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Glass Screenprinting: Make One From Three

THIEME delivers flexible usable multi-colour lines to Bulgaria

On request of a Bulgarian glass processor THIEME GmbH & Co. KG, leading manufacturer of flatbed screenprinting machines, developed and delivered a tri-colour line for the printing of flat glass for white goods (appliance applications). The screenprinting line, which was recently commissioned, consists of three interlinked single-colour systems, which also can be operated independently.

The enterprise Trakya Cam Bulgaria EAD in Bulgarian Targovishte, which specializes in the manufacture and processing of glass, prints glass for diverse applications – from architecture to the automobile industry through to white goods. For the latter segment, a new multi-colour line custom designed by Thieme has recently come into their production portfolio. It consists of three THIEME 3000 GS screenprinting stations, which are integrated into a 45-meter long, fully automatic inline production line (fig. 1).

The application options of the printing line are, completely customer specified, very diverse: Print applications include oven auxiliary lights, microwave door windows and displays for all kinds of household appliances. For this reason, the user placed great importance on the machine system's diversity to produce on different panel formats. With a maximum printing format of 950 mm x 650 mm and a minimum printing format of 80 x 250 mm, it's clear the machine design was challenging and allowed Thieme to utilize its broad range of experience and knowledge. A further specialty: special sensors are integrated in such a way that panels with drilled holes can also be transported without disturbance.

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Independent of panel format, the range for glass panel thickness is 3 to 8 mm.

The printing stations offer, in addition to a high positioning accuracy, a very operator-friendly glass panel automatic set-up feature from the operator console. Moreover, the Thieme squeegee unit which rotates 90 degrees and the anti-drip device to prevent print streaks always guarantees optimal printing quality.

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Fig. 1: Layout of the glass tri-colour line



Fig. 2: The three screenprinting stations are integrated into a 45 metre long inline production line at the Targovishte site.

Flexible usage: Tri-colour line or combination of two-colour and single-colour lines.

In addition to the panel formats which are to be processed, Trakya Cam Bulgaria placed high requirements on a usability which is as flexible as possible and on optimal efficiency of the installation. This is assured by means of two glass accumulators, which are

integrated in the line and function as production buffers to prevent idle time during production interruptions. Moreover, 90-degree inflow and outflow stations are integrated between the printing stations, so that the tri-colour lines can also be operated without costly reconstruction as three self-sufficient single-colour lines (or as a combination of one two-colour and one single-colour line).

The installation control system is also designed for these aforementioned variations: It is comprised of three individual functional machines and line control systems, which are linked via a network. This control system flexibility assures that operating conditions, such as the removal of a panel from the inspection table and later re-integrating of panels back into the process, do not disturb or even interrupt the production flow.

During operation as a tri-colour line the "panel logistics" function as follows: In the case of partial line stops the panels which are still located in the upstream dryer, are buffered in the subsequent accumulator buffer. At the same time, the upstream screenprinting machine is stopped. After the restarting of the line, the storage unit will first be emptied in order to be able to accept all panels which are still located in the dryer during any future stop.

Maximum capacity: High capacity dryer with infrared and recirculating hot air

The integrated dryers were also designed with focus on maximum capacity. It involves a high capacity dryer with combined infrared and recirculating hot air, as well as cooling on both sides with ambient air or refrigerated cooling. The focus of the design was to provide a maximum drying speed in a minimum amount of floorspace.

Every dryer consists of one hot air section with two cooling sections. The three drying lines have a total length of 8 m each. In order to achieve the high quality demands of the customer, all dryers are equipped with stainless steel interior plating as well as

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with recirculating air and intake filters to prevent contamination. Through this design, the accumulation of dust contamination in the paint during the drying process is prevented.

Proven modules – unique solution!

The printing line for Trakya Cam Bulgaria is comprised of proven modules and components from the Thieme product line (see box). In its custom designed configuration, in particular the engineered solutions for ultimate operational diversity, it presents a unique customised solution.

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Overview: Glass screen printing solutions from Thieme

With its modular system concepts, Thieme, the market and technology leader, covers nearly all application areas of the flat bed glass printing in the sector of flat bed screen printing machines – from large format facade glass in architectural applications to automobile form glass to front windows for microwave ovens or gaming machines. Technical applications such as sensor glass and thin film solar cells belong to the application range of the Thieme Machines.

In order to optimally design the respective printing process, Thieme offers the addition of a large selection of auxiliary components such as automatic screen-wetting, a "Wandres" cleaning unit, "ScreenClean" intermediate paper cleaning, anti-drip system, laser positioning system and much more. The stored program controller, available for all Thieme installations, in which all of the order-related parameters can be recorded, shortens the set-up time considerably and increases the quality and reproducibility.

By means of exactly adapted system concepts, Thieme allows for the highly diverse requirements in various sectors. From individual machines to custom-assembled inline printing lines, almost every system configuration is possible.

About THIEME

The THIEME engineering works was founded in 1960 by Werner Thieme. In 1965, THIEME entered the plastics market. THIEME GmbH & Co. KG currently employs about 500 people around the world and achieved, in 2006, a consolidated total turnover of approximately 70 million euros. This year, THIEME expects an increase in sales of about 15%. The headquarters of THIEME is in Teningen, near Freiburg in South-West Germany. There are sales and service subsidiaries in France, Great Britain and the USA.

www.thieme.eu

About Trakya Cam Bulgaria EAD

Trakya Cam Bulgaria EAD in Targovishte (Bulgaria) is one of five production sites of the Trakya Cam Sanayi A.Ş. with headquarters in Istanbul. Trakya Cam specializes in the manufacture and processing of glass. A wide product range is covered in the area of glass printing, from architecture and ornament glass to automobile glass through to glass for household appliances. The enterprise, which belongs to the Turkish SISECAM group, employs a total of approximately 3000 workers and achieved a total sales in 2008 of 689 million dollars.

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