

RELIABLE FASTER CONFIDENTIAL



Blow Moulds for PET Bottles

YOUR PARTNER FOR BLOW MOULDS.

röders
TEC

RÖDERS: TRADITION AND 200 YEARS OF INNOVATION

Reliability through permanence

For over 200 years, and six generations in direct descent, Röders has been a family owned and operated company. Customers and business partners have always valued Röders as a reliable and fair partner. The company started out as a pewter manufacturer at a time when there was no industry. This tradition has been continued to the present day.



Expertise based on extensive experience

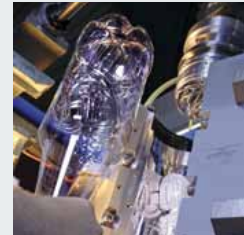
Part of every pewter manufacturer is a mould shop, which serves for the production of steel cavities for casting tin. More than 30 years ago, Röders was pioneer in the development of the High Speed Cutting technology and developed its own machines and control. The machine tool production has become the major branch of Röders and the backbone for a highly efficient blow mould production of more than 5,000 blow moulds annually.



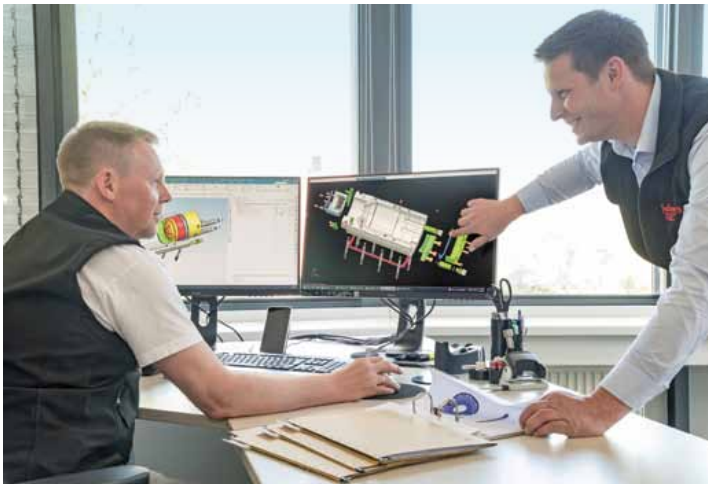
Success by innovation

Since its very beginning, in the 1970's Röders has contributed to the development of the PET blow moulding technology with high innovation. Newest manufacturing technologies were applied to achieve precision and mirror surface quality in blow moulds with highest complexity. Due to its outstanding experience and know how Röders has been partner in the development of the blow mould design for several blow moulding machine manufacturers.

- 1975 >> Production of first PET blow moulds for the company Corpoplast in Hamburg
- 1984 >> Contemporaneous with VW and Mercedes first company in Germany to introduce CAD/CAM construction software and NC programming technology in the mould shop. CAD construction of first Petaloid base mould
- 1991 >> Operation of first self-developed High Speed Cutting machine in Röders blow mould shop. Reduction of manufacturing and polishing times by 50 %
- 1993 >> Development of first quick change system
- 1994 >> Production of first hotfill blow moulds
- 2007 >> Investment into Sidel SB01 blow moulding machine and Agr equipment for Röders blow mould laboratory
- 2013 >> Development of Röders "Rapid Mould Change System" for very fast changeover of blow moulds
- 2015 >> Introduction of additive manufacturing technology for fast production of bottle models
- 2018 >> Development of Röders "low-pressure base mould design" for significant reduction of blow moulding pressure
- 2020 >> Purchase of highly efficient 3D-scanning technology for quality control and measuring of mould parts or bottles



WHY RÖDERS?

