

illig®



FS 37 Form, Fill and Seal Line

Optional equipment
decoration technology

Economical thermoforming with FS 37
State-of-the-art technology – Familiar principle

Reliable sequencing
for high efficiency

Optional equipment
to supplement your individual machine

Filling devices
Digitalized function sequencing

Precision and flexibility
in tool making



Left: Sealing station
Right: Punching station

Economical thermoforming with FS 37 Form, Fill and Seal Line

Millions of people worldwide are supplied daily with fresh, healthy products by the food and dairy industry. The products must be packed quickly and hygienically to make sure the consumer will always find appetizing yoghurt, creamy fruit curd, tasty spread or cream cheese packed in portions in his super market.

This does not only mean logistic efforts from manufacturer's side, above all there is a need for packaging machines featuring constantly high performance and reliability.

This is why FFS lines must provide maximally possible format layouts and processing speeds adjusted to the filling product.

The usual 3-shift operation in addition calls for robust, easy to maintain and reliable machine designs for trouble-free production under given circumstances.

ILLIG form, fill and seal lines of all different types have stood the test in an excellent way and provide the necessary reliability to the user so he can always deliver reliably and in time.



FS 37 State-of-the-art technology – Familiar principle

Whether 20 g portion pack or 500 g curd, there is almost no alternative to thermoformed plastic packs.

FFS lines, such as model FS 37, are very suited for this purpose. With format layouts between 10 and 32 packs (subject to pack size) per machine cycle, an hourly performance is achieved between 10 000 and 60 000 packs.

The FS 37 is of modular design providing many equipment variants for individual adaptation to customers' requirements.

All working stations of the machine are servo driven for high efficiency and absolute repeat accuracy of all functions. Everything in the machine is set up for multiple-shift continuous operation. State-of-the-art control standard with motion control ensures efficient machine

operation and high working speeds.

All pack materials used in the food sector (e.g. PS, PP, PET or compounds) suitable for thermoforming can be used on the machine. The same applies to lid materials.

Thanks to variable filling ranges, 2.500 mm up to 7.000 mm length, up to 3 filling devices can be installed, so the well-liked multi-layer products in the dessert sector can also be filled on the machine.

European hygiene standard is available in different versions (clean and ultra clean) for the sections forming station, filling range, filler through to sealing station.

The transport directly driven by servo motor ensures high cycle speeds with controllable speed profiles without spilling of liquid products on the sealing rims.

Packs can be transported in the machine with positional accuracy using the multi-gripper system.

Moreover, formation of start up scrap is prevented thanks to the automatic re-positioning of the sealing and punching station and also material tolerances are offset. Smooth machine operation without interruptions is ensured in these sensitive areas.

Various discharge systems allow direct interlinkage with automatic end packers or other downstream equipment.



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Left: Forming station
Center: Forming station detail
Right: Sealing electrode

FS 37 – Reliable sequencing for high efficiency

Material can be changed without machine stop thanks to the double material roll stand combined with cutting and splicing device and control of this section. The spliced part (approx. 2 index lengths) is forwarded directly to the skeletal container without being formed, filled or punched.

The heating stations are separately driven and separated from the forming station. The intermittent mode of operation ensures smooth start/stop operation in the automatic mode without formation of start-up scrap.

Format-milled contact heating plates with individual zone control and gradual material heating provide correct forming temperatures. In addition this results in a stable web with minor tolerances during machine operation.

Thanks to the servo driven pre-stretcher and resulting precisely set speeds and forces absolutely even wall thickness is achieved in the containers. Savings of up to EUR 12 000/p.a. are possible that way due to reduced material thickness.

The other possible alternative, forming with sterile pressure air, prevents contamination of the inside of the container. This is a major element for clean or ultra clean machine versions. Overflow with sterile air in a specially designed filling tunnel completes this device. In addition, UVC radiation is available for lid material sterilization. The material web is transported through the machine using a multi-gripper system and servo driven transport. This way even very liquid products (such as mineral water) can be transported very quickly without spilling. The controllable, sinusoidal speed profile makes this possible.

Non-productive times can be greatly reduced by means of the Siemens motion control. The machine can thus be operated much more effectively and faster.

Filling processes are checked very thoroughly. Should there be a cup under the filling head which for any reason is not formed very well, it is not filled, sealed or punched, moreover, this material section is automatically discharged. The check already starts before the heater (splicing spot) and is continued in the forming station (container not formed at all or formed incompletely).

Automatic re-positioning of sealing and punching station makes sure sealing and punching rims are positioned absolutely centrally. Besides

material saving this prevents destruction of containers which are no longer in a central sealing or punching position due to material shrinkage or other reasons. The position is controlled by laser sensors.

