

Linden

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Hermann Linden Maschinenfabrik GmbH & Co

Founded:	1940 by Hermann Linden
Managing directors:	Mr. Alexander Schneider
Employees:	65 employees
Product groups:	- Double - Z - Kneaders - Planetary Mixer
Turnover:	8,5 - 10 Mio. Euro
Industries:	- Chemical Industry - Food - Pharma
Memberships:	Association of German Machines and installations e.V (VDMA) German society for chemical apparatuses e.V (DECHEMA) ZDS – Central technical college of german confectionery industry

MIXING & KNEADING TECHNOLOGY

CONFECTIONERY PROCESS EQUIPMENT



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Hermann Linden Maschinenfabrik GmbH & Co. KG

For more than 80 years, the leading industry has been cultivating, mixing and kneading machines from the MACHINENFABRIK HERMANN almost all over the world.

In the third generation, we manufacture the right machine for each purpose and adapt it to your respective operating conditions in our own production.

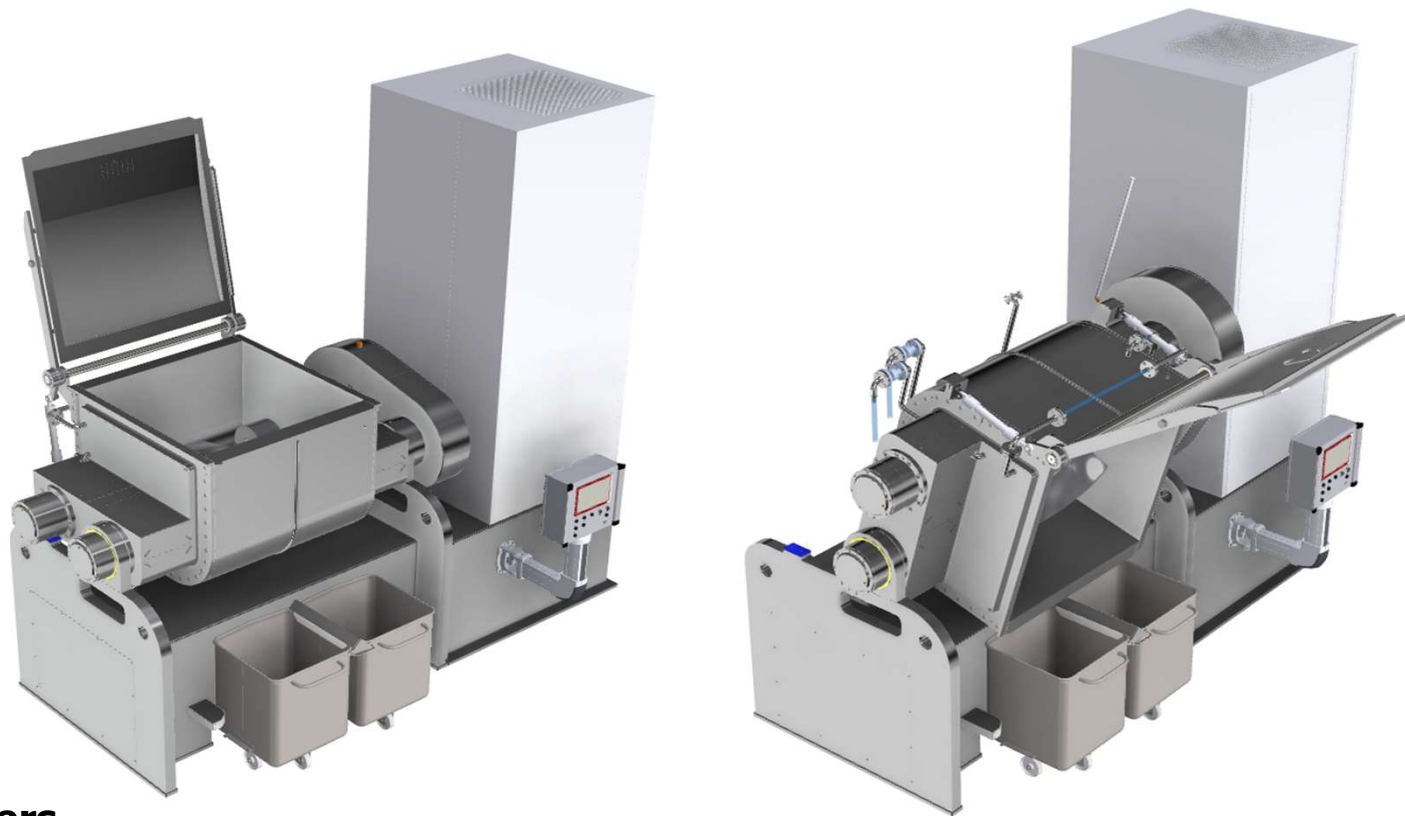
Our machines provide you with the highest level of efficiency, while ensuring the safety of your employees.