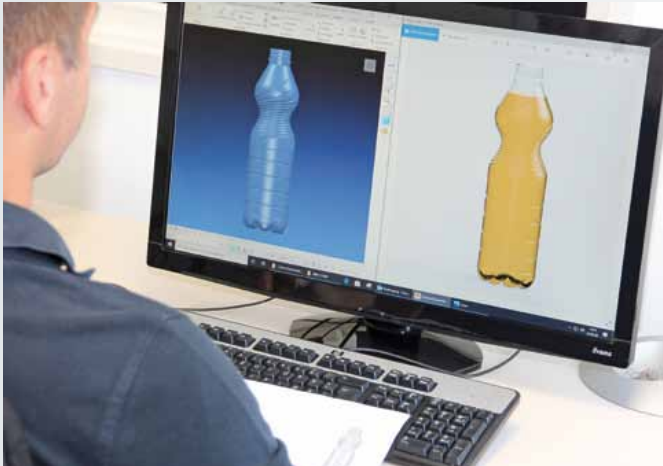


50 years of experience, reliability and confidentiality in the production of blow moulds for PET bottles

- > In our certified Technical Centre we blow sample bottles and carry out extensive laboratory tests
- > Our customers drastically reduce their energy consumption with the help of our self-developed low-pressure base mould design
- > Solutions for quick change, hotfill, refillable bottles, non-returnable bottles, large moulds or special constructions for all machine types are our competence
- > Regardless of whether bottles for soft drinks, beer, oils, juices, milk or other liquids are needed we can advise you
- > With state-of-the-art CAD systems, laser scanners and 3D printing, we will quickly develop qualified proposals for your new bottle project
- > A large range of fast available format and spare parts ensures your production and independence
- > We produce with highest quality on our automated Röders HSC machines and achieve extremely short delivery times
- > If required, our specialists will support you in converting your blow moulding machine to and running with new blow moulds



