



Every part lands up here. Milan presides over the failsafe collation of different orders

Industry 4.0 at Darex Home Guided by the network

If a customer is missing a hinge or a panel, the order could mean money down the drain rather than a profit for the furniture manufacturer. Darex Home in Belgrade sells kitchens online: it pledges to deliver within 48 hours, uses fully networked systems and ensures that nothing can ever be forgotten.

Piece by piece, Milan at the Serbian online kitchen manufacturer Darex in Belgrade works his way through big stacks of mixed furniture components. Most stacks are delivered from the CNC machine, but shelf inserts come straight from the edging cell, while back panels arrive from the cutting cell of the automated storage system and the pressure beam saw. Each completed furniture component leaves the production line and waits in one of these stacks to be sorted and added to its specific order. This is precisely what Milan's job is – and he completes it without making a single error. From one of the stacks, he selects the furniture component at the top, aims his hand-held laser scanner at the label, which is uniformly aligned within the stack, and presses the button. A huge flat screen monitor mounted overhead which is easily legible from several meters away indicates the pallet number to which the item belongs.

The production host computer running the woodFACTORY software from HOMAG eSOLUTION automatically books the scanned workpiece to the displayed pallet. As soon as he has placed the last part of an order on its specified pallet, the monitor changes the color of the displayed pallet from yellow to green. Milan takes it to the packaging station. At the same time, another colleague is picking the furniture fittings and hardware which have to be packaged in with the furniture components. Here too, woodFACTORY is in charge of organizing the workflow. A barcode scanner ensures that precisely the right quantity of the correct fittings is selected. Only then does the control system give the go-ahead in the form of a green light.

From the order picking pallet, the colleague stationed at the packaging machine collates the furniture components and boxes containing the

hardware for each individual cabinet, scans in each of the labels, waits for the green light and then packages everything in one cardboard box, on which he then applies a plain text label which is decipherable for the customer.

Panel dealer and kitchen producer

Darex was formed in 1992 after the fall of the iron curtain, initially as a Serbian panel dealer for the Egger range. Initially, the articles were sold practically straight off the truck to joiners and cabinet makers. Now, the company employs a total workforce of 160 in three locations, of which around 70 work at the subsidiary Darex Home. Darex now offers not only panels but also edge bands, fittings and other materials for furniture construction. The original panel cutting department grew into today's subsidiary Darex Home which was founded in 2011. Alongside complete kitchens, the company also produces furniture components and fittings for cabinet makers and joiners.

After two working shifts, around 2000 fitted kitchen components leave the factory daily.

The Serbians have a particular affinity to online business, which has allowed Darex Home to successfully sell its range using a webshop. Its cabinet shop and joiner customers use the webshop together with their clients to design and configure their ideal kitchen, and then receive a quotation at the click of a mouse. This often takes place using a laptop in the manufacturer's showroom. Orders are also placed at the click of a mouse.

Darex Home pledges to dispatch a kitchen within a delivery period of just 48 hours. As a rule, customers collect the kitchens themselves.

The kitchen manufacturer opted to implement the complete vertical networking of all its data, from the webshop to the individual production cells. This excludes the possibility of transmission and design errors. Horizontal networking in production, in other words the flow of information to and between the producing stations, is implemented using the barcode labels automatically applied at the panel cutting stage. These are used to control the edging cell and the CNC. They also report the current location of the items at the different stations to

the production control system. This allows woodFACTORY to ensure that production only continues at the various points if everything for a specific order is present and complete. The precisely inter-coordinated machines and software were supplied by the HOMAG Group: The webshop operates with woodNet.

wood**CAD|CAM** is the actual heart of the factory, and contains the parametric furniture catalog which can be accessed over woodNet. woodFACTORY brings together parts belonging to the same article, monitors the material flow and ensures that every order is complete.

The central machines used at Darex Home are the panel cutting cell made up of the TFL 411 panel storage system supplied by HOMAG Automation and the HPP 300 saw from HOLZMA, the edging cell with edge banding machine KAR 350 from HOMAG and workpiece return conveyor TFU 220 from HOMAG Automation. The cardboard box cutting machine VKS 200 was also supplied by HOMAG Automation.

Efficient, automatic, reliable

Darex Home's CEO Olja Glisovic is seeing her investment reap rich rewards: "The webshop is buzzing. Vertical networking has eliminated any chance of transmission errors. The production

cells are taking care of efficiency and delivering top quality. By controlling the manually moved material flow using woodFACTORY we've been able to minimize capital outlay and secure a successful return on our investment."



Simple positioning is enough: feeding the edging cell

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Edging cell in the foreground, storage system behind