Do you have special wishes? Even special requirements are not a problem for us.

All of our machines are flexibly expandable in order to be perfectly adapted to any substance that need to be mixed.

Whatever is good for your mixture!

Kneader in tiltable execution



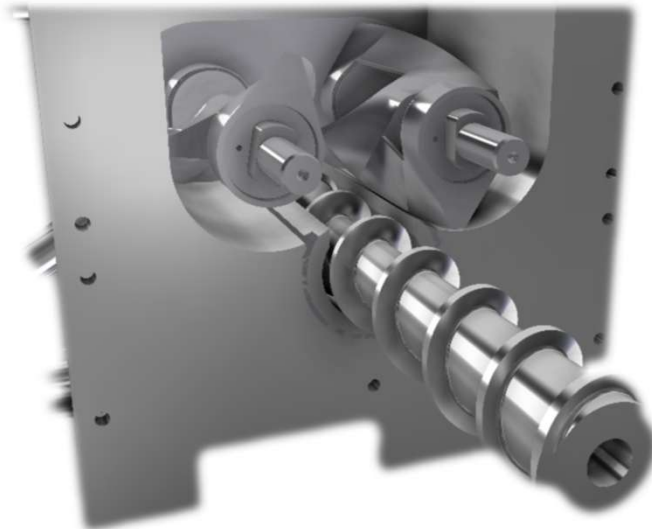
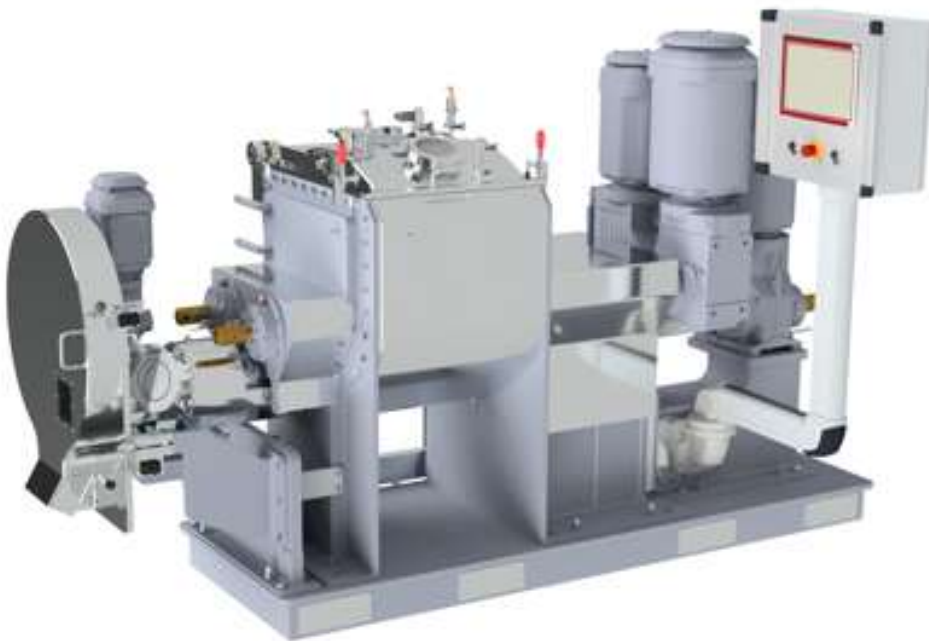
Tiltable Kneaders

The emptying is performed by tilting the mixer. Depending on the design and size, this can be done manually by hand, or hydraulically by hydraulic cylinders.