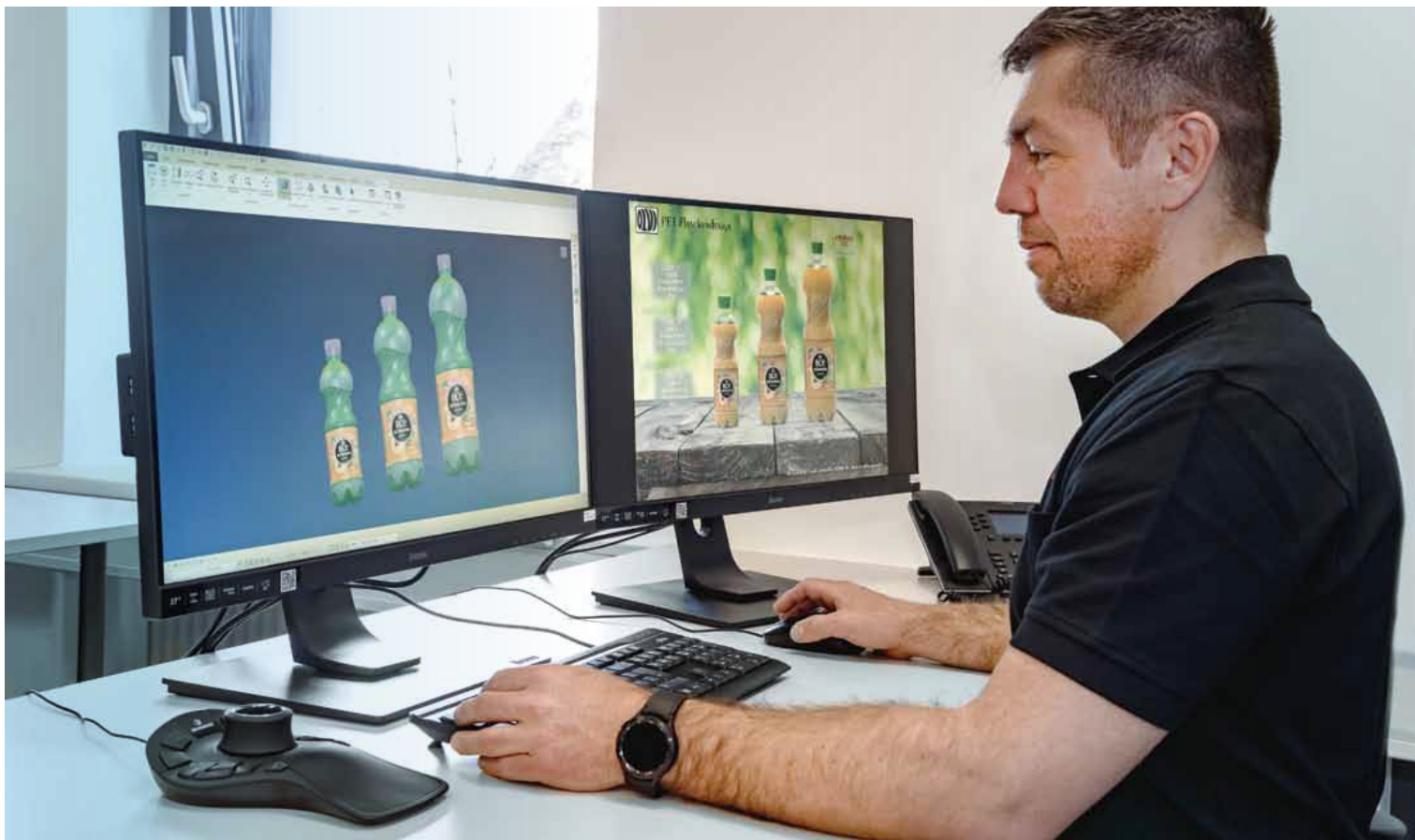
FAST DESIGN



Based on your sketches, logos, images or models, we use the latest CAD systems to create the first drafts of your new PET bottle with high-quality 3D views and volume calculations.

Our many years of experience in terms of blowability of different designs are certainly considered. Of course, you can also expect design suggestions from us. Our independence and absolute discretion ensure your lead and market success.

If desired, models are produced from the 3D CAD constructions in shortest possible time.





HIGH-PRECISION LASER SCANNING OF AVAILABLE GEOMETRIES

Röders has the latest laser scanning technology from GOM (member of the Zeiss Group).

If you have blow moulds in your production from which you would like to derive a new design based on the bottle geometry, e.g. in a different size, we can digitize the moulds geometrically with high precision and transfer the data to our CAD systems for further processing.

Sample bottles, models, logos and other items can be scanned as well and then used in CAD, of course also as section of new bottle designs only.

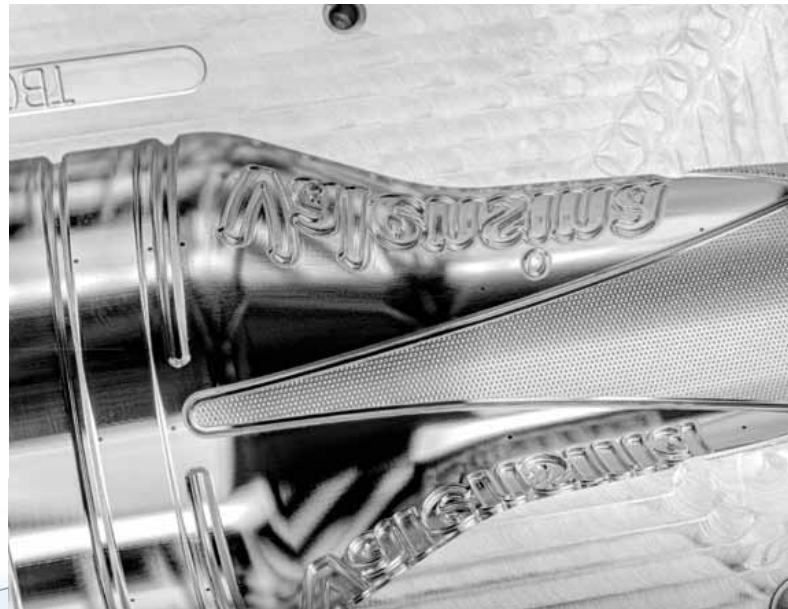
To check the installation dimensions of moulds in the blow moulding machine, especially for older blow moulding machines, the outer geometry of an existing blow mould can be measured by the laser scanner. This reliably avoids problems when later installing newly manufactured blow moulds in your blow moulding machine.

ENGRAVINGS FOR DISTINCTIVE DESIGN

With the pictures presented here we can only show a very small portion of the various projects in which we have realized an individual bottle design for our customers with engravings. Those range from simple logos to full landscapes with palm trees, waterfalls, mountains and sun.

A wide variety of surface finishes in the blow moulds is possible. Using sample bottles that we have available, you can estimate how the different surface finishes will look on the bottles before you start a new project.

In order to give your engraving its best appearance, we advise on technical details such as radii, ventilation, etc.



