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Industry 4.0 in the furniture industry

Executive Summary

Situation: Industry 4.0 and specific customer requirements lead to challenges for furniture manufacturers

Connected production or smart factory, as well as the customer desire for customization, pose new challenges for the furniture industry today. Vertical and horizontal integration of production areas, along the entire value chain, form the basis for the reduction of costs and increase of the degree of automation to production, and therefore leads to more efficiency. Efficient production enables us to meet the increasing need for customization, and to remain competitive, specifically in high-wage countries.

Problem: Elaborate and expensive customization

While furniture manufacturers, with a standard offering, could meet consumer needs just a few years ago, the rising demand for customized products now forces the manufacture to think differently. Special production must be comparable to mass-produced products in price, while delivered to the consumer quickly to satisfy them. Lot size 1 causes considerable costs in conventional production, and a high manual effort that is also often subject to errors and may cause expensive complaints

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Solution: Investing in software and optimizing production processes

Manufacturing software solutions makes it possible to link people, machines, and resources; it is a necessary hub for all data originating in a company. An industry-specific system also permits precise mapping of the production processes and work flows relevant for the furniture industry and provides cost-efficient production for a lot sizes of 1.

Result: Optimum production, flexibility, energy and material efficiency

The comprehensive, modular, software manufacturing solution, 2020 Insight, permits automation of sales, purchasing and production processes, offering the technology basis for profitable flexible and customer-specific production to size even at large piece numbers. This is accomplished by automation and optimization of order processing, work preparation, purchasing and production processes. The high degree of automation ensures efficient use of energy and materials, and results in visible cost reductions. Transparent processes and data also permit continuous improvements of production to the optimum level.

Industry 4.0

The term "Industry 4.0" was initially put in focus at the Hanover trade fair 2015 by an industry-comprehensive alliance of the Federal Government for digitalization in economy. The "fourth revolution", after the steam engine, the conveyor belt and automation by IT, is targeted at the creation of smart factories.

In a smart factory, people, machines and resources communicate directly with state-of-the-art information and communications technology. Smart components know their production processes and future uses, to actively support production and documentation. Production also changes - cycled conveyor belt production is replaced by disconnected, entirely flexible and highly integrated production systems.

IT forms the technical basis of the smart factory. It supports communication between the machines and workpieces and forms the basis for smart and digitally linked systems and production processes. For example, material flow can be controlled by the system (quantity-dependently) based on variation or order data, status messages, etc., and can be called in real time.

Industry 4.0 in the furniture industry

Demands in the furniture industry have changed essentially as well in the last years. Not only mass goods with a low product diversity are in demand, but highly customized products that make lot-size 1 an everyday occurrence for the manufacturers are requested more and more often. To achieve this cost-efficiently and timely, in accordance with customer demands, it is no longer enough to look at and optimize processes separately.

To ensure efficient production, they must be linked as well to all internal, adjacent and support processes; such as, material management, product development and sales. This should not stop behind the factory gates: suppliers and customers should be included. Only if information collected in this manner is continually analyzed and the entire process chain continually optimized can efficient and future-capable production be implemented.

Data is the key to a company's success. Only if you have all the data needed – and, of course, are able to control and evaluate it – can you achieve economic management. Data helps forecast customer needs and thus support product developments, set priorities for marketing channels and assess new sales options. Data is the basis for networked machines and self-controlling production processes, thus increasing the company's competitiveness.

Software manufacturing system – the data hub in the company

Industry 4.0 creates new information relationships that connect databases, internet and real-time information from factories, delivery chains, and products as well as the manufacturing software solution. The manufacturing software solution is given specific relevance since it is the hub in a company. All market, production, and logistics data are combined and provided here. Additionally, the manufacturing software solution filters and classifies the incoming data and thus acts as an interpreter for the connected systems.

To be able to act, the manufacturing software solution must be used as a leading instance in terms of redundancy-free master and movement of data (single source of truth). This enables it to coordinate and synchronize the partially autonomous units such as machines, people and products in the scope of order processing, to optimally and consistently use all applications.
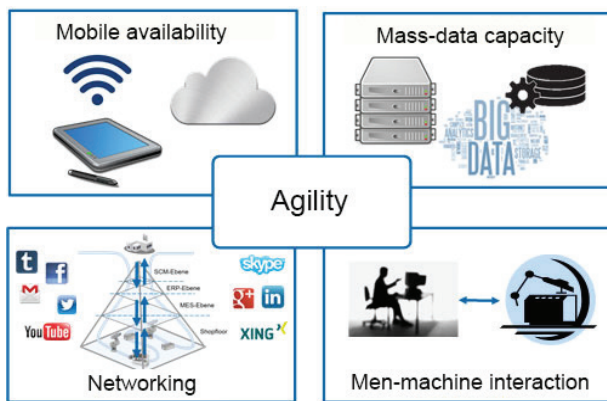
Additionally, Industry 4.0 poses new requirements from a manufacturing software solution that has traditionally taken over the central control in the company: by now, it must be available via mobile technology, be mass-data-capable and multiply linked. In addition, the man to machine interaction becomes more and more important to ensure a high degree of agility in the company.

Source: Trovarit AG

2020 Insight – Focus on the furniture industry

The special requirements in the furniture industry requires a manufacturing software solution that is specifically developed to those needs. The comprehensive, modular solution, 2020 Insight, forms the basis for linked production in the sense of Industry 4.0. It integrates all data from order recording to product configuration to production planning and control and offers a continuous IT solution. Workflows also map customer-specific processes and are the prerequisite for automated decision-making processes based on real-time data, at all corporate levels, until and into production. With its open structures, 2020 Insight is the hub for exchange of structured data.

In production, the manufacturing software solution not only submits information to the employees, but distributes and produces data (e.g. for CNC machines via integrated GenPost data). Apart from this, this applies to all production machines independent of the machine manufacturer.

"2020 Insight has us best-prepared for implementation of effective linked production."
Christoph Fughe
CEO Störmer Küchen

Data is provided not only in one direction; at the same time, feedback from production, regarding the work progress and similar, is recorded, and available for analysis and control. Alternative work schedules permit automated exception treatment based on this information, e.g. for internal complaints in production.

Additionally, integrated scanner technologies ensure that production feedback is continually available and up to date. Real-time data can also be called by mobile apps; thus, they are available anytime and anywhere - continually offering the necessary transparency on work status and execution progress.

To ensure the quantity of data and processes from impairing overview, 2020 Insight was constructed in a user-friendly manner and can be customized to the information needs of the individual user. This ensures that man to machine interaction is possible without problems; only this way can implementation of a smart factory in the meaning of Industry 4.0 be useful.

"To us, industry 4.0 means linking all systems and machines to each other. Software is the connecting element in order to achieve this link. 2020 Insight maps the processes precisely and uncovers efficiency deficits, bringing us continually closer to our target of production with a lot size of 1."
Rüdiger Libor
Head of IT Interlübke | COR

To maintain economic efficiency, today's furniture manufactures must be able to do the following:

- **Optimization** of the customer-specific product design
- **Tracking** the product status and order history
- **Execution** of real-time analyses of costs and resources
- **Evaluation** of factory performance and setup of early indicators
- **Provision** of valid planning data and operating indices
- **Improvement** of production and product as well as information quality
- **Reduction** of power and material costs

Learn how 2020 Insight can support you in implementing Industry 4.0 in your company, making it more economically efficient:

www.2020spaces.com/solutions/manufacturing/ *

*Also source indication