Executions:

- 0.5 – 3.000 liters net capacity
- stainless steel compl. or only productside
- Vacuum
- control conventional or PLC
- temperable kneading blades
- wear protection
- ATEX
- temperable double jacket for heating or cooling

Kneader with extrusionscrew



Kneaders with extrusion screw

The discharge kneaders are emptied with a discharge screw. This is arranged below the two rotating kneading blades and runs during the kneading process opposite to the discharge direction.

Unmixed product is thus continuously fed to the kneading process.

Following the kneading process, the finished product is discharged by the screw.

Executions:

- 0,5 – 5.000 liters net capacity
- stainless steel compl. or only product
- wear protection
- vacuum
- ATEX
- control conventional or PLC
- temperable double jacket for heating or cooling
- temperable kneading blades
- temperable discharge screw

Kneader with bottom outlet



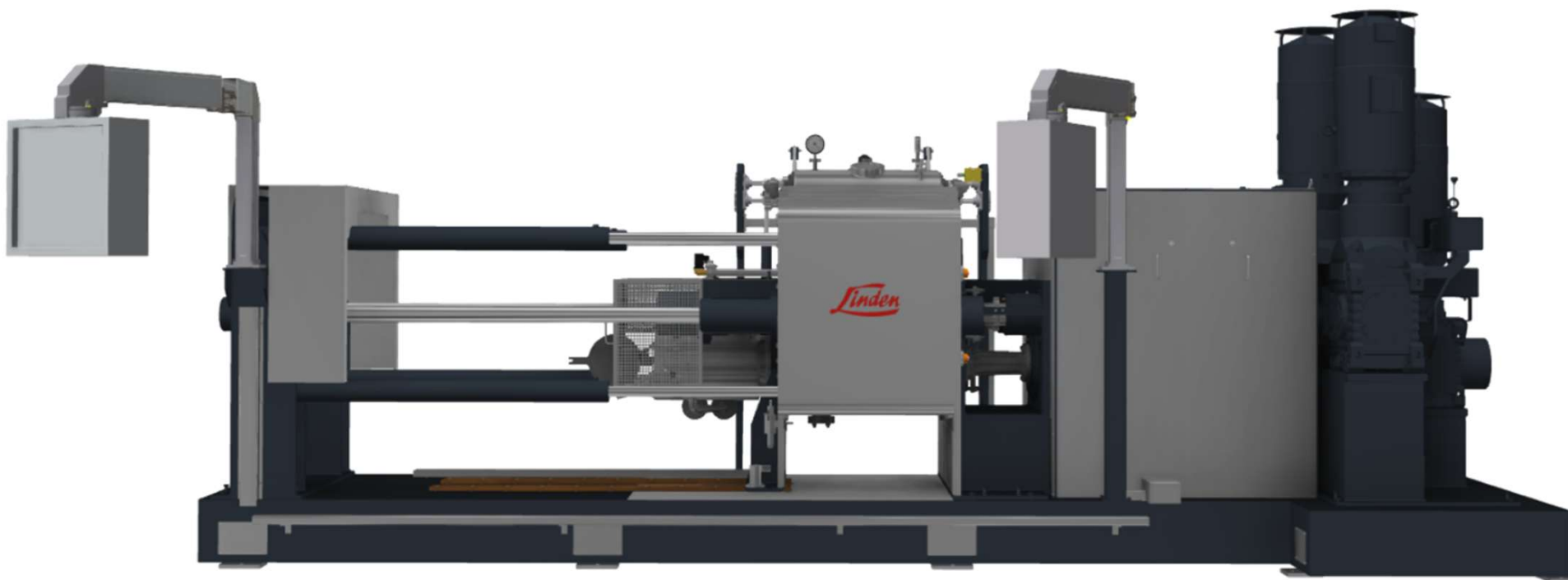
Kneaders with bottom outlet

In addition to tilting and discharging screw kneaders, we also offer the execution of the kneading machines with bottom outlet. In this case, the kneader is emptied by a bottom drain as a flap, ball valve or slide.

