

KRONES Contiform Stretch blow moulder



 KRONES

Perfect PET

KRONES Contiform

In the Contiform series of stretch blow moulders, technical sophistication and many years of engineering experience are combined to form one unbeatable package. To precisely fulfil your specific requirements, the machines are available in several sizes and model variants. This means that they cover the entire bottle spectrum - from 0.1 to 5.0 litres, including wide-neck containers.

However, regardless of the scope of your area of application, our tolerance reaches its limits when it comes down to quality. The blown bottles must meet the specified measurements from their base right up to their neck and must have a consistently high level of stability.

Do you find so much conformity boring? Then why not simply produce different bottles on the same machine? With the practical quick-change systems, you can change over each Contiform to handle new bottle formats in a matter of seconds. And since speed and quality do not need to be an expensive luxury, the machine always manages to operate with little energy and low operating costs.



Principle of operation

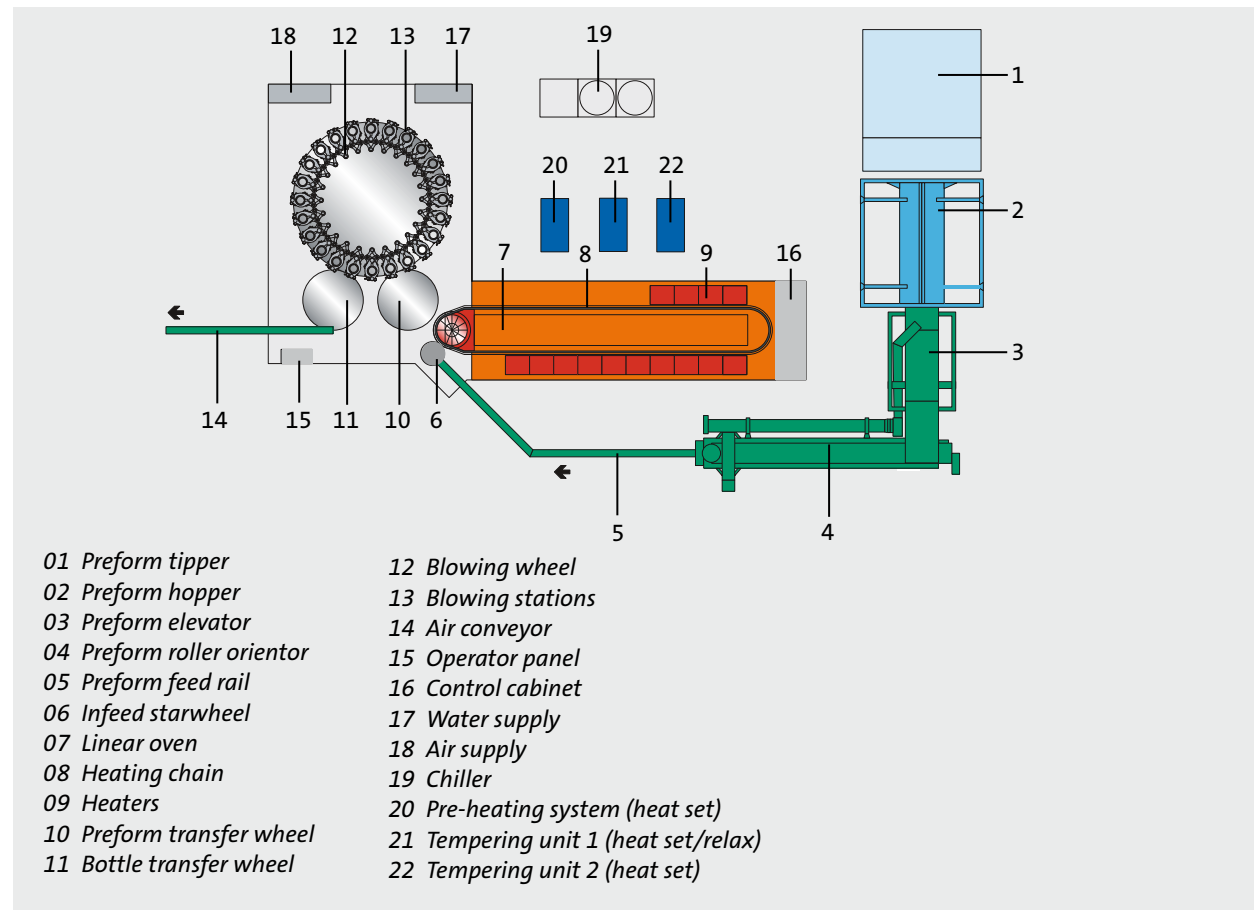
The Contiform S operates according to the two-stage process in which PET preforms are blown to form bottles. To do so, the prefabricated preforms are first carried through a modular linear oven which has been heated up to its optimum processing temperature. They are then transferred to the cam-controlled blowing wheel where compressed air and a particularly economic application of energy are used to blow mould them into bottles.