MODELS OF BOTTLES



We can offer the following solutions for bottle model production without needing a sample blow mould for our blow moulding machine:

- > Cost-effective 3D printing directly from the CAD data
- > Machining transparent plexiglass models, also painted upon request





PRODUCTION OF SAMPLE BOTTLES

On our modern laboratory blow moulding machine with one blow moulding station, we can flexibly adapt to your production requirements and carry out extensive tests, e.g. for new bottle designs:

- > Installation of all mould types of various rotary and linear blow moulding machines
- > Test of quick change or standard blow moulds
- > Adaptation to different thread types and preforms
- > rPET and PET possible
- > Optimization of blowing pressure (low pressure)
- > Test of different material distributions, stretch ratios, process parameters, etc.
- > Weight optimization (light weighting)
- > Delivery of sample bottles, also in larger quantities

Long-serving employees work in our Technical Centre. They also support our customers with the adjustment and optimization of the blow moulding process on site.

If you wish, the tests, optimizations and investigations take place together with you. Confidentiality has top priority for us.



QUALIFICATION OF YOUR NEW PET BOTTLE IN OUR TECHNICAL CENTRE

State-of-the-art equipment from Agr International, supplemented by devices developed in-house, allow a comprehensive qualification of new PET bottles, the blowing process, preforms, etc.

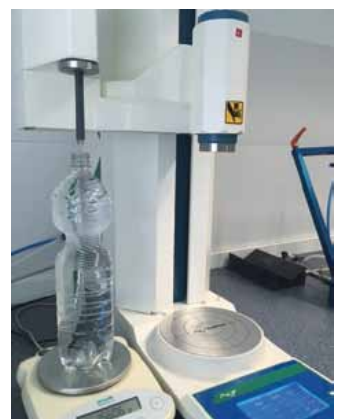
We can carry out the following examinations for you:

- > Drop impact
- > Thermal stability
- > Stress crack test
- > Top load
- > Burst resistance
- > Carbonation retention test
- > Weight
- > Fill point capacity
- > Brimful capacity
- > Bottle dimensions
- > Perpendicularity
- > Base clearance
- > Wall thickness
- > Section weights
- > Appearance & odor



CERTIFICATIONS

Our Technical Centre with its blow moulding machine and numerous devices for testing the bottle quality has been certified and acknowledged by various well-known companies. Amongst others, we have been the official laboratory partner of the PepsiCo corporation for 10 years.



QUALITY CONTROL AT RÖDERS

Quality assurance is a continuous process in the Röders blow mould production.

After each production step up to the assembly of the blow moulds, a standardized test is carried out in order to immediately identify and correct possible errors.

High-precision coordinate measuring machines from Zeiss and a laser scanner are the backbone of the Röders quality assurance. Leak tightness, mould parting lines, polishing quality, mould edges and other features relevant for the blow moulding process are comprehensively checked during assembly.



ENERGY SAVING BY DRASTICALLY REDUCING THE BLOWING PRESSURE

Many Röders customers have been able to significantly reduce their energy consumption and thus their costs because they have replaced existing mould bases with the special "low-pressure base mould design" developed by Röders.

This makes the PET bottle even more environmentally friendly. The Röders low-pressure base mould design is made of a special bottle base geometry and a new ventilation concept that has been developed through many tests. Talk to our specialists. The investment in new base moulds pays for itself within a very short time.