Executions:

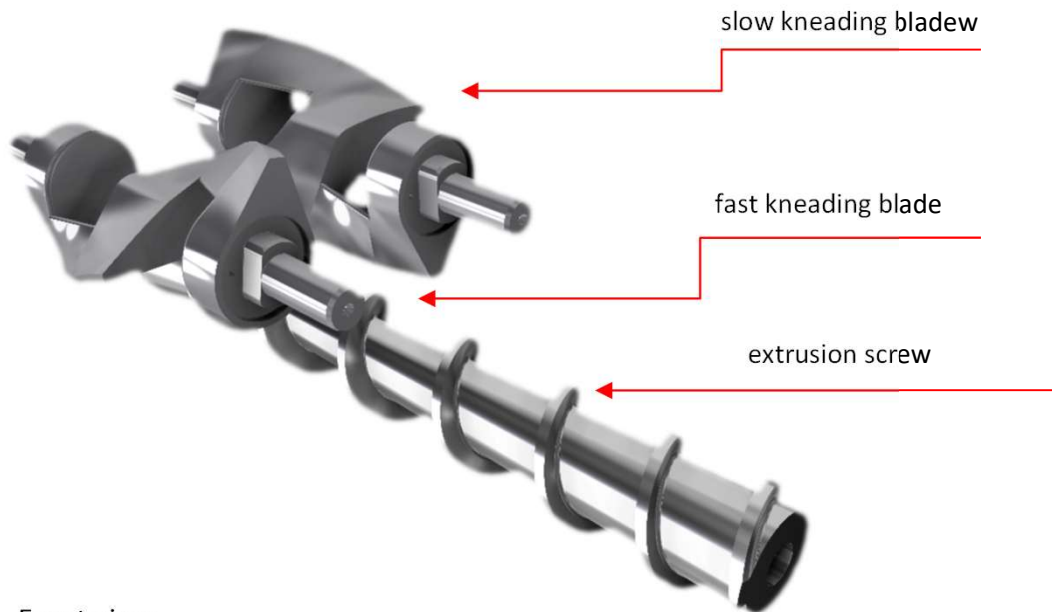
- 10 – 3.000 liters net capacity
- stainless steel compl. or only product
- ATEX
- temperable with a double jacket for heating or cooling
- vacuum
- wear protection
- control conventional or PLC
- temperable kneading blades

**Kneading machines in special execution, completely demountable for high efficient and
easy cleaning to avoid material contamination**

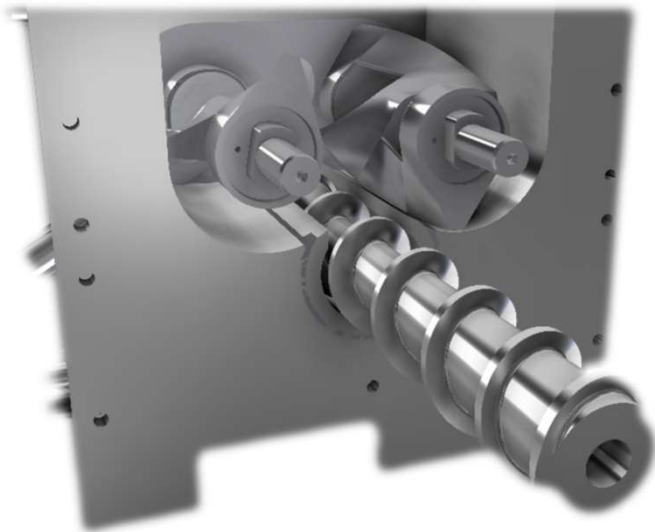


Typ: K III / KIV-A 0,5 bis 5000 liter working capacity

Z- Blades with extrusion screw / Top view



Front view



Principle of operation

Below to the two Z - kneading blades, the discharge screw is positioned.

During the kneading process, the screw is running backwards to continuously feed the un mixed material back to the kneading process.