Pack punching and discharge was further improved. There is a special discharge system for every pack shape, rectangular, round or asymmetrical, for further transport or interlinkage with end packers.

End packers are not included in the ILLIG product range. However, they can be interlinked with our lines at any time regardless of make. Interface clarification required.

Benefits of this machine series:

- Double material roll stand for container material with cutting and splicing device as well as automatic stop in case of lack of material.
- Multiple-zone contact heating with individual zone regulation. Can be opened for maintenance and change of plates. Cast-in heating elements with zone control.
- Automatic start for flexible start/stop behavior of machine without formation of start-up scrap. Important for interlinkage with upstream or downstream devices.
- Pre-stretcher servo driven for exact setting values with repeat accuracy during pre-stretching of heated material sections.
- Automatic switching off of machine in case of lack of pressure/forming air or cooling water.
- Stations with individual drives (servo motors) facilitate start up and setting of machine.
- Siemens motion control for time-optimized movement sequences. Display, support and service programs.
- CE-certified safety devices.
- Optimized cover of filling range for clean and ultra clean version for less consumption of sterile air.
- Sealing station with membrane sealing for even sealing pressure and reliably sealed packs.
- 4-Pillar punching station with optimized punching force of 30 to.
- Discharge of empty packs in case of direct interlinkage with downstream equipment.
- Interface for interlinkage with end packers or sorters.
- High output with low maintenance effort.
- High efficiency due to optimized energy and material consumption.
- Optimal availability right from the start, fast and reliable commissioning.

Optional equipment:
End packer



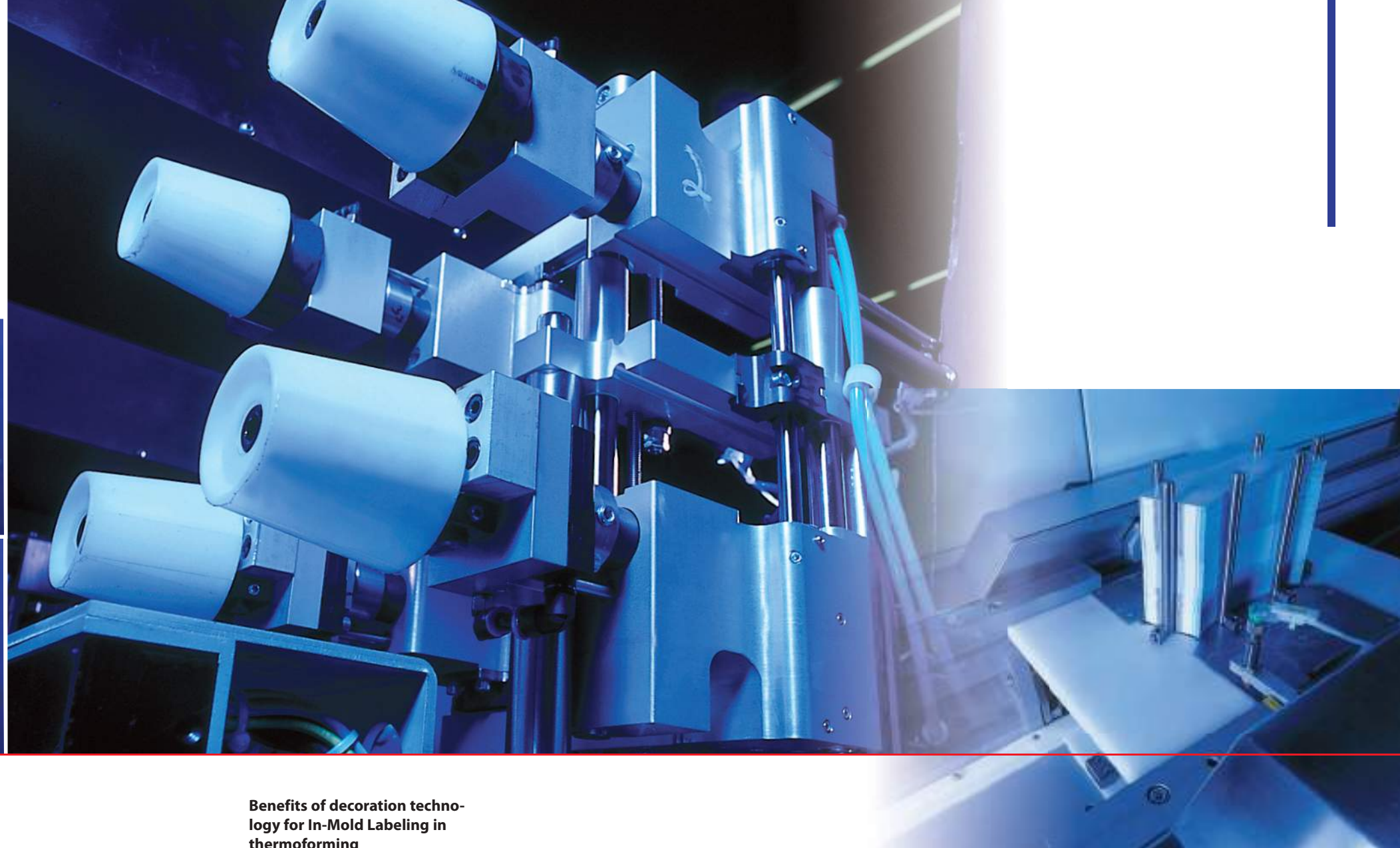
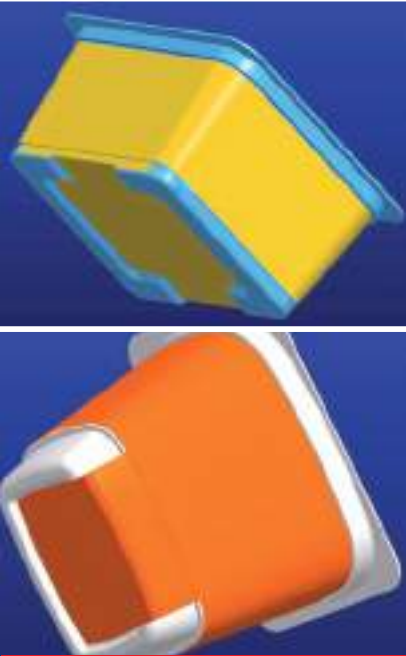
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Optional equipment – to supplement your individual machine