Application

- Production of PET containers with a volume of 0.1 to 5.0 l
- As a high-speed machine, the Contiform S is the ideal choice for both bottlers and bottle manufacturers.

Model variants

- Contiform S: for containers up to 3.0 l
- Contiform S, K series: for small containers up to 0.7 l
- Contiform S, M series: for medium containers up to 2.0 l
- Contiform S, G series: for large containers up to 5.0 l
- Contiform H: for hot-filled containers up to 2.0 l



Output range

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Contiform S: Produces containers for carbonated/non-carbonated beverages and beer

Model name	No. of blowing stations	Max. mechanical output (containers per hour)*	Max. container volume (l)
Contiform S8	8	16,000	3.0
Contiform S10	10	20,000	3.0
Contiform S12	12	24,000	3.0
Contiform S14	14	28,000	3.0
Contiform S16	16	28,800	3.0
Contiform S18	18	32,400	3.0
Contiform S20	20	36,000	3.0
Contiform S24	24	43,200	3.0
Contiform S28	28	44,800	3.0
Contiform S12M	12	24,000	2.0
Contiform S20M	20	40,000	2.0
Contiform S28M	28	50,400	2.0
Contiform S30M	30	54,000	1.5
Contiform S18K	18	36,000	0.7
Contiform S24K	24	48,000	0.7
Contiform S30K	30	54,000	0.7
Contiform S36K	36	64,800	0.7
Contiform S40K	40	72,000	0.7
Contiform S12G	12	14,400	5.0

* Maximum mechanical output if aluminium moulds are used

Contiform H: Produces containers for fruit juices, teas and isotonic beverages

Model name	No. of blowing stations	Max. mechanical output (containers per hour)**	Max. container volume (l)
Contiform H8	8	12,800	2.0
Contiform H10	10	16,000	2.0
Contiform H12	12	19,200	2.0
Contiform H14	14	22,400	2.0
Contiform H16	16	25,600	2.0
Contiform H18	18	28,800	2.0
Contiform H20	20	32,000	2.0
Contiform H24	24	38,400	2.0

** Maximum mechanical output if hot-fill steel moulds are used

Heating module

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Linear oven

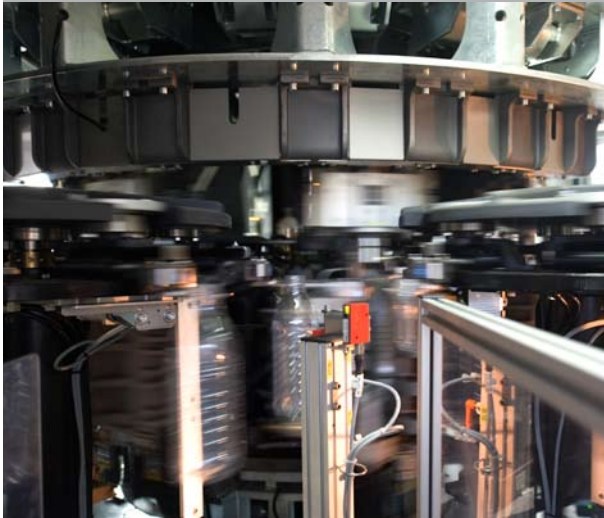
- Modular linear oven which can be configured in accordance with the speed and process
- Depending on the requirements, available with a chain pitch of 40 or 50 mm
- Preforms are heated while suspended, their neck finish facing upwards
- The preform neck finish is cooled by a guided, adjustable current of cold air
- Swing-out oven benches with quick-locking device for the heaters
- Very light and compact heaters with integrated electrical plug-in connection
- Closed heating tunnel with long-life, maintenance-free ceramic reflectors
- No lubricants used in the preform section



Light, compact and easily removeable heaters



Perfect access to all areas of the heating module



Blowing wheel

- Robust design
- Base plate with the highest torsional stiffness
- Large, wide-opening doors on all sides
- Central lubrication system for all stationary parts provided as standard



Transfer points

- Only four transfer points within the entire machine
- The preform infeed is at the same height as the bottle discharge
- Automatically-controlled transfer clamps for gentle handling of the material



Blowing stations

- Fastest, cam-controlled locking system for mould hangars
- Valve block arranged directly above the blowing nozzle
- Air-recycling system included as standard

