

An Investment in High Tech

Glas Fandel: Fully Automated IG Production

Bitburg, Germany, 20 May 2010: With the flick of a switch, Pierre Fandel, senior partner of the Fandel group, took one of the most modern IG production sites in Europe into operation in front of 400 invited guests. But the family business has another good reason for launching this event: Glas Fandel celebrates its 75th birthday this year! From its foundation in 1935 until today, Fandel has progressed to one of the leading IG manufacturers in Europe, producing up to 5000 high-tech IG units a day on its six production lines, with more than 200 employees.

Constant innovation, top product quality, and uncompromising customer orientation are the core values of Glas Fandel, manifesting themselves once again in the latest big investment. Founded as a glazier's and glass dealer's shop, the owner-run company started to produce IG under the brand name of TERMO-BIT in 1973 – which makes them one of the pioneers of IG production. Trends like thermal insulation which is still gaining on importance, were recognised early on – not least the importance of the 'warm edge'. This way, Fandel have been relying on the TPS system since 1999 and is still offering – based on customer request – all common solutions based on the 'warm edge'. All production lines are designed for producing triple IG, the new line even more so thanks to the integrated turning device. To guarantee reliable quality and an innovative product range, Glas Fandel uses state-of-the-art production technology from the top machinery suppliers as well as optimum organisation through a comprehensive software system for utmost efficiency. On the commercial side, ALBAT+WIRSAM's

ERP system ALFAK has been a fixed part of Fandel's business for more than twenty years. Minimum waste and the clear production organisation are the result of various optimisation systems from the XOPT range, and the PPS software ALCIM.

With its central location, Bitburg is the ideal basis for serving the Ruhr area, the Rhine-Main area, down to Freiburg in the South. The neighbouring countries of France, Luxembourg, Belgium, and the Netherlands are just a stone's throw away. The entire area is supplied by Fandel's own fleet of lorries which guarantees perfect delivery logistics, punctuality, and expert handling of the sensitive IG products.

A step towards the future

November 2009: The decision for a fully automatic production line has been made. Glas Fandel will realise the project together with Hegla, Lisec, and ALBAT+WIRSAM. Lisec is going to provide the IG line, Hegla the entire glass supply, from stock via cutting and an automatic sorting up to the transfer to the IG line. ALBAT+WIRSAM are



Photo: Rudolf Höser

going to contribute the necessary software and the networking of technologies. An investment of about four million Euros will be necessary to bring this tailor-made concept to life.

Manuel Jarantowski, Technical Manager, says: „The main targets were the improvement of productivity together with reduced labour cost, improved quality, better yield, and utmost efficiency. Also, we had decided right from the start to optimise our production processes in connection with the existing architectural structures. Instead of spacious, expansive solutions, we were looking for a slim, intelligent one.“

Project work within the innovation network

One customer, three suppliers: Apart from massive expert knowledge, this requi-



Left: Straight ahead! Fandel are the first to use HEGLA's subplate turning device TraCon. With this space-saving development there is no need for a 90° change of direction on the transport belt between X- and Y breakout.

Right: Various tools at the cutting control station visualise the present state of production and permit direct intervention in the production sequence





„Living, working, and relaxing in close vicinity: This is the vision of the renowned architects Herzog & de Meuron for the St. Jakob area in Basel. Glas Fandel has supplied the TERMO-BIT products PREMIUM, SILENCE, and SAFETY PLUS for this project.

res from all parties involved the absolute willingness to cooperate in a constructive way. Both conditions were fulfilled right from the start; the chemistry was right. Considering the completely new solutions built for and with the help of Glas Fandel, it is no exaggeration to talk about a well-functioning innovation network here. One of ALBAT+WIRSAM's major tasks was the intelligent linking of different machinery environments and specific IT elements, while quickly and flexibly responding to any additional requirements that might arise in

the course of the project. Dipl.-Inform. (FH) Peter Pawlowski, Head of Fandel's IT department: „A+W sent us an excellent team which made the work on this project very easy. This means that requirements from our side which turned up during the project, were quickly received and realised by the A+W team.“

Cutting, breaking, sorting

The portal crane accesses an automatic, compact store and feeds the ultra-quick HEGLA high-performance float cutting line. The cutting table boosts a ReMaster residue storer for the precious, partly cut sheets which, controlled by ALBAT+WIRSAM's DynOpt 2.0 system, are added real-time to the ongoing optimisation. Thanks to the Remaster technology, this is achieved without any manual work, saving time and material.

