Waldorf Technik provides highly specialised IML systems

Trial run for the world market

Waldorf Technik GmbH & Co. KG, a specialist for automation of injection moulding periphery for medical and laboratory technology as well as the packaging sector, launch a new system concept for the world market. The company based in Engen (South Germany) delivers IML- (in-mould labelling) systems to a new customer overseas. The IML-system for decorating buckets inside the mould demonstrates the strengths of Waldorf Technik: Individually constructed machines to the highest performance capability. The customer request: ÄMaximum performance at the lowest cost.ò Packaging production is based on Ätime is money.ò Waldorf offered the right answers: high tech on the smallest space uniquely built swinging mechanism for Äa limited mould opening movementñ, short cycle times, highest positioning accuracy and extremely secure operation.

A sophisticated new customer

As explained by Wolfgang Czizegg, Managing Director of Waldorf Technik GmbH & Co. KG, Waldorf Technik was recommended to the new customer by one of their existing packaging customers. Other IML suppliers were contacted as well Äbut the dimension was too big for themñ Bespoke systems are the speciality of Waldorf Technik in the packaging sector. The development costs are, however, extremely high, a fact that eliminates competitors: ÄA standard IML system requires around 100 hours for developing the format parts, for this particular requirement ï a flexible IML of three bucket sizes within an integral system ï more than 600 hours were neededñ, explains Czizegg. Due to the high costs, pilot systems are built without achieving any profit in general, only follow up orders will amortise the high development costs. ÄThe customer demands were enormously highñ Czizegg points out after studying their requirements. Several variations and layouts for the label feeds were designed. Czizegg: ÄThe space requirement should be kept as small as possible. Hence, we developed a design with fewer magazine tables.ò There would have been four maga-

zine stations normally of which always two are constantly working. The exchange is done over towers, which requires a lot of space and there is much material to move.

A compact new development

Instead of four there are only two magazines in use. Each magazine holds approximately 2000 labels. Czizegg explains: ñThe mould dummy cores for the buckets are situated on top of each other. The lower dummy core centering unit is loaded and then the system takes a label out of the same cassette, drives up and enters the upper centering unit.ò A few seconds are required for each action of entering the cassette and taking the labels. The movements are done servo-electronically, the gripping through pneumatic vacuum. ñAll takes part within a small area; nevertheless, the single components are easily accessible for format changes. The pre-centering stations are loaded, the labels are laid on the dummy cores and brushed on physicallyò, explains Czizegg. New is the entrance into the mould: ñNormally, the mould is opening far enough to position the dummy core inside the cavity; at the same time the finished parts are removed from the other side. Should the mould opening be too small, a two-step procedure would be necessary. During a two-step procedure an extended and stepped arm removes the finished bucket before a dummy core can enter the cavity with the label.ò This takes a lot of time though, now a better solution has been developed.

Czizegg: ÄThe dummy core with the new labels moves into the mould, at the same time a swinging arm with vacuum grippers removes the finished moulded and labelled bucket of the previous injection cycle and uses the entrance movement into the cavity for the demoulding process. A turning unit swings the finished product horizontally and perpendicular away from the injection moulding axis and clears the mould space. In this way the removing unit and the dummy core arm can move out of the mould freely although there is limited space. And this can be doubled as we work with a two cavity mould.ñ The cycle time for a 20 litre IML-bucket: clearly below 20 seconds! The positioning accuracy is amazing 0.2 mm. Although this is a specialised system, the high performance robot control communicates with the injection moulding machine via standardised interface connection.

Reduction of loading times

Polypropylene labels, that are not glued on but Ämeltedñ together with the bucket are the decoration variation of the future, according to Czizegg. ÄIML gets more and more fashionable thanks to its photo realistic print qualityñ says the Waldorf-Technik Managing Director. The expensive alternatives are the self-adhesive labels and dry offset printing. For a four- or five-coloured print the loading time takes up to four hours for the latter option. ÄThe ordered quantity numbers are getting smaller and smaller. Just-in-time deliveries are required. Therefore, long loading times are a disadvantage.ñ IML does not require any loading times other than for the injection moulding machine/mould. All required quantity numbers can be achieved. Czizegg: ÄThe customer has three different bucket sizes with three different labels and twelve different inserts. This is all currently realised within this specialised system.ñ There are barely any limits to the label diversity. A further advantage of the Waldorf-Technik development is the remote service which is available through a modem at the controller. ÄA service from Germany to overseas customers does not present any problemñ says Czizegg. Furthermore, Waldorf Technik offers a 7-day-hotline service in English. Very important factor too is the constant training of the Waldorf employees.

Service on site

The training at the machine is vitally important according to Wolfgang Czizegg: ñThe operating personnel must be able to know the system inside out.ò A service specialist and a mechatronic engineer were responsible for the installation of the system at the overseas customer. Both taught all system functions including load changes to twelve customer employees on site. Documentation with around 1500 paper pages respectively CD-ROM was provided. ñThe manual contains the chapter maintenance and self assistanceò, says Czizegg. A Reason for this is the customerôs narrow margins for bucket loading times. Only 20 to 30 minutes are reserved for the change over from one bucket size to another. Therefore, the machine is equipped with fast coupling systems instead of screw connections. ñOur extensive service and the training on site guarantee that the IML system is running highly efficiently.ò

Free market for Waldorf Technik

Czizegg accepts that other suppliers are able to deliver IML systems to a similar quality. ÄHowever, most prefer to stay within their standardised market segment. And that is our chance.ò IML systems in Europe are designed for the local markets. Individually equipped machines as the one for this customer have not been seen in Europe so far. ÄThis opens up the market for Waldorf Technik. We enter the markets with other dimensions as for USA, Canada or the Pacific/Asian Areañ points out Czizegg. He refers to the working life of the machines: After two to three years the costs for the IML system will have amortised. The working life of the robots is at least ten years. ñThe machines can be modified to handle other parts at any time. In general, all robots can handle all types of labelsò, explains Czizegg. A further factor shows the reliability of Waldorf Technikôs machines: The spare parts business often amounts to a 20 percent share of the overall turnover of a machine manufacturer. ñWe are at eight percent. As soon as the systems are running we no longer hear anything from our customer!ò Unless the customer wants to place follow-up orders. This customer is so satisfied that he placed orders for further IML follow-up systems. ñThe bucket is continuing to rollò, explains Czizegg with a smile on his face.

Photos:

Photo 1: showing the clearly visible problem of the narrow mould opening

Photo 2: finished products onto conveyor belt

Photo 3: handle assembly

Photo 4: to apply in-mould label onto the core ï solid und robust construction

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