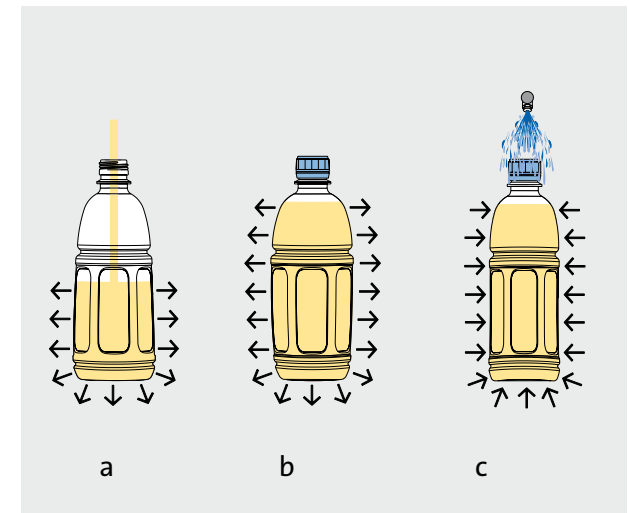
Hot filling with the Contiform H

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Some like it hot

For still fruit and vegetable juices, coffee, tea and soya beverages to remain preserved for a long time without the use of preservatives and other additives, they are hot filled. The temperature of the product is generally between 78 and 93 °C. To allow them to withstand such high temperatures, hot-filled PET containers must meet special requirements. They are produced in this way so that

- No permanent deformations are created when the bottles are filled
- The containers can absorb the vacuum pressure
- The volume does not shrink below two percent and
- The screw thread is not deformed - meaning that the cap can seal the bottle tightly



The PET bottle must withstand the following stresses during hot filling:

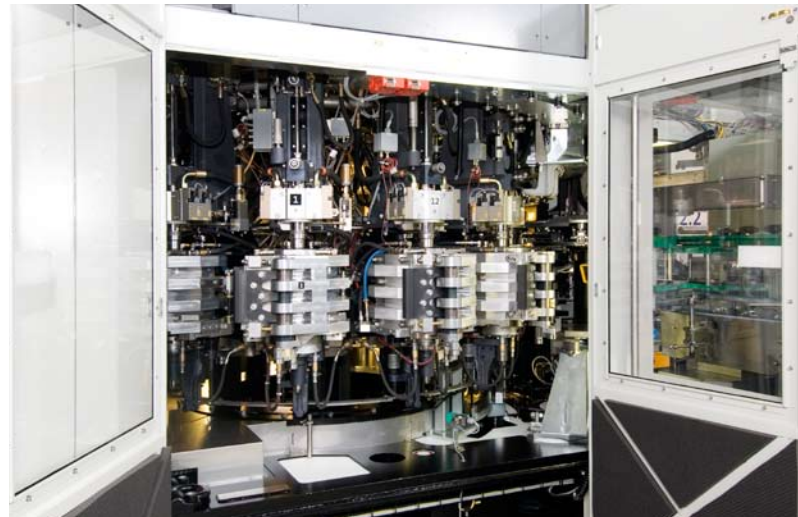
- a) Temperature increase during filling
- b) Pressure increase and bottle shrinking after closing by heating the air in the head space
- c) Vacuum creation through cooling of the product

Contiform H – the specialist for heat-set applications

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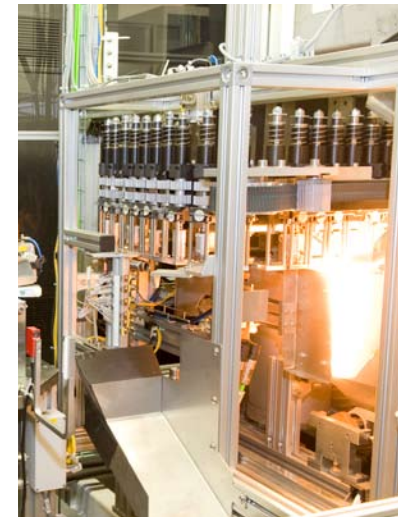
Principle of operation

PET containers later used for hot filling are manufactured in the so-called heat-set procedure. Infrared emitters first heat the preforms to the required processing temperature which lies just below the PET crystallisation point. Subsequently, the preform is stretched in a heated blow mould and is then blow-moulded to form a bottle. The heat supply creates additional crystallisation, and internal material tension is widely reduced. Here, the retention period in the blow mould plays an important role: The higher the demands on the container, the more time must be taken for the crystallisation process in the blow mould. Prior to opening the mould, the bottles have to be cooled so that they can be removed with their shape undamaged. Cooling compressed air is channelled through ports in the tubular stretching rod and onto critical areas of the bottle wall. Due to these additional process steps, the Heat-Set process usually requires a longer processing time and a greater air consumption than the standard process.