Special requirements call for special measures and/or equipment. This was always considered in the development of optional equipment for this machine. Some of these devices are described as follows.

- Cooling devices for required cooling of forming and sealing tools. These devices are equipped with a closed cooling circuit and are thus environmentally friendly since there is no water supply required.
- Tool change carriage with hydraulic lifting table for simple and comfortable change of punching tools.
- Different filling and supply devices for liquid and pasty products or products with solid parts.

Benefits of decoration technology for In-Mold Labeling in thermoforming

■ Cup decoration with ILLIG IML system (in-mold labeling system) by inserting pre-punched labels from magazines directly into the forming tool. All label variants are feasible, from 2-sided label through to 5-sided full decoration.

Much more attractive labeling can be produced with this system. There are almost no limits with respect to container shapes. Perpendicular side walls, as required for banded cups, are no longer required.

Pre-punched, printed labels are inserted in magazines. The chutes are designed for operation of several hours. A special retaining system allows reliable, individual label supply.

Thanks to the compact design this system can also be used for FS 37 machines. When labels have been transferred into the forming tool (designed as tiling tool) the cup is formed into the cavity – as conventionally done in thermoforming, i.e. forming and labeling are effected in one step.

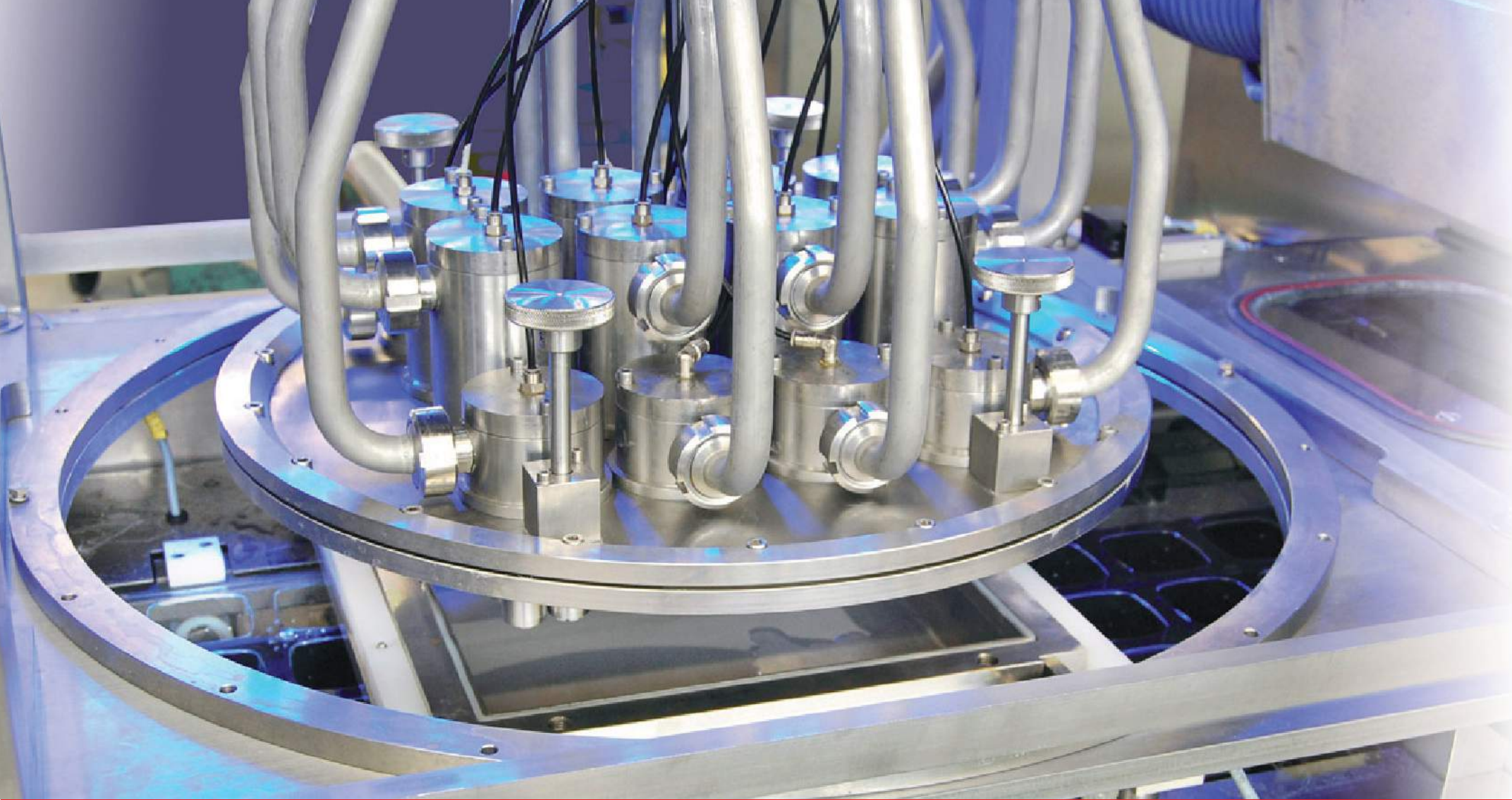
Benefits for customer:

- The decoration impresses with excellent quality and high brilliance and can be produced in both methods, offset printing or gravure printing.
- Not only the outside areas can be labeled but also the bottom. This option grows more and more important since the EAN code on the bottom is increasingly important.
- The label improves side wall stability of the cup (rigidity) so the basic material thickness for the cup can be reduced.
- Certain decorations can only be produced in the IML method due to the required print quality. Besides photo-realistic images more information can be accommodated on the pack by using smaller fonts.
