WP BAKERYGROUP

ZPM MIXER

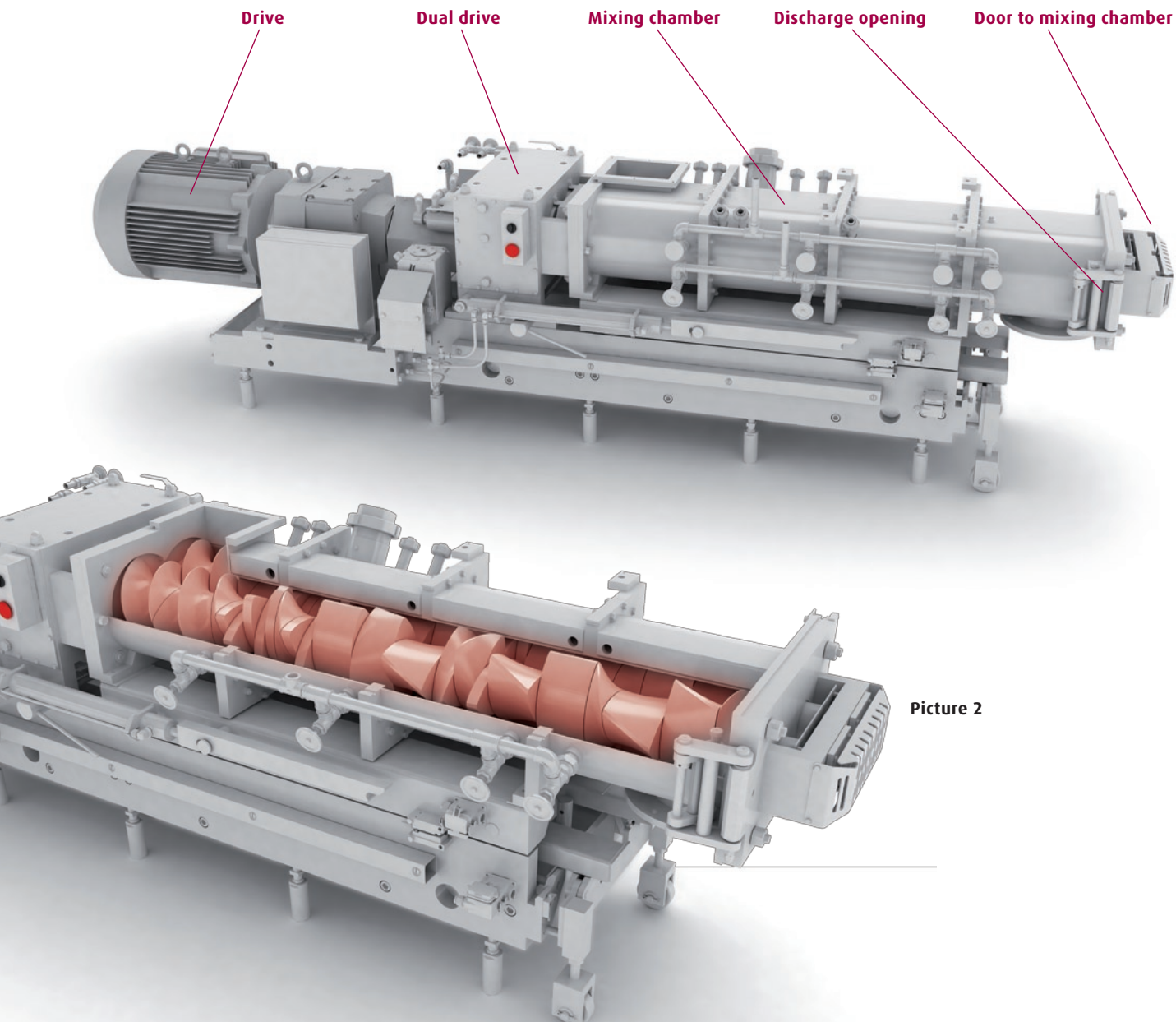
CONTINUOUS MIXING SYSTEM

Werner & Pfleiderer
Industrial Bakery Technologies

Continuous mixing system **ZPM**

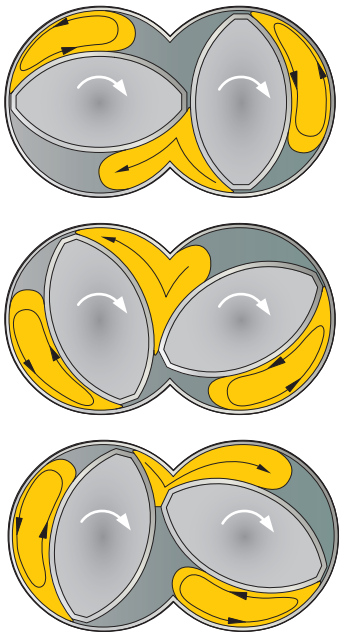
The **ZPM** continuous mixing system consists of several elements:

- Basic frame, drive support and pull-out frame with levelling legs for fastening on the floor
- Drive with drive motor and flexible coupling
- Transfer gearbox (dual drive) on two mixing shafts with the mixing tools
- Mixing chamber with temperature-controlled double jacket, ingredients in-feed sections and adjustable discharge opening
- Mixing chamber as support for the mixing shafts



Picture 2

The **ZPM** mixing principle



Picture 1

The screw elements in the ZPM's mixing chamber intensely mix and knead the ingredients with pressure and shear depending on the respective type of dough. The arrangement of mixing elements such as screw elements and mixing disks as well as the infinitely adjustable rpm value determine the retention time of the dough in the mixer.