Design features

- Modular design, based on the Contiform S series
- Triple-circuit rotary manifold for the simultaneous distribution of the hot / warm water and oil for heating the blow moulds.
- Additional rinsing air circuit for cooling the containers through the blowing rod
- Air-recycling system integrated as standard
- Simple change-over between the relax and heat-set processes



Hot and economical: the NitroHotfill procedure

The Contiform H is also used in the KRONES NitroHotfill procedure - a particularly economical alternative to conventional hot filling.



NitroHotfill achieves the following

- Considerable savings in the PET material used
- No need for the panel design for compensating the vacuum pressure
- A reduction in the blowing air consumption
- The use of aluminium moulds - and thus station speeds of up to 1,800 containers per hour!

Product change-over

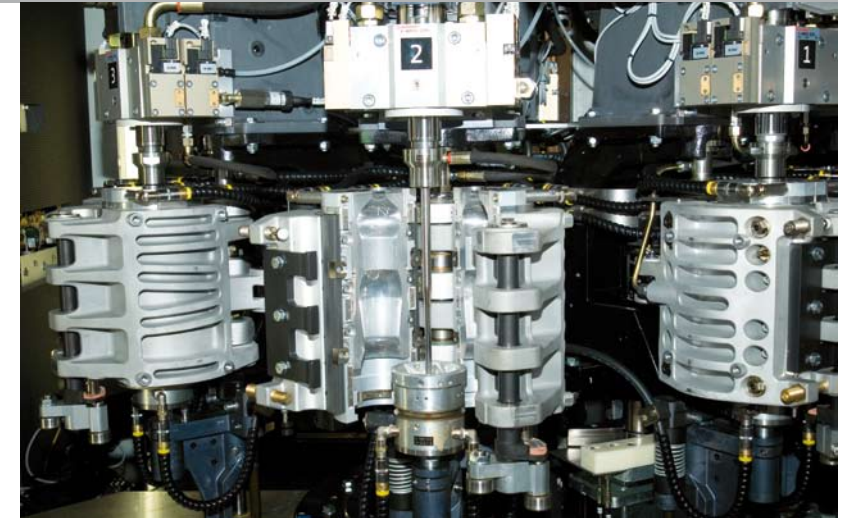
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- Large swing or lifting doors make the Contiform easily accessible from all sides.
- During change-over work, the entire machine can be operated in the safe and comfortable jog mode using a handheld pendant.



Product change-over on the heating module

- All handling parts are equipped with quick-change systems as standard.
- Heating mandrels and protective plates must be only replaced with other neck-finish dimensions during change-over.
- Heating mandrels and protective plates are easily accessible via two swing doors and can be replaced both quickly and easily.



Product change-over on the blowing module

- The blow moulds can be changed in parallel at up to three positions.
- The stretching stoppers supplied as standard are quick and easy to replace.
- The transfer clamps need to be replaced only when the system is changed over to other neck finish geometries.
- Once the change-overs have been completed, no further mechanical adjustment work is necessary.