For the first time ever, an automatically controlled subplate turning device (HEGLA TraCon) has been integrated in the cutting/breakout line: After breaking the X cuts, the subplate is automatically turned so that the Y cuts can be broken in the same direction, thus saving space. Needless to say that this new technology is fully integrated ALBAT+WIRSAM's automatic cutting control.

After the – possible – Z cut, the sheet is turned to its bottom edge – this, by the way, is done by the only Fandel employee who can usually be seen in the cutting area. An automatic device sets the sheet up vertically, and loads it into the SortJet buffer. The DynOpt 2.0 cutting control software makes sure that the defined sequences



Mainly responsible at Glas Fandel for the successful realisation of this big project: Manuel Jarantowski (right), Technical Manager, and Dipl.-Inform. (FH) Peter Pawlowski, Head of the IT department.

are maintained, with a minimum of waste. This is facilitated by the option of occupying every slot of the sorting buffer three times – another aid for the automatic production of triple IG because even the slots of the unloading shuttle can be occupied three times.

DynOpt 2.0, cerebrum of cutting, creates no rigid, tied-up batches. Even optimised sequences can be changed and regrouped until shortly before the start of production. This permits the real-time, fully automatic reproduction of breakage and the addition of rush jobs. There is a permanent, real-time data exchange between cutting centre and IG line so that changes in the production sequence are known within seconds at any point of the production line, and the next processes can be adapted automatically. The information system ProdView offers full control by visualising not only the DynOpt data but also real-time information from other sources on the shop floor.

Far right: The buffer of the HEGLA Sort-jet with unloading shuttle, the link with the IG line at the bottom right. In the background: the turning device, Re-master, and portal crane. The unloading shuttle can take three sheets at once which makes the creation of sequences for producing triple IG much easier. Inside right: At the breakout table, the sheet is aligned with a stopper then set up vertically for being loaded into the sorting buffer.



Tailor-made:

Loading of supplied sheets

All sheets go into the sorting buffer but not all of them will be cut on site. Special glass types like laminated glass, toughened glass, and patterned glass are supplied on racks.

Since it may take five times longer to cut laminated sheets than it takes to cut float glass, one has to make sure that the laminated sheets are cut well in advance.

These sheets are added to the SortJet in defined cycles via a 'side entrance'. The worker removes the labels and registers the sheets in the system by scanning the barcodes. On a short transport line and a measuring device, the sheets are checked and passed on to one of the loading shuttles. This way, the supplied sheets can be fully integrated in the automatic sequence.

As if by magic:

Automatic IG production

The sheets are unloaded from the sorting buffer in the defined sequence and are passed on right to the IG line. To meet the architectural requirements at Fandel, a special construction turns the sheets by a few degrees. This tailor-made production has helped to avoid extensive reconstruction work.

After the first glimpse of the high-tech production line, visitors ask themselves where all the operators might be. A closer look reveals what automatic IG production is actually all about: Most of the work is done by the Lisec line itself, online-controlled by production data and closely communicating with the upstream cutting process. Authorised representative Guido Schwarz states: „Throughout the IG production,

the sheets remain untouched by human hands“. The individual sheets are automatically fed into the line and are automatically turned after the washer if necessary. Butyl spacers are set by an automatic applicator. After that, at the checkpoint, a worker applies the labels which are also printed there. Gas filling, pressing, and sealing are of course done automatically. The next two human beings can appear at the end of the line where they unload and stack the units, supported by A+W's rack view: It takes three persons to run the entire high-performance IG production – four if one includes cutting. The man at the checkpoint helps out if a sheet has to be added or removed at the line entrance, but this does not happen very often.

This high degree of automation has a direct effect on the product quality. Since the sheets are mostly transported on air cushions and rollers, breakage is scarce. Scratches and stains seldom occur because the sheets do not have to be unloaded from the table, put onto the line, and loaded onto harp racks by hand. The new technology helps to increase quality and delivery reliability.

Outlook: The second step

In a second step, the line shall be extended by another, automatic compact store: a combined laminated/float cutting line with laminated glass Remaster and a second IG line, also directly linked with cutting. The capacity of the sorting buffer is already designed for this final configuration which is scheduled for 2012.



Automatic spacer application at the LISEC high-performance IG line. All modules of the line communicate with the cutting line via ALBAT+WIRSAM software to guarantee quick reactions to any change of production sequence.

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Right: The LISEC line does its job, software-controlled, and mainly without any human support – the shop floor practically empty, a strange view. Left: at the checkpoint, the ALBAT+WIRSAM monitoring system ToolTV shows sheet structure, sizes, and position of layers. Labels are printed right at the line. The printing sequence is automatically adapted to any changes in the production sequence..