After the kneading process, the finished product can be discharged by the screw

Duplex kneading blades



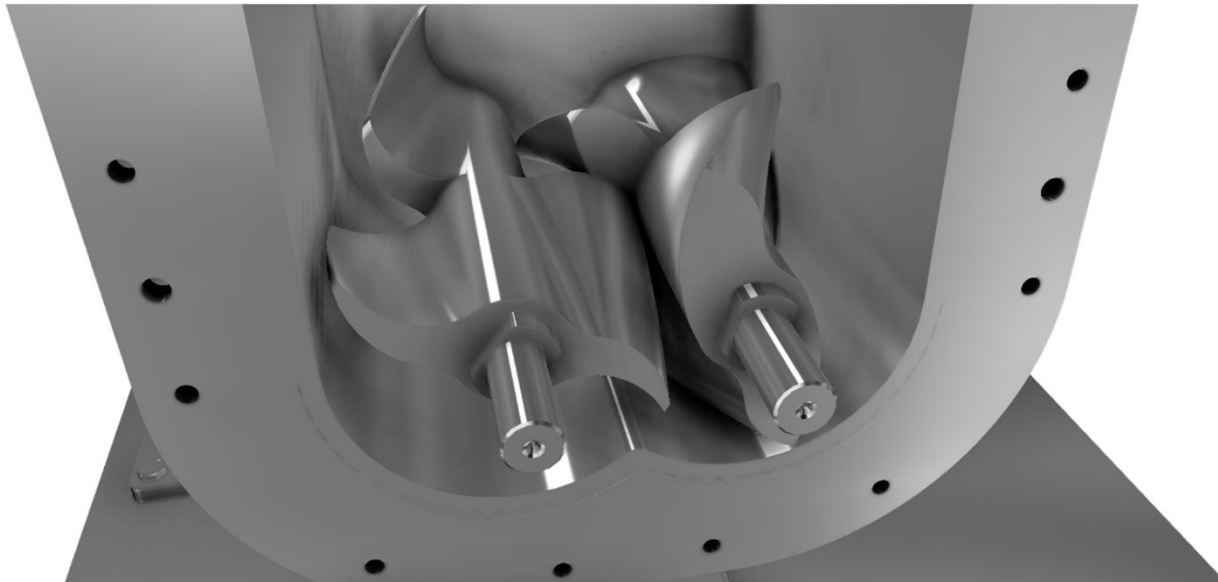
The **Duplex mixing blades** are mainly used in the ceramic and carbide industry.

These type of Blade reach an extremely high shear rate and thus achieve a very high energy input into the material to be mixed.

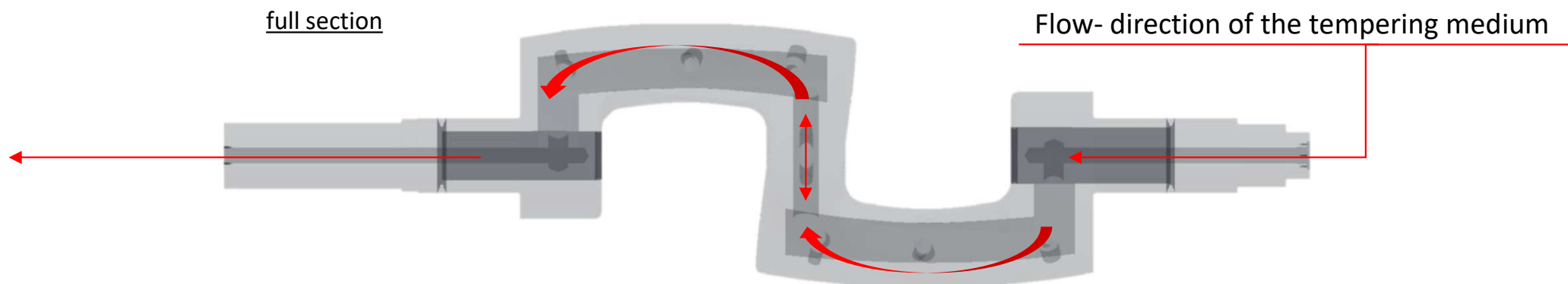
These mixing blades operate at a certain speed ratio intermeshing and unlike to the conventional Z blade that works parallel to each other.

