

Diversity in the world of furnishing: Industry 4.0 to enable individuality on a mass scale

For over 50 years now, the employees of the HOMAG Group have been concerned with addressing the needs of their customers and with the trends and developments of tomorrow and beyond. We are concerned with issues such as how expectations placed in furniture are likely to change over the coming 10 years, or which furniture manufacturing technologies will bring our customers the greatest success.

The movement towards furnishing individuality is clearly and unstopably setting the direction. The home of the future is set to increase in importance as a place of retreat, recovery and recreation. As the speed and mobility of daily life continue to increase, our own four walls are a welcome haven of peace and security where we gather strength for the daily onslaught.

This trend is pushing furniture manufacturers to concentrate their production more closely on individual furnishing requirements of end users, while they are confronted by enormous scope in terms of furniture dimensions, shapes, materials, colors and surface finishes – to the extent that customers can actually design their own item of furniture on the manufacturer’s website and order it online. The ultimate aim is for bespoke customer furniture, once exclusively the province of joiners or cabinet makers, to be industrially produced – and where possible at costs not dissimilar to those for series production.

Against this backdrop, “Industry 4.0” is currently the watchword of the moment. This abstract visionary concept covers an enormously broad field. In the HOMAG Group we talk about “networked production” – a concept our customers in the furniture sector have implemented hundreds of times over in recent years. Furniture producers across the world are already using high-flexibility batch size 1 plants from the HOMAG Group to produce millions of furniture variants within minimized delivery periods.

As we see it, “networked production” encompasses five components: The digital component, the intelligent machine, horizontal and vertical networking and the “smart”

workpiece.

These components enable a networked plant from the HOMAG Group to know at any given time how every “smart” component has to be processed and where it is currently located. Another benefit: All components can be manufactured in any sequence without the need to reset the production process. The resulting benefits are decisive: A networked plant allows the furniture manufacturer to approach closer to the productivity optimum, while the plant’s outstanding flexibility allows differentiation from competitors and the ability to satisfy widely diverse customer wishes. And thirdly, the use of an “intelligent” plant means enhanced energy and material efficiency.

Against the backdrop of “networked production”, the cell control system **woodFlex** has evolved to become a core area of competence for the HOMAG Group. Achieving a completely networked system from our modular machine range calls for totally robust interfaces between the individual components and the cell control system. By using our standardized **powerControl** technology and **powerTouch** operating system, we ensure an optimum manufacturing process across all of the networked machines.

powerTouch represents a totally new dimension in machine operation. Thanks to its standardized elements and familiar look and feel, users of all machines across the HOMAG Group are able to quickly feel intuitively at home – in the same way as using a smartphone. The relevant information on the machine status is available at a glance thanks to the use of modern software modules. At the same time, integrated help and assistance systems support the user in localizing and remedying faults. The progress of production across the entire plant can be monitored and controlled from a central operating console.

To allow the most efficient production possible, we additionally offer our customers facility for continuous production analysis and optimization. This is implemented using MMR (Machine Monitoring & Reporting) – a standardized diagnostic system featuring operating data evaluation on every level: unit, machine and cell. The benefits: Improved productivity, availability and flexibility.

Looking to the future, the process of networking is certainly set to increase, culminating ultimately in the integral digital factory. This will equate to even greater flexibility, even shorter throughput times and further reduced stock keeping.

With its “networked production” concept, the HOMAG Group has already put in place many aspects of the “Future Project Industry 4.0”. The companies of the HOMAG Group are also heavily involved in a number of the associated research products. Overall, the furniture industry may claim to be a worldwide forerunner in the implementation of Industry 4.0. However, there is no denying that Industry 4.0 poses new challenges. The most serious of these is the issue of standardized data communication – for example through the cloud storage and processing of data in real time – and the associated data security risks. We have always attached particular importance to the issue of security, and this has been a central concern of the HOMAG Group in areas such as teleservicing. This is also a focal theme of the HOMAG Group’s in-depth involvement within the framework of the Industry 4.0 project. The topic of Industry 4.0 is very far from being an “unrealistic future pipe dream”: it is very much a present-day issue for the HOMAG Group.

Pictures courtesy of: HOMAG Group AG



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Quotation:

“Industry 4.0 is about mastering the complexity of 100% individualized production, ensuring a seamlessly consistent data structure and preventing non-conformance. As suppliers, we are responsible for supporting our customers with capable solutions. For this to succeed, intuitive operation of machines is crucial.”

Example of a plant: Batch size-1 for 4 000 parts per shift

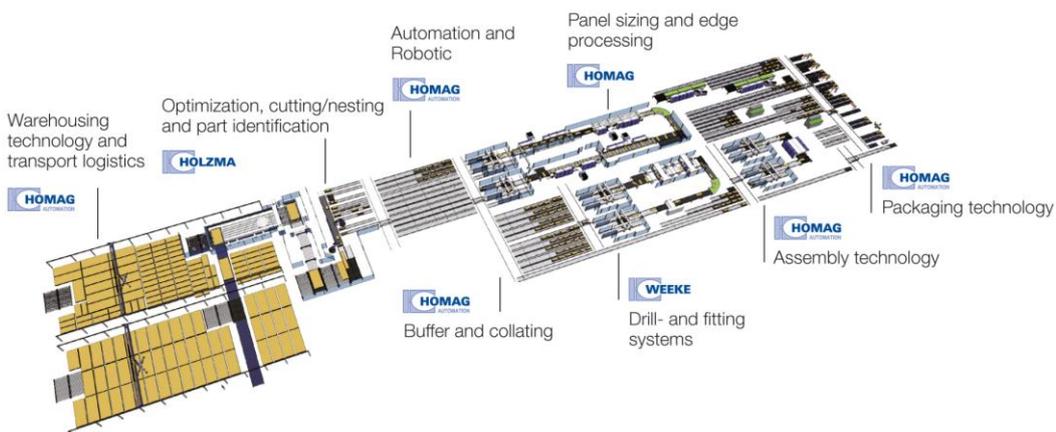


Fig. 1: Batch size 1 plant: From warehousing technology and panel cutting through to packaging of the finished items of furniture.



Fig. 3:

“Networked production”: The HOMAG Group supplies all the components required from a single source, whether machines with highly developed control systems or the necessary software, from the production engineering stage through to support for the sales process.



Fig. 4:

powerTouch: Standardized operating elements and software modules

ensure that all HOMAG Group machines have the same look and feel for the operator, with differences only in a few machine-specific details.



Fig. 5:
QR codes enable the transmission of machine data such as maintenance instructions to any smartphone (“digital notepad”)

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