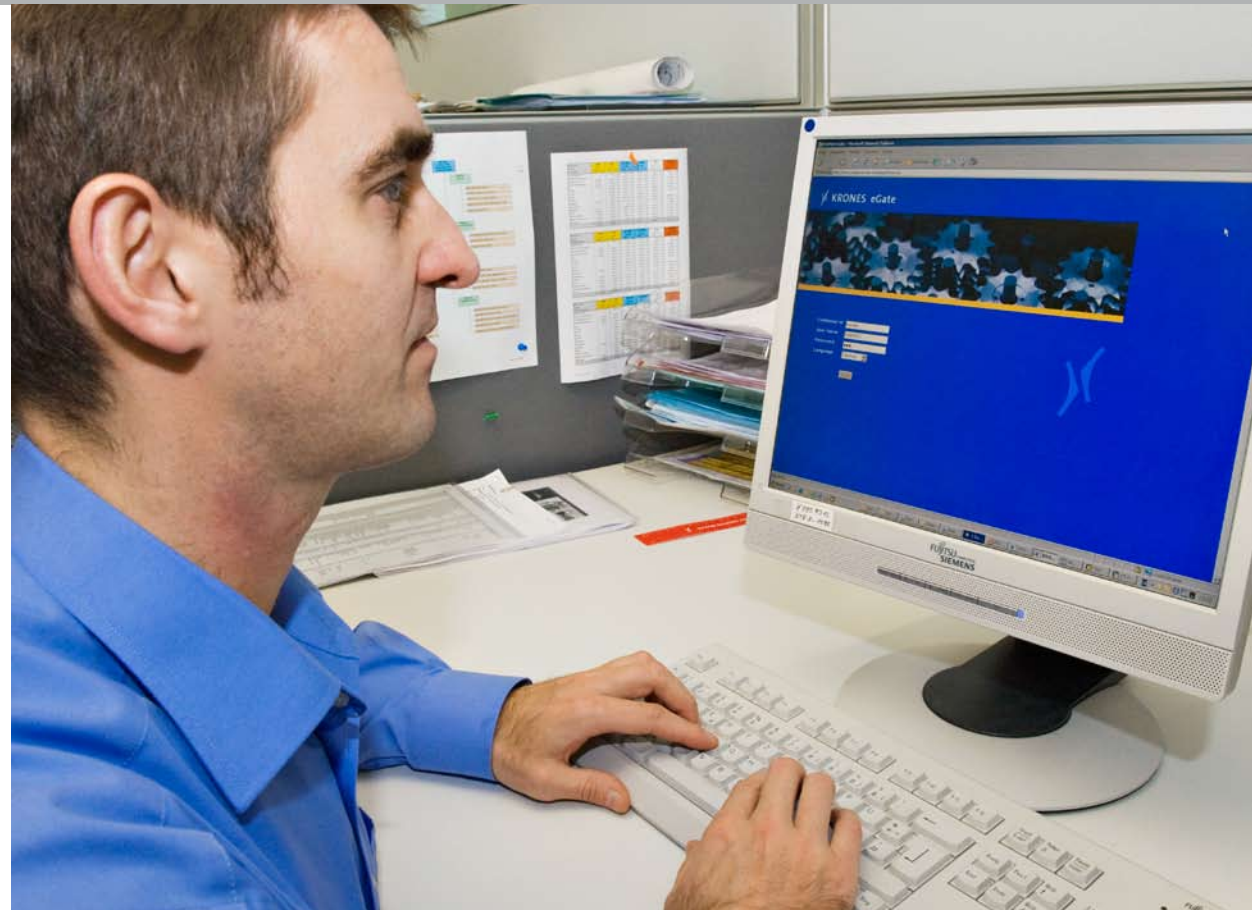
- Optimum access to the machine simplifies maintenance operations
- Low maintenance requirements thanks to the central lubrication system for stationary machine parts which is supplied as standard
- Use of food-grade lubricant at all lubrication points
- Almost all spare parts are available within 24 hours

eCat parts catalogue

Our free service for your spare parts storage. The eCat catalogue of parts is available to you both online and on CD. The intelligent search function allows you to quickly reach the assembly for which you require the spare parts. Detailed drawings help you to find and order the spare part you have been looking for.

Teleservice

KRONES teleservice allows you to reach experienced service engineers, who can help you answer all of your questions and solve your problems with speed and precision, at any time of the day or night. If required, a KRONES engineer can simply access your machine via a secured data line. This way, parameter settings, software updates, and malfunction analyses can be performed cost-efficiently and quickly.



*Always up-to-date:
The online version
of the eCat spare
parts catalogue*

Additional equipment

How to achieve a first-class standard of hygiene

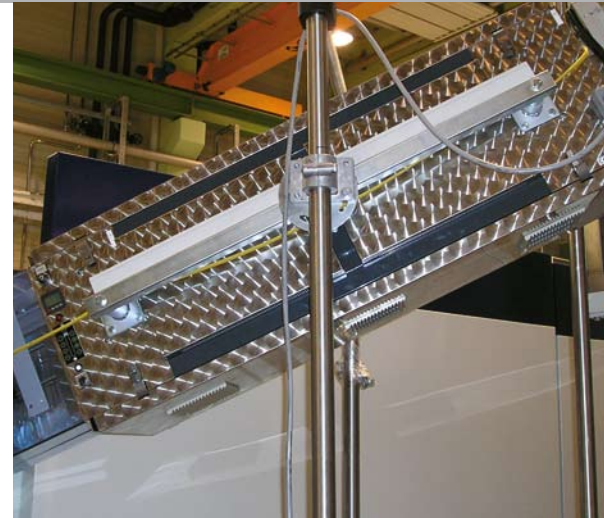
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PET bottles which are filled immediately after the blowing process have special demands when it comes to hygiene. This especially applies for cold-aseptic filling. The corresponding additional KRONES equipment allows you to effortlessly master any hygiene hurdles. And if you want to be extremely sure, we can equip your Contiform S completely with hygienic-design parts.