High shear rates are achieved, which allows a quick and efficient kneading of the material.

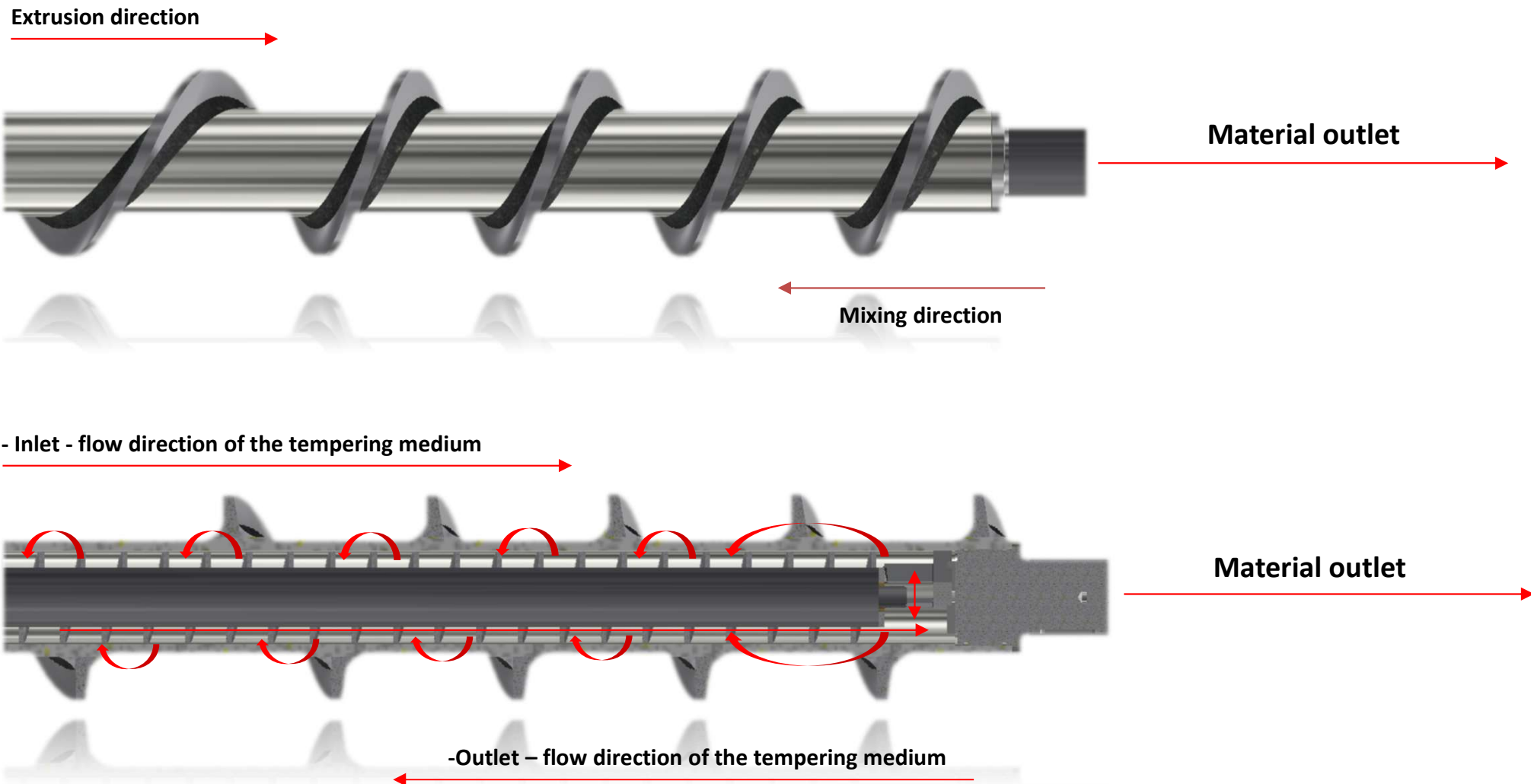
The duplex blades are milled from solid in 3D and the kneading blades are then vacuum hardened to achieve optimum tool service life.