- Last but not least, in IML the cup decoration can be changed without interruption of production.

The share of decorated so-called "premium products" will further increase in the food sector.

Using IML you will achieve an excellent photo-realistic quality for your product images.





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Filling devices – for all product variants from liquid to pasty

All different fillers can be offered from simple membrane fillers for mineral water through to servo controlled high-performance fillers set up for S.I.P. (sterilization in place) or C.I.P. (clean in place).

Funnels with several sections, with or without stirring devices, as well as double-wall funnels with heating are available.

Sterile air overflow in filling funnel, different hose systems or quick-change filling heads for different products are available. Subject to customer requirement the filler is mounted directly on the filling range or to its side.

Fillers are either equipped with their own Siemens control or they are controlled centrally, i.e. via machine control.

Interlinkage with upstream cleaning systems is always possible, interface clarification required.



Digitalized function sequencing for practice-oriented operating philosophy

The newly developed user interface is an innovation suitable for selective operator guidance through the individual process phases.

All data required for production are entered on the operating panel and displayed as setpoint/actual comparison. Consequences of the measures taken are exactly shown on the user interface.

Selective display of required information and support functions according to the principle of professional industrial design is a significant advantage of this visualization. Support is provided for machine and process setting as well as for monitoring and quality assurance by diagnostic aid and/or monitoring of limit values.

Benefits

- Reproducible and reliable process sequencing results in optimal and consistent product quality.
- All setting data of the data set can be stored at any location (network, USB).
- Diagnostic aid.
- Display of forming sequencing.
- Printer connection. Setting data and production protocol can be printed.
- Improved operator guidance for tool installation and removal.