KRONES Prejet

- Cleans the preforms with ionised air
- Removes dust, carton and film particles from the preforms
- Achieves an optimum cleaning result through static particle discharge
- Is directly integrated in the preform feed rail to the heating module



UV radiation

- Uses UV light to kill harmful germs on the outside of the preforms
- Is directly installed around the preform feed rail to the heating module



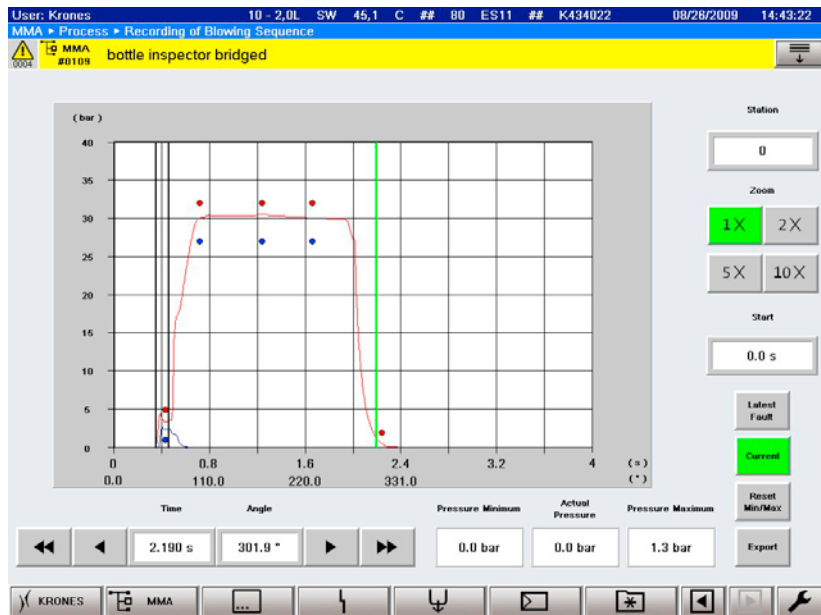
Hygienic design

- The entire preform feed unit is housed in
- The infeed and transfer starwheels in the blow moulder are covered
- Washable guarding on the insides of the doors
- Laminar air currents create over pressure in the blowing module
- Use of an optimised, low-consumption lubrication system
- The blowing air is cleaned by an additional pre-filter on the blowing module

Additional equipment

How to set high quality standards

KRONES Contiform



With the blowing curve recording system, only completely blown containers leave the machine.

Blowing curve recording for all blowing stations

- Records and visualises how the pressure progresses during the blowing process
- Recognises burst containers in the station and automatically switches off the blowing process
- Initiates the rejection of burst or incorrectly moulded containers while they are still in the machine

KRONES Preform Ejector

- Detects preforms with deformed neck finishes or which are positioned at a slant on the heating mandrels
- Removes any imperfect preforms from the heating mandrels before they reach the heating tunnel
- This prevents machine damage due to faulty preforms
- Rejects preforms during operation, without changing over to emergency stop mode
- Can also be easily retrofitted in existing machines



Lets only correctly positioned preforms through: the Preform Ejector inspection unit.

Additional equipment

How to effectively reduce your operating costs

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Save energy and reduce costs: The energy saving systems from the Air Wizard series all follow the same target and achieve - without magic - magical results. The systems for recycling finished blowing air for stretching and pre-blowing purposes are already included in each Contiform as standard. Additional savings can be achieved with the optionally available Air Wizard 3 for the Contiform S and the Air Wizard 5 for the Contiform H.

KRONES Air Wizard 3

- System for blowing air recovery in the Contiform S
- Guides residual volumes which have not yet been used out of the machine and feeds them either into the compressor or into its low-pressure network
- Returning to the compressor reduces its energy consumption
- Leads to a considerable reduction in energy costs

KRONES Air Wizard 5

- System for blowing air recovery in the Contiform H
- Guides residual volumes of finished blowing air which have thus far remained unused out of the machine and feeds them either into the compressor or into its low-pressure network
- Returning to the compressor reduces its energy consumption
- Leads to a considerable reduction in energy costs



*Air recycling at the blowing station
with the Air Wizard 3*

Additional equipment

How to increase your line availability

KRONES Contiform



When it comes to change-overs, it is better to be quick. With the practical quick-change equipment, different preforms and bottles can be handled on the same Contiform without major time loss.