Z – Kneading blades in solid & hollow casted execution

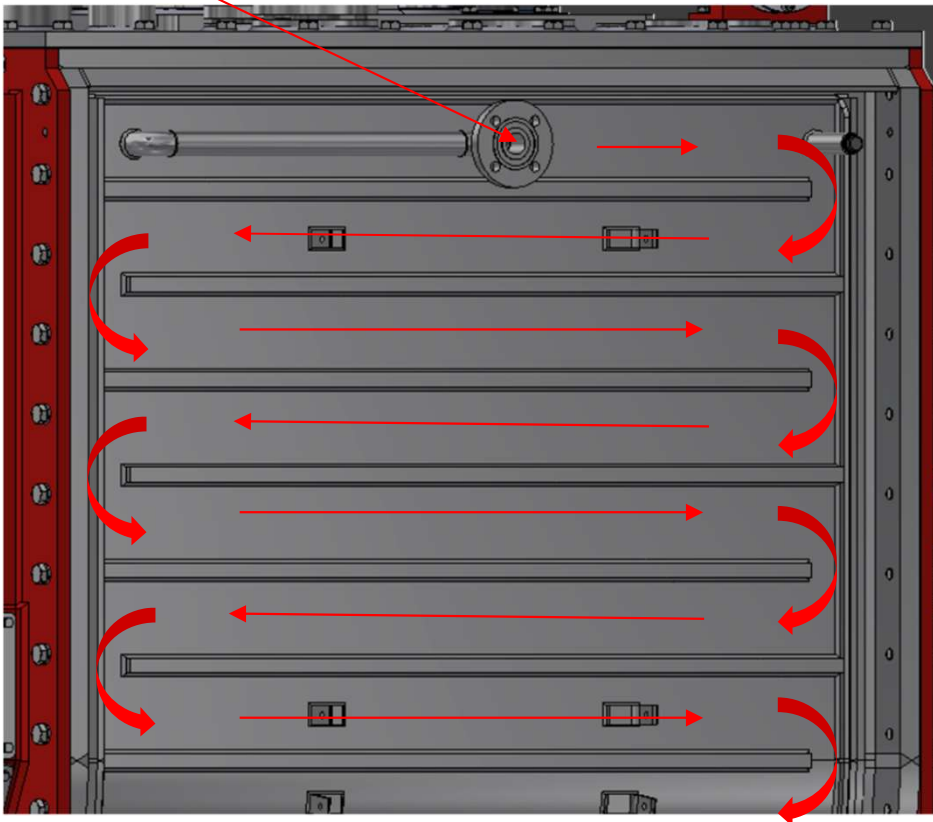


Extrusion screw with the flow direction of the tempering medium shown in full section



Operating principle of a Linden standard double jacket

Inlet



Double jackets:

The double jacket's of the pressure-carrying components are designed in such a way that the temperature control medium:

- water
- steam
- thermal oil

is forcibly guided to the entire furnace of the double jacket area.

This ensures an optimal temperature regulation of the mixed material and leads to a fast process time in terms of heating or cooling of the product.

Other executions of the double jackets are also possible - for example:

- trapezoidal sheet
- half pipe

Working position (closed machine)



Cleaning position (open machine)



Advantages of the demountability

To clean the machine, either the front side wall can be moved forward together with the trough.

For smaller machines, this can be done by hand, larger machines are hydraulically operated.

For optimal cleaning, the mixing tools can be executed removable.

The two kneading blades and also the extrusion screw can be easily pulled out of the driving shafts and could be cleaned separately, to obtain an optimal cleaning result and to avoid material contamination.

In the event of wear, the mixing tools can also be exchanged without great effort and without dismantling the machines. Downtimes are thus reduced to a minimum

Wear Protection

For wear protection, we have the possibility to coat the mixing tools as well as the product room with:

- Tungsten Carbide
- Hard Chrome plating

It is also possible to line the product room, e.g. with tungsten carbide or ceramic.