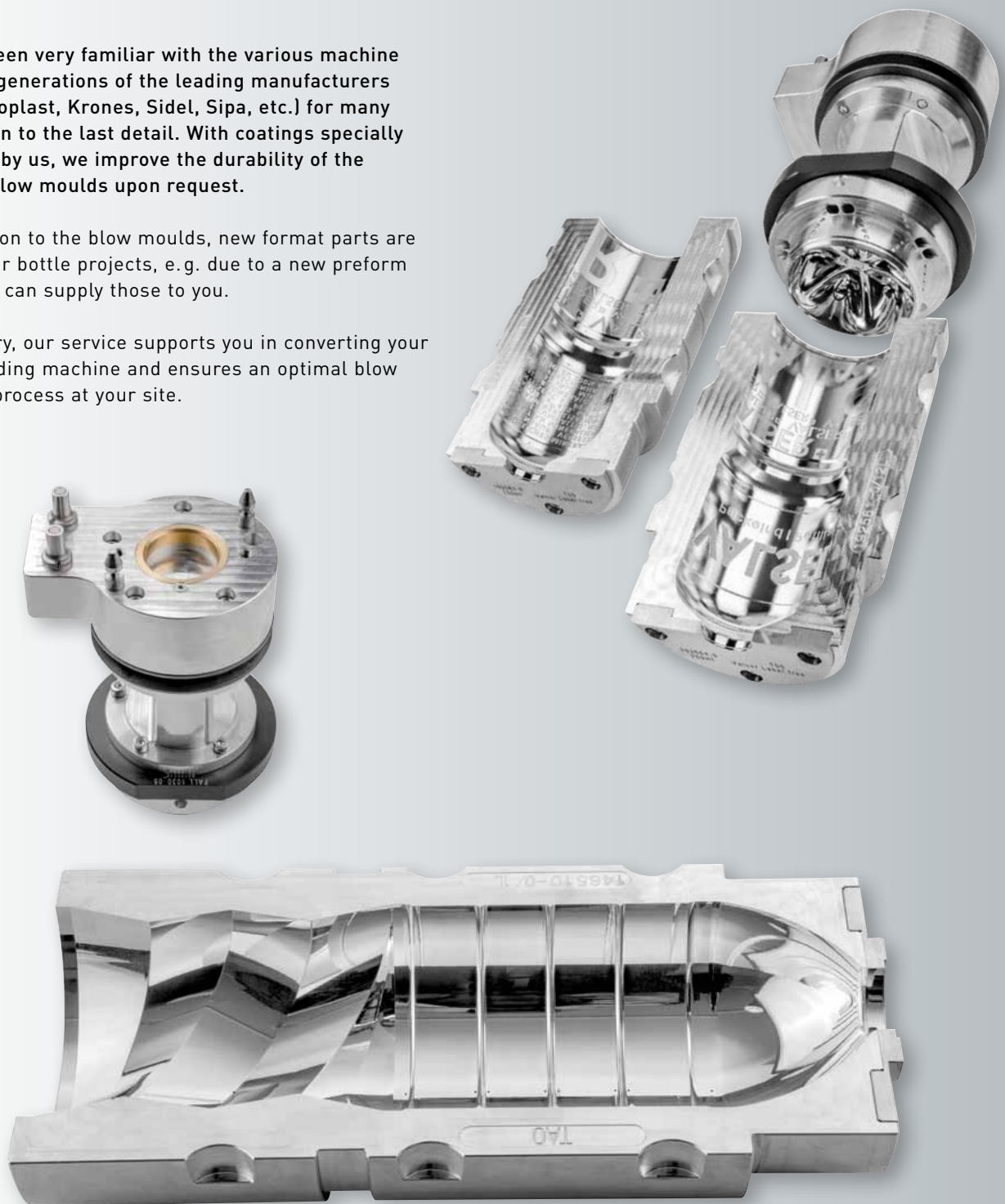
STANDARD BLOW MOULDS

In the last 50 years we reliably have produced several 100,000 blow moulds for non-returnable and refillable bottles, mostly with very short delivery times.

We have been very familiar with the various machine types and generations of the leading manufacturers (KHS Corpoplast, Krones, Sidel, Sipa, etc.) for many years, down to the last detail. With coatings specially developed by us, we improve the durability of the standard blow moulds upon request.

If, in addition to the blow moulds, new format parts are required for bottle projects, e.g. due to a new preform design, we can supply those to you.

If necessary, our service supports you in converting your blow moulding machine and ensures an optimal blow moulding process at your site.