Quick-change systems

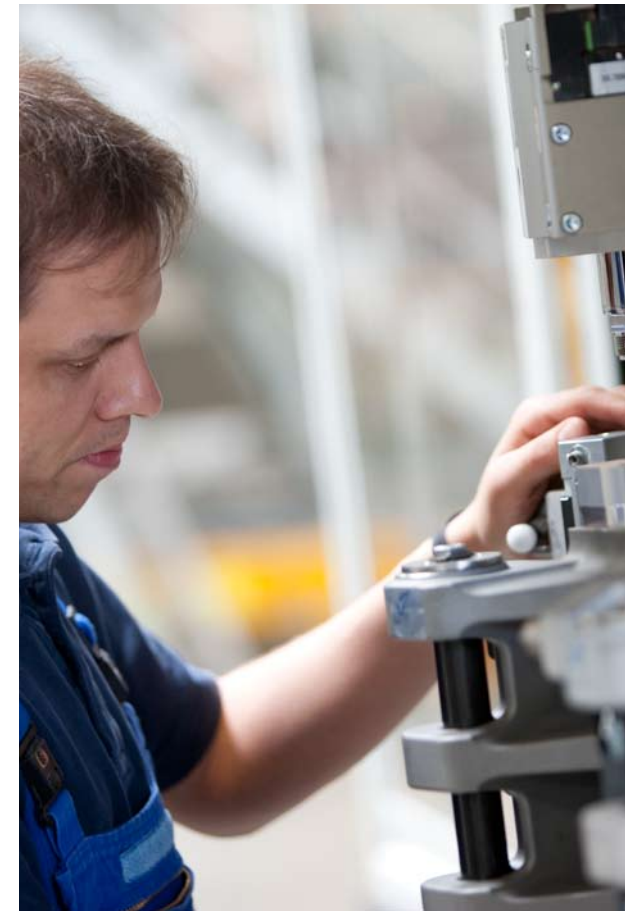
- For base moulds - with a time saving of around 30 %* per blowing station
- For transfer clamps - with a time saving of around 60 %* per transfer arm
- For stretching rods - with a time saving of around 50 %* per blowing station

* Compared to conventional systems



Quick-change transfer clamps

Different transfer clamps are required for different neck finish diameters. The quick-change system clearly shortens the change-over times.



System expansions

KRONES PreformCheck – the inspection unit for preforms

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Principle of operation

The compact inspection system checks all of the preforms before they enter the blow moulder using a high-resolution CCD camera. Faulty preforms are sorted out immediately via a rejection flap.

Design features

- Contact-free inspection with CCD camera
- A rejection flap sorts out faulty preforms
- Operation and adjustments at individual access levels with user-defined transponders
- Automatic recording of all operating modes
- Maintenance-free LED illumination
- Parameter setting and remote maintenance possible by tele-service