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**In-house tool shop -
advantage in precision
and flexibility**

Thanks to the in-house tool shop ILLIG is not dependent on suppliers so fast and flexible response to all requirements is ensured. Tools are adapted exactly to the corresponding machines and form a closed, well-functioning high-performance system together with the machines. In-house design means all developers and engineers are familiar with the respective project so improvements or new developments can be realized quickly.

Forming tools

Whether pressure air or vacuum forming, there is a suitable tool for every requirement. The optimal mold is built for the respective system, synchronized with the pre-stretcher design. This way good drawing behavior of the materials is ensured as well as uniform wall thickness distribution. Uniform, best tool temperature is achieved by a well-balanced cooling system in the tool and also high repeat accuracy of the products. Bottom height adjustment (for different volumes without tool change) or date embossing in bottom of cup (quick-change type) are only two out of many design options.

Sealing tools

As a rule, these tools are divided in three and consist of upper part, lower part and the actual sealing electrode. The electrode, made of NB1 or special steel, is the tool element most important for the subsequent sealing result. Subject to the requirement it is either made in one piece or designed as membrane sealing electrode. The geometry of the sealing bead which is the actually sealing part of this electrode determines whether a container is really sealed - even though so-called "easy peeling" of the lid material is possible - and whether the desired seal will last.

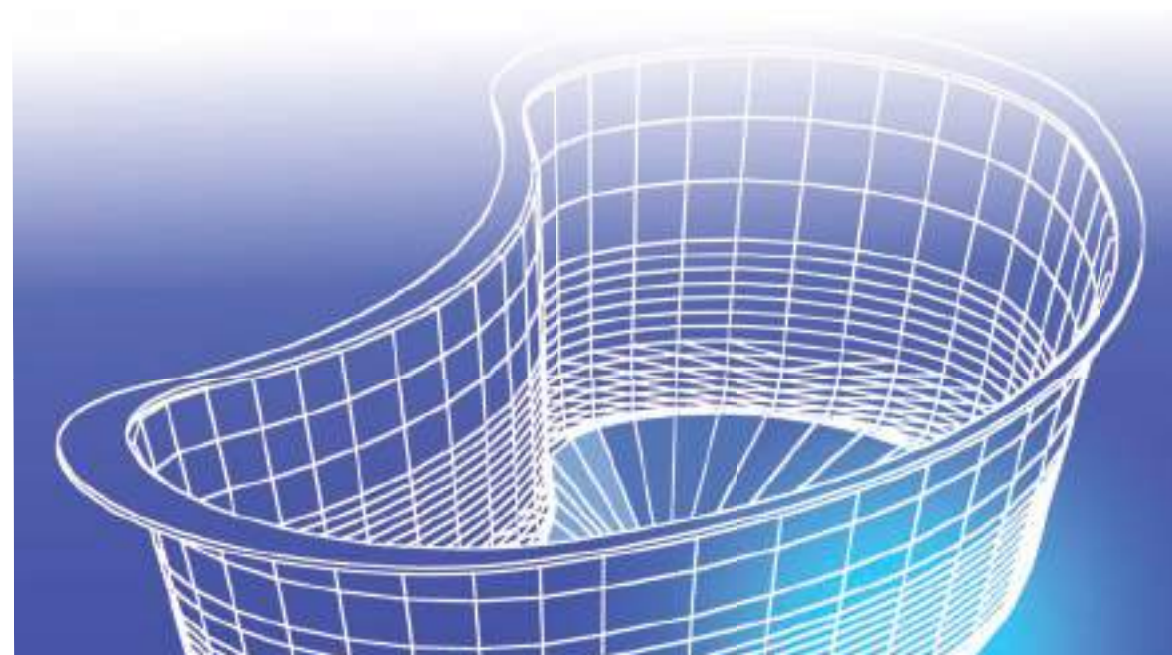
For this we can resort to long-term know-how. With or without tear flap, with bead or with wafer-type sealing rim, tools are always adapted to cup design and material used.

Punching tools

These tools are the core element of a tool set. They are designed with extreme care to detail and in a stable way so they can meet the requirements with respect to precision,

punching contour and durability under high stress. Various punching variants, from simple contour cutting through to sophisticated star-knife cutting, make highest demands with respect to material and design. Punch and die must

match exactly in the micron range to ensure precise pack cut out of the web, punching force 30 t, speed > 30 cycles per minute. Service life of such a tool mainly depends on the material used, but service and maintenance are also decisive factors. As a rule and subject to its condition the tool can be reground up to 5 times. Special tool steels and state-of-the-art processing units make this possible.



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Automatic roll-fed thermoformers, separate forming and punching
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