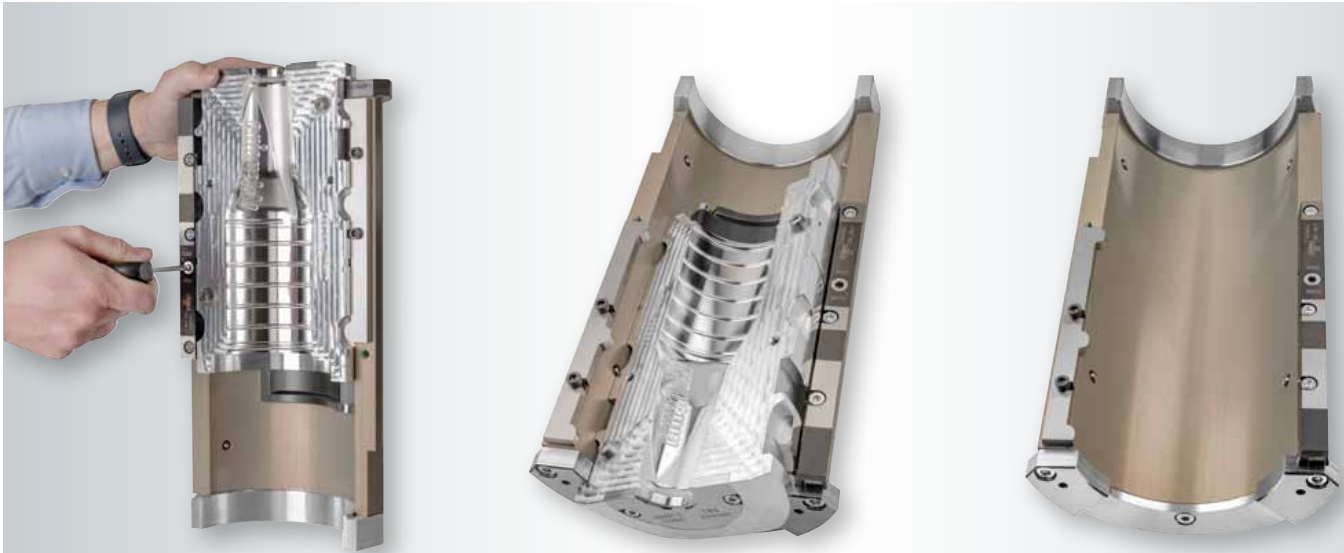
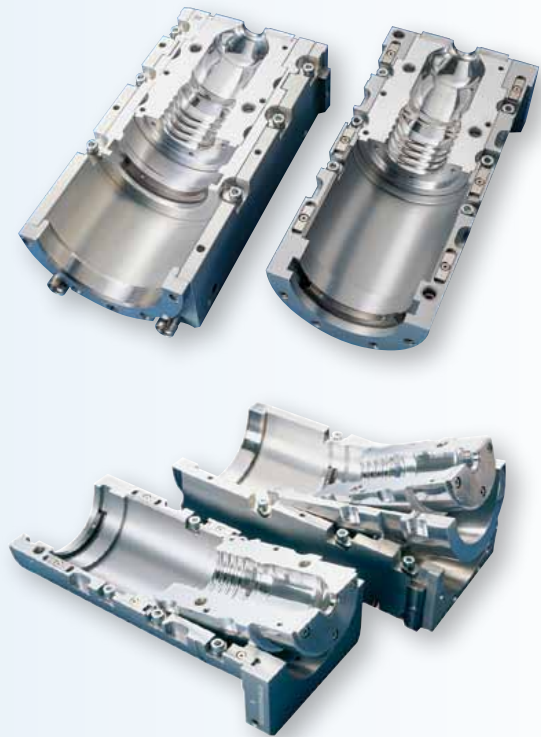
RÖDERS QUICK CHANGE

Röders is pioneer in the development of quick change systems. In consequence, essential patents from machine manufacturers are and were irrelevant for Röders.

Our own, early-developed solutions have proven themselves over many years of production with frequent mould changeovers at our customers.

When designing the Röders solutions, great importance was given to possible blow mould changes between different machine types, also from different manufacturers, in some cases using a "multiple shell system". Our independence and our comprehensive know-how were a solid foundation for this.

In the very fast Rapid Mould Change System from Röders the inserts are easily mounted in the mother mould, turned against a fixed stop and clamped in the mother mould with just one "twist". Demounting is achieved respectively easy as you may see in below pictures.





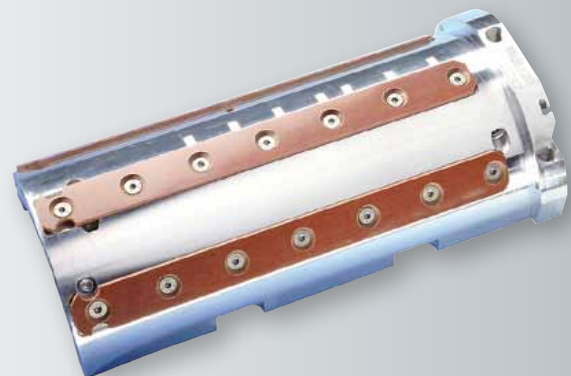
HOTFILL BLOW MOULDS

Röders was involved in the development of hotfill blow moulds right from the start, sometimes in close cooperation with well-known bottlers.