Application

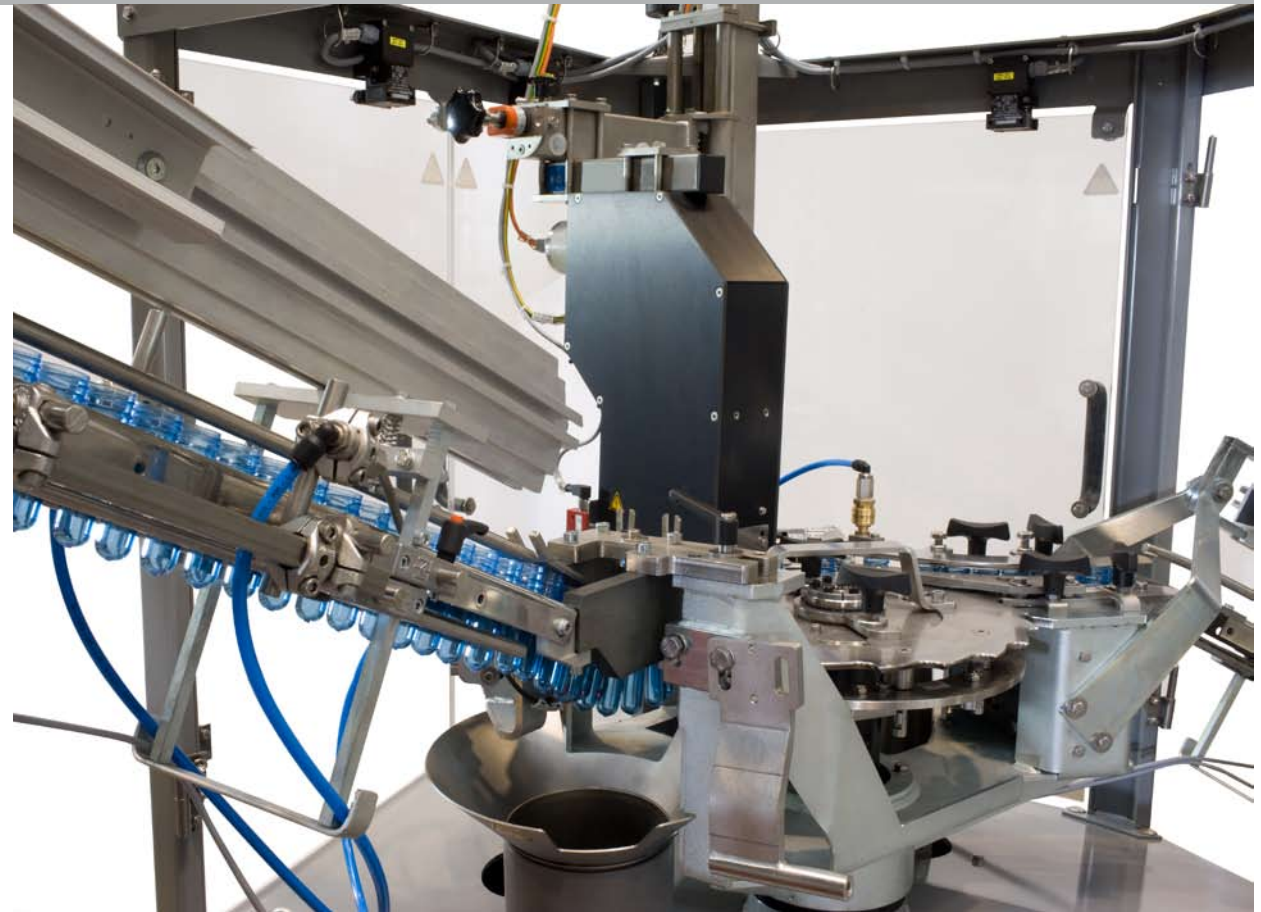
Inspection of all common preforms

Output range

Up to 55,000 preforms per hour

Detection possibilities

- Ovality of neck finish
- Damaged sealing surface
- Irregularities on the sealing surface



Will not turn a blind eye: the PreformCheck quality inspection system

System expansions

KRONES PET-View - PET bottle inspector

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Principle of operation

The PET-View can be directly integrated into the Contiform. Using a CCD camera, the inspector checks the completely blown PET bottles even before they leave the stretch blow moulder. This way, faulty containers are immediately detected and rejected.

Design features

- Modular inspection unit
- Contact-free inspection with CCD camera
- Maintenance-free LED illumination
- Rejection of faulty bottles via the Contiform rejection unit
- Visualisation on the touch-screen of the stretch blow moulder
- Operation and adjustments at individual access levels with user-defined transponders
- Rejection trend analysis registers changes in the blow moulding process and the environmental conditions and warns the operator if the rejection rate is too high
- Parameter setting and remote maintenance possible by tele-service

Application

Quality inspection of newly blown PET bottles

Output range

Up to 72,000 containers/h

Available modules

- Base inspection
- Base quality
- Sealing surface inspection
- Sidewall inspection



The quality of the newly blown containers is checked while they are still in the Contiform.

Your benefits

■ Individual adaptation

The wide range of Contiform models provides the correct answer to every requirement: Standard or heat-set, individual or bloc arrangement, medium or high output range, small, medium, normal or large cavities - the KRONES product specialists are only too glad to find the best possible solution for your production process.

■ High efficiency

The modular heating oven is individually adapted to suit your requirements. Due to the fact that the heating and blowing modules are perfectly tuned to suit one another, the machine operates at an optimum efficiency rate.

■ Efficient use of energy

Targeted new developments, such as the improved heating module or optimised preform heating, move the efficiency level up another gear. In addition, the air recycling systems installed as standard drastically reduce the energy consumption.

■ Low operating costs

The up to 30 % lower energy consumption of the Contiform S contributes to keeping production costs low. Extra savings can be achieved with optionally-available tools, such as the Air Wizard 3 upgrade.

■ Short change-over times

To ensure that change-over and maintenance work take up as little time as possible, numerous handling parts have a quick-change function. And quick-change systems which are optionally available for the base moulds and transfer clamps minimise the change-over times to "pit stop" level.

■ Safe transfer

The preforms and bottles are conveyed through the entire Contiform at the same height and, in doing so, only pass through four transfer points within the system - a major advantage for production safety and machine availability!

■ Robust construction, long service life

Characteristics such as the complete ball-bearing oven chain,

the high torsional stiffness of the base plate, belt drives and the preforms' suspended conveyance all give the Contiform a high mechanical service life.

■ Maintenance-free and user friendly

Large, wide-opening doors make the Contiform easily accessible from all sides. Other characteristics, such as the simple operation and central lubrication supplied as standard, will considerably relieve your production employees and thus increase your line's availability.

■ Precise production

The blown PET containers have a uniform wall thickness, are extremely stable and correspond to the specified measurements down to the last millimetre.

■ Large process window

The quick, cam-controlled locking system for the mould carriers extends the process time and thus creates ideal production conditions.

