

Heye International:

# HIGH-SPEED PRODUCTION OF HIGH QUALITY CONTAINERS

Heye International gives us its idea on the IS-machine evolution which responds to important requirements. We find out about how this German manufacturer deals with these requirements and with its developments in machinery and technology, all finalized to ensure production and quality, but also the safety of operators involved.

machinery developments



## HEYE SPEEDLINE: EVOLUTION IN IS-MACHINES

Heye sees four major requirements in the IS-Machine segment: high safety in every respect, optimum cleanliness and user-friendliness, all this at high quality and speed. Safety and clean design are two factors that belong together, because staff and equipment both need to be protected. Machine downtimes decrease, quality of the products and profit increase. Integrated control features provide permanent information on the state of the equipment. This reduces the number of errors, avoids time-wasting troubleshooting and useless exchange of components.

Last but not least, top quality machines ensure high speed – for many years. Important to mention: Heye focussed on making an evolution – not a revolution – to ensure that plants can still use existing mechanisms and variables.

In the past, the variety of possible options within the machine led to a variety of individually customized solutions. By functional integration the modular concept of the SpeedLine contributes in implementing the most important options in one common structure.

With this background Heye has decided to design a new machine concept to be well prepared for the future. An excellent example of functional integration is the machine bed. It is not only the backbone of the machine; all air distributors and tanks are integrated. That means an optimally prepared bed also for retrofitting Heye Process Control and proportional valves.

Let's have a closer look into the different features and technical solutions, to see how market requirements have been implemented.

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## MACHINERY DEVELOPMENTS

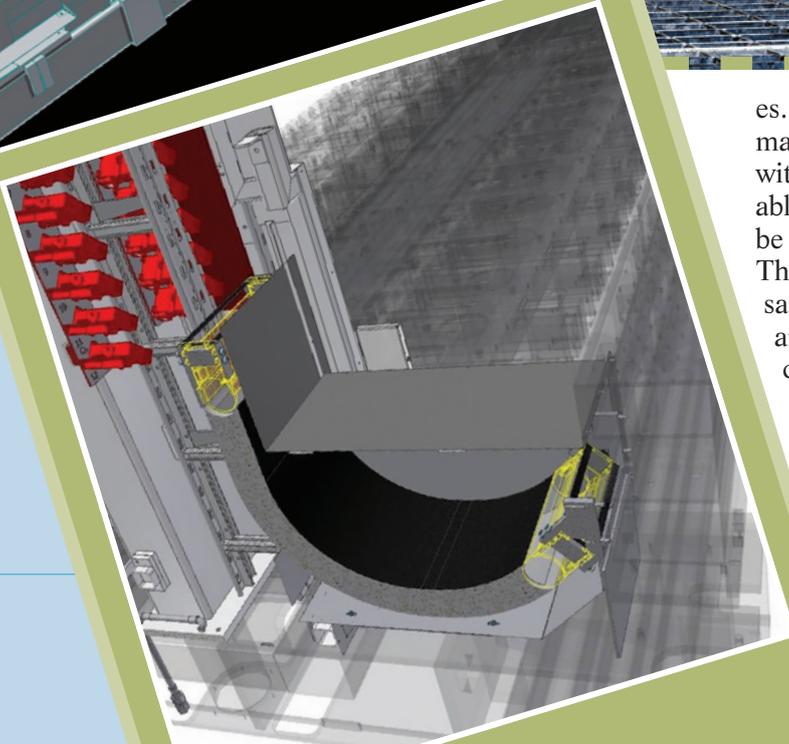
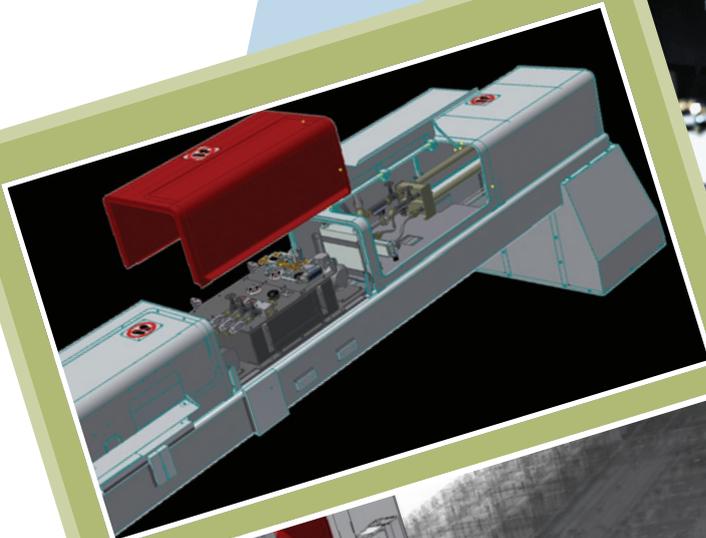
### HIGH SAFETY AND USABILITY

Safety and usability come hand-in-hand. Good usability reduces the risk of potentially dangerous human errors. High safety is, for example, a result of the integrated cable channels in the machine bed.