Thanks to our own coatings with particularly hard and smooth surfaces, it has been possible to qualify aluminum moulds for the hotfill bottle production.

This has great advantages:

- > Lower blow mould manufacturing costs
- > Reduced wear on the blow moulding machine due to the lower weight of the blow moulds
- > Faster and easier blow mould changes



SPECIAL-PURPOSE SOLUTIONS



Due to our reliable discretion and independence, we carry out special developments for many customers, e.g.

- > Blow moulds with special coatings, e.g. for hotfill
- > Production of large blow moulds up to 30 litres
- > Special blow mould constructions with movable mould parts
- > Blow moulds with inserts for an easy change of the bottle design in just one mould
- > Cross-machine quick change solutions
- > New ventilation concepts



Whether for soft drinks, beer, oils, juices, milk or other liquids, whether for refillable, non-returnable or hotfill, we can rely on decades of know-how in all areas. In some cases, we have long-term development partnerships with the world's leading bottlers.

In projects with well-known blow moulding machine manufacturers, we have made significant contributions to the development of new, modern blow moulding stations in the blow moulding machines. In the event of capacity bottlenecks, we often manufacture blow moulds for machine manufactures.



RELIABLE SHORT DELIVERY TIMES

There are understandable reasons why Röders can deliver blow moulds with a wide variety of designs faster and more reliable than others:

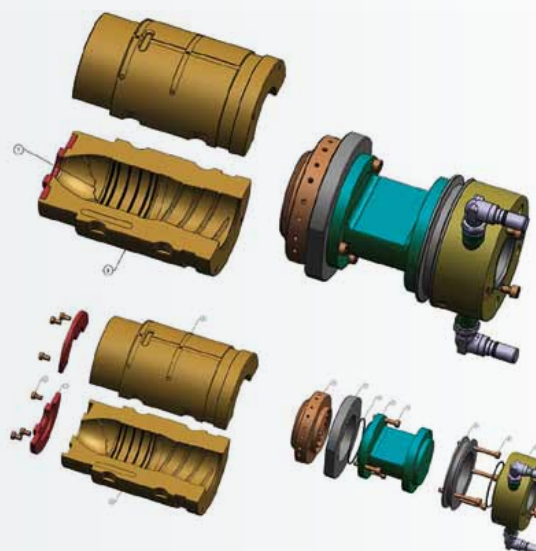
- > The Röders blow mould production relies on the high-precision, fully automated High Speed Cutting machines from the Röders machine tool unit, which enable unmanned production of moulds with polished surfaces 7 days a week
- > Röders has all the advantages of an owner-managed family business with flat hierarchies and quick decisions
- > Long-serving employees as permanent contact persons for our customers can almost always provide competent information immediately without internal queries
- > Röders manufactures more than 5,000 blow moulds annually so that the installed machine capacity allows the production of also larger quantities with very short delivery times



SPARE PARTS FOR BLOW MOULDS

Should it ever happen that one of your blow moulds gets damaged, a look into the supplied exploded assembly drawings is enough to identify the necessary spare parts.

We know how critical continuous bottle production for our customers is. Therefore, standard parts, such as centring devices, are always in stock and individual mould parts are re-manufactured overnight if required.



