

Slim format, slim process

THIEME screen printing lines automate the production of decor foils for the ski manufacturer Elan.

Since February 2008, eleven special versions of the screen printing model series THIEME 3000 S have been in operation at the two locations of the Slovenian company Elan, one of the world's leading manufacturers of skis and snowboards, producing the unusually long and narrow PE decor foils.

The manufacturing process, conceived by Thieme, is just as "slim" as the print format, which includes printing, drying, handling and feeding in a fully automatic workflow. Accordingly, the integrated design increases the capacity and the cost-effectiveness of the Elan decor production. The only manual part of the process is the application of the foils. After printing, they are automatically transferred into a continuous dryer where they are dried and subsequently stacked.

The printed and dried foils are then ready for further processing. The decors are placed manually on the ski surface and covered by a further transparent foil to protect them against abrasion and damage. The layers that are processed to form the ski are built then heat pressed together.

The task

In the spring of 2006, the Viennese company Putz Drucktechnik, a long-time sales partner of Thieme for Austria, received an enquiry from Elan regarding the development and supply of a number of screen printing lines for the printing of polyethylene (PE) foils for skis and snowboards. In-house, Elan had built a number of semi-automatic screen printers, which needed to be replaced by modern technology. Several factors complicate this process. For example, on one hand they had to take into account their unusually small format (800 mm x 2600 mm), while on the other hand they needed to completely integrate the production process steps which were previously manual (printing, removing of decals, placing in the rack truck, manual insertion in the dryer, drying, manual removal, and stacking).

The first task for Thieme was to develop a suitable drying technology for the new printing systems specifically for water-based inks. Extensive print tests were carried out for this purpose with sample inks in the Thieme technical centre. The sample prints were then heat-

pressed onto skis by Elan and subjected to weathering tests (exposure to sun and ice). On the basis of these results, it was possible to determine the optimum parameters for the drying process.

The Thieme solution

Thieme developed a three-quarter automatic print line consisting of a print station with the (custom) print format of up to 2,400 mm x 400 mm, a continuous dryer and an automatic stacker arranged after the dryer. The concept for the print station is based on the technology of the proven and reliable model series THIEME 3000 S. This is a three-quarters automatic flatbed screen printer with moving print table and parallel-lifting print head. It also has a wide range of automated and operator-friendly set-up features integrated as standard.

The slim screen format required a long-stroke printing system. Three of the print stations used for the printing of snowboard decors are equipped with a substrate cleaning unit.

In order to prevent the narrow print foils from sagging while being transported from the print station to the dryer, Thieme developed a special print stock feed system with elongated suction grippers which pick up the printed foil at the ends and carry it to the conveyor belt via a transfer bridge. The transfer is automatic and no manual intervention is required.

In the custom designed dryer, the printed foils are transported on a horizontal grid belt at a constant speed through a 4-metre hot-air zone and dried at approximately 70 °C. While this is happening they are fixed in position by a suction system under the conveyor belt. Subsequently, they pass through a 2-metre cold-air zone to cool down. In order to minimize the energy consumption, the dryers were connected to the existing water supply system via an air-water heat exchanger. This energy-saving supply for the dryer is a customised system integrated for the customer.

The stacker directly follows the dryer. The printed and dried decors are stacked here and are ready to be picked up. This formerly manual process step further allows Elan to optimise their workflow.

The first machine was supplied to Elan in February 2007 and was subjected to extensive testing. The next seven machines for the main production plant in Begunje, Slovenia, arrived in August 2007. A further three machines, identical apart from the addition of cleaning units, were installed by December 2007 at the Austrian production location in Fürnitz.

The result

Elan is very satisfied with the result. "Our aim of simplifying the production process and increasing production capacities has been fully achieved," says Michael Kollmann, Technical Director of Elan's Wintersport Division. "We used to be able to produce a maximum of 1,200 decors per day, now we manage up to 2,300." The competent and reliable execution of the extensive order by Thieme also received praise.

Another advantage of the new print lines is their high flexibility, with short set-up times between the various ski and snowboard designs, 15 different decors are printed alternately per day on a single line. At the same time, the manual interaction has been considerably reduced by the automated workflow. "The close collaboration with the customer made it possible to realise an optimally coordinated system for the printing and drying," sums up Klaus Meßmer. "Now that all of the eleven print lines are in operation, decor production at Elan is considerably more streamlined and cost-efficient."

Fig. 1



Up to 2,300 decors are produced every day on the new Thieme print lines. This means that productivity could be more than doubled.

(THIEME GmbH & Co. KG, Teningen/Germany)

Fig. 2



First-class print quality and reduced tooling times distinguish the new Thieme print lines, which at present are producing 15 different ski and snowboard decors alternately per day.

(Photo: ELAN, Begunje/Slovenia)

About Putz Drucktechnik

Putz Drucktechnik has been the only specialised dealer in Austria for many years that can offer the whole range of products for screen printing, digital printing and advertising technology as a one-stop shop. Over the last two decades innovative products from the top manufacturers have constantly extended its portfolio so that today over 25 suppliers are represented exclusively by Putz Drucktechnik in Austria.

Locations in Vienna, Salzburg and Graz guarantee a rapid and customer-oriented service as well as the shortest possible delivery times. The service department has many years of experience in installation and after-sales service – starting with graphic digital systems right up to complex industrial systems. As a family-run company, Putz Drucktechnik stands for continuity and innovation.

www.putz.at

About Elan

The Elan Company is one of the world's leading ski and snowboard manufacturers. Founded in 1945 in Begunje na Gorenjskem in Slovenia, the company originally also produced tennis and badminton rackets as well as skis. In the 1960s it began to specialise in ski production. 20 years later snowboards were added to the range. In the 1990s Elan was a pioneer in the development of the carving ski.

Today Elan produces skis and snowboards from the core to the finished product at its locations in Begunje (Slovenia) and Fürnitz/Brnca (Austria). Elan is a specialist for handmade skis. In order to guarantee optimum quality, the main production steps are still carried out manually.

www.elansports.com

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