The development of integrated cable ways on the blank and blow mould side is very important for the increasing number of servo- and control electronics. Thus, the cables are protected in an optimum way against mechanical influences and hot glass, and risk of fire is eliminated.

Besides the optimum protection of the cables, the structured cable ways also enable to carry out cabling during the machine assembly phase in the Heye workshop.

For installation at customer premises on site and for a later exchange of cables it is important to have defined interfac-



es. Another feature is that the machine conveyor is equipped with a rail system so that a movable heat protected ladder can be moved along the sections. Thereby, the operator can work safely on the blow mould side and the machine can be kept in operation.

### CLEAR INTERFACES

One important interface is the connector board in the uprights for connecting



the servo- and valve block cables. For installation at a later date or a section-wise exchange, Heye has designed cut-outs from the bottom of the cable duct into the cellar. It is therefore possible to lay the cables section-wise into a separate duct underneath the bed.

Defined interfaces for air and water underneath the machine bed allow precise planning of medium supply and quicker installation during commissioning.

### USABILITY THROUGH EASY CONTROL OF THE PROCESS

The upright was redesigned due to the increasing amount of servo- and control technology. Furthermore, the development of the housing has been executed in such a way that all components can be accommodated and the streamlined design could be maintained. Besides the integration of various control cabinets, the housing also contains a human machine interface (HMI)

in order to control all important functions and to make settings. This HMI ensures quick access to the most important information. Thanks to the introduction of new monitoring functions the information does not only cover the Heye servo components but also a query and adjustment possibility for operating pressures, optional dead plate monitoring and a central messaging system.

Monitoring of the valves for functions such as final blow is an important step towards process monitoring, preventive maintenance and job safety. The operator is not at risk when accessing difficult areas in order to control the pressure functions. The pressure check can be carried out without losses resulting from switching-off the section. However, monitoring not only involves whether the valve works but also how exactly.

All valves are electrically controlled so that extensive cascade via the valve block is omitted. In its place, the structure contains cable ducts that guide the cables to the upright. The adapter plates are prepared for the use of proportional valves.

### CLEAN DESIGN

HACCP is the abbreviation for the Hazard Analysis and Critical Control Points concept and is required by all major fillers. This is a preventive system that ensures both, food and consumer safety. Beside a high quality article, clean design also means that the equipment can be cleaned in an optimal way. This reduces the time needed for repairs and maintenance. Cleanliness increases the lifetime of equipment.

For the new design the individual air distributors of the cross structure were grouped together. Thus, a clear and clean design resulted which is not only easy to clean but also offers the operator

## MACHINERY DEVELOPMENTS

a clear view through the entire machine from the blow to the blank side. Process air can be fed directly into the beam via the upright by means of flange plates. This means that external piping is no longer needed.

The streamlined design continues on the blank side. By arranging the injectors above the valve block the air pipes are no longer crossed by the injector rack and its pipework underneath the block. Furthermore, the new injector generation is now arranged compactly in the operator's field of vision. Additionally, rapid interchangeability and exactly pre-adjusted capacity matching with lubrication point size are ensured.

In the machine area, conveyor functions have been integrated on a large scale. Conveyor cooling, cable ways and dead plate cooling are now installed in the conveyor body, whereby the cables are optimally protected and guided the shortest possible way.

For better cleaning and as protection against dirt and heat, the pushers are surrounded by casings, also offering the option of active pusher cooling by the machine conveyor body via the cable channel. By directly positioning the pusher socket at the machine conveyor in front of each section, the pusher can be exchanged very easily as it is possible to remove the plug to uplift the unit with the cable tail.

The dead plate position for each cavity can optionally be monitored by an infrared sensor underneath the dead plate over the whole cycle run of a section. If heat radiation is abnormal or does not exist at a given time, a failure in glass handling or demoulding has occurred. In that case the following gobs for this section will be rejected. This minimizes downtimes and avoids wasteful maintenance.

Beside the bed, manifolds and conveyor, the scoop beam is an

additional example of functional integration. Both hollow profiles are used to guide compressed and blast air, while the cable duct is embedded in between.

There are modules for scoop cooling and pneumatics on the profiles. The modules are optimally protected against environmental influences by easy to remove hoods, while still being easy to reach by means of flaps.

### HIGH SPEED

Increasing production speed also requested an optimization of the flow paths. For this reason – when carrying out the design of the new bed – the flow paths were kept very short and straight. In addition, the exhaust air for plunger cooling and valve block is guided directly into the atmosphere. Thus, flow resistance is decreased and cooling efficiency of the plunger hence increased. By omitting the exhaust air manifold the back pressure into the valve block could be eliminated as there are no more interactions possible. A straight design, combined with high quality for all parts and mechanisms means high-speed production of high quality containers for many years to come. ■



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