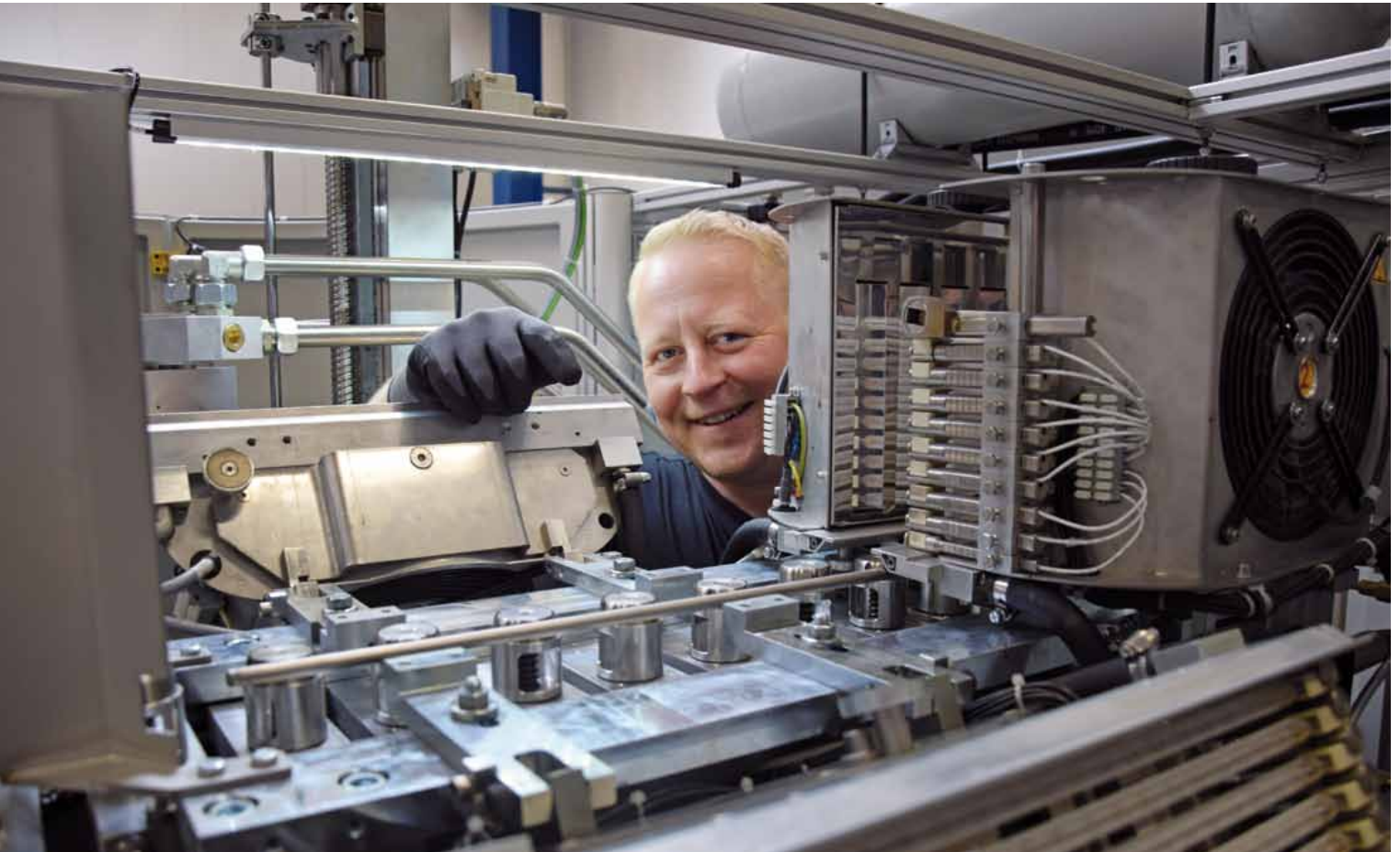
FORMAT PARTS



New blow moulds often require new format parts in the blow moulding machine, especially when the preform changes. Numerous format parts and spare parts for blow moulding machines are available from Röders, including:

- > Stretch rods
- > Stoppers
- > Bottle exit wheels
- > Guide rails
- > Grippers
- > Ejectors
- > Valves
- > Furnace chains
- > Spindle tips

We cooperate with UM Inc., Canada, to provide our customers with a comprehensive range of format and spare parts for blow moulding machines with very short delivery times.



CONVERSION OF AND PROCESS OPTIMIZATION IN YOUR BLOW MOULDING MACHINE

Our specialists from our Technical Centre often provide on-site support if requested by the customer

- > For converting the blow moulding machine
- > For adapting the blowing process to new blow moulds
- > For optimizing the blowing process and the blowing parameters for the best possible bottle quality

Our decades of experience are your advantage and your security.



>> Machines for Milling and Grinding >> Blow Moulds for PET Bottles
>> Röders Pewter & Röders ART

Subject to technical changes – 2208



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