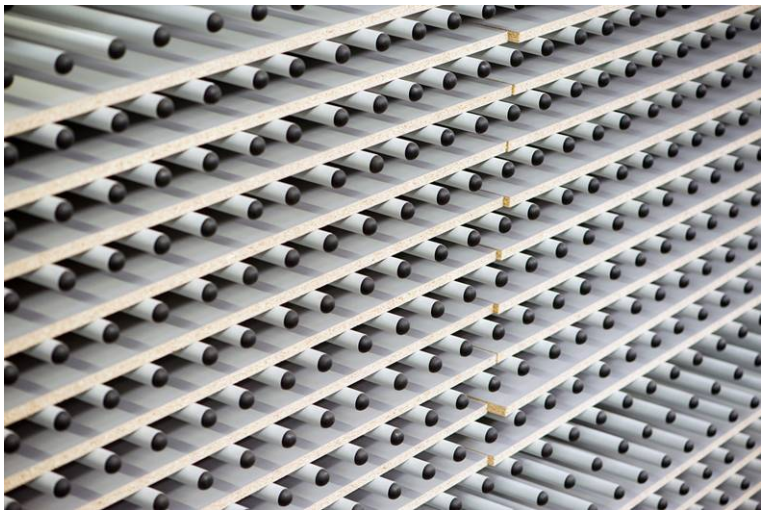

Fig. 4:

“Porcupine buffer” is the name given to the fully automatic BARGSTEDT multi-storey storage system located between the sawing and the edging line

Fig. 5:

U-shaped sizing, grooving and edge processing line for batch size one processing of all Hali parts in two passes

Fig. 6:

A glance at the Hali office furniture showroom testifies to Hali's outstanding reputation as a full range supplier

Fig. 7:

Hali-Büromöbel GmbH logo

Pictures courtesy of: Hali-Büromöbel

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