The parts which are subject to the greatest wear during the process can also be made exchangeable, for example kneading blade active edges and trough saddle pieces



Ceramik lined



Tungsten Carbide



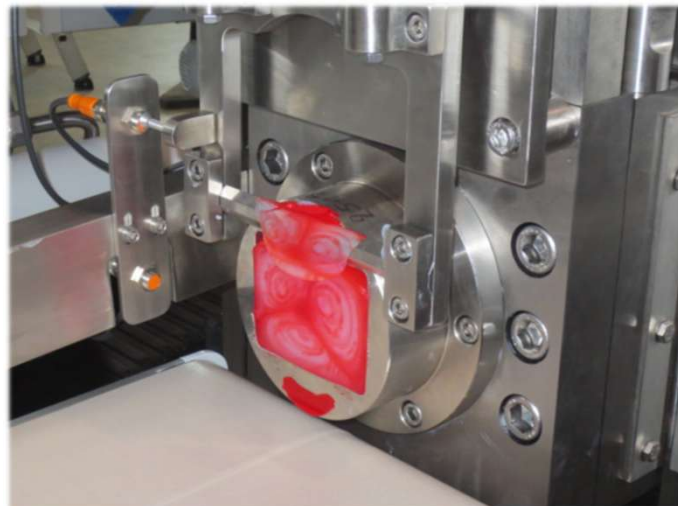
Hard metal lined

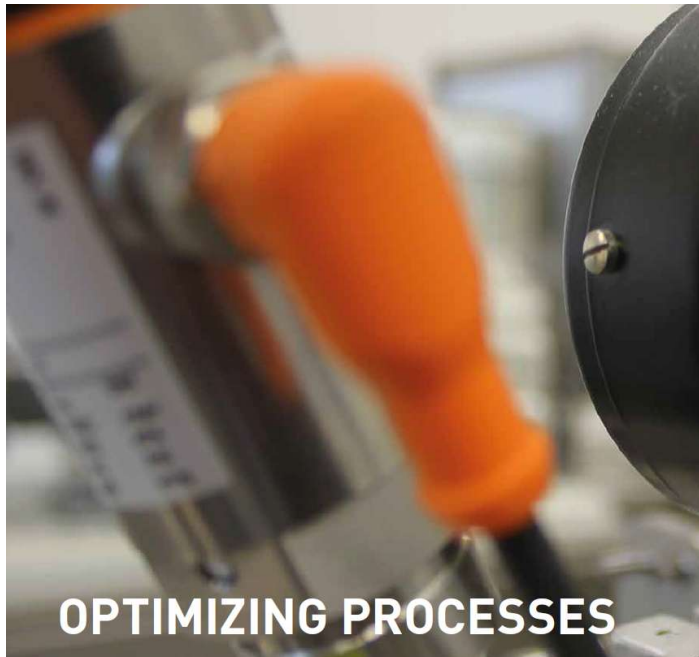
All our discharge kneaders can be equipped with a cutting device on the discharge in front of the machine.

Garnulator for
pelletising



Cutting device for rod
cutting





Experimental Laboratory / Pilot Plant

For the consultation and selection of the type of machine adapted for your application, a well-equipped laboratory is at your disposal.

Here, together with you, we can develop or optimize individual process steps or even entire processes.



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References



Konrad Friedrichs, Kulmbach/Germany



CERATIZIT Austria AG, Reutte/Austria & SARL Luxembourg



BASF AG, Ludwigshafen/Germany



Kennametal, Fürth/Germany



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Bernhard Förster GmbH, Pforzheim / Germany



HelsaTech GmbH, Gefrees / Germany



Fraunhofer Institut, Bremen / Germany



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Ledermann GmbH, Horb-Neckar / Germany



Keramchemie GmbH, Siershahn / Germany



ILJIN Diamond, Korea



Hoechst CeramTec, Lauf / Germany



Hoechst AG, Frankfurt am Main / Germany

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Dr. C. Otto Feuerfest GmbH, Bochum / Germany



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Haldenwanger Technische Keramik, Waldkraiburg / Germany



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