Four-in-One

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GLASTECHNOLOGIE

Four-in-One Linear System
Four-in-One Roundtable System

Four Manufacturing Modes – One Production System: Four-in-One Combi-System

The telescope unit of the linear system as well as the rotating table of the roundtable system may be equipped with the components of four different manufacturing modes:

• pressing • injecting • spinning • casting

All manufacturing modes are thus available at any given time – allowing to switch production according to the design of the glass item. The four-in-one linear combi-system as well as the four-in-one roundtable combi-system stand out as extremely flexible production systems with regard to the range of designs available as well as the machine speed.

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design-oriented

Flexibility has become far more than an extra-benefit: it has become a must, because only flexible production systems allow to respond quickly to a wide range of design demands on the market and to supply to the market promptly. Combining four different manufacturing modes into one machine – linear system or roundtable system – expands the range of designs available while short job-changes guarantee high productivity. Flexibility that does not affect productivity is flexibility that is a real comparative advantage.

target-oriented

It is crucial for the production system to provide a sound relation between the means applied and the target to be achieved. This is why flexibility does not only cover design variety but also optimised capacities and tool costs. The linear system as well as the roundtable system focus on different targets production rates:

- The linear system is designed to produce comparatively small numbers of glass items of one design. The fact that only one glass item goes through the production steps in linear sequences reduces tool costs to a minimum, since only one mould for one production cycle is required.
- The output of the roundtable system lies significantly above that of the linear system, because 2 to 20 glass items run simultaneously through the different production steps, depending on the number of stations the roundtable system accommodates – and on the number of stations equipped for each manufacturing mode.

Since up to three linear system may be fed by one feeder system and since the number of stations fully equipped on the roundtable varies from two to twenty, there are many ways to establish a target-oriented production.

cost-efficient combinations

Optimal adjustment to individual production conditions, design requirements and production targets is not equivalent to expensive engineering. The basic equipment as well as the pressing, injecting, spinning and casting components are firmly established while their combination is highly innovative. The four-in-one combi-system is the most cost-saving combination of proven components providing optimal adaptation to individual requirements. Flexibility is the pre-requisite for economically reasonable production systems – and it is a solid basis for a market-oriented production.


PRESSING


INJECTING


SPINNING


CASTING

APPLICATION

Pressing System (Production Rate)

• LINEAR SYSTEM • ROUNDTABLE SYSTEM	• 0,5 piece/min. (i.e. 1 item in 2 min.) up to 3 pieces/min. • single-gob: 0,5 piece/min. (i.e. 1 item in 2 min.) up to 60 pieces/min. • double-gob: up to 100 pieces/min.

Injection System (Glass Quantity / Weight of Glass Items)

• LINEAR SYSTEM	• 60 g (e.g. stems) up to 6,5 kg net weight of item (glass quantity up to 10 kg)
• ROUNDTABLE SYSTEM	• 60 g (e.g. stems) up to 3,5 kg net weight of item (glass quantity up to 4,5 kg)

Spinning System (Production Rate)

• LINEAR SYSTEM	• single-station: 0,5 piece/min. (i.e. 1 item in 2 min.) up to 3 pieces/min. • double-station: 0,5 piece/min. (i.e. 1 item in 2 min.) up to 6 pieces/min.
• ROUNDTABLE SYSTEM	• 0,5 piece/min. (i.e. 1 item in 2 min.) to 60 pieces/min.

Casting System (Production Rate)

• LINEAR SYSTEM	• single-station: up to 2 pieces/min. • double-station: up to 4 pieces/min.
• ROUNDTABLE SYSTEM	• less than 1 piece/min. (heavy items) up to 40 pieces/min. (for small items)

FEATURES

extremely flexible production	• due to an extension of the range of product designs which can be produced by one single production system which combines pressing, injecting, spinning and casting manufacturing modes • due to easy job-changes since the MMC-software provides an efficient product management tool which stores the adjustments of all production parameters under the specific name of the glass item and provides optimal production parameters for later resumption of production
highly adaptable to production target	• since the capacity may be adjusted to the quantity of molten glass available: - single-station operation on one linear system - double-station linear system (for spinning and casting) - up to three “station” operation, since up to three linear systems may be fed by one feeder - roundtable with 2, 3, 4, 6, 12, 20 station operation (single gob and double gob operation) • since the station equipment can be adjusted to the average market demand (for example: 12 stations fully equipped for pressing operation and additional equipment for 6 spinning stations etc.) • since the number of stations can be freely chosen (2, 3, 4, 6, 12, 20) depending on the best relation between tool costs and the total number of glass items to be produced of one specific design • since an optimised table layout provides a significant increase in the production capacity by the extension of the time the glass item remains in the mould for cooling
large cost-savings	• due to extremely short job-changes because all manufacturing modes (pressing stations, injection pressing stations, spinning stations and casting stations) may be installed onto the roundtable, allowing to select those stations equipped with moulds for current production via the electronic control [for example: 12-station roundtable equipped with 4 pressing stations, 4 injection pressing stations and 4 spinning stations] • since even mechanical job-change times are reduced to a minimum due to quick-change systems – providing even more flexibility, since the number of stations may be chosen according to demand and the output may thus be increased drastically
short delivery spans and secure investment	• due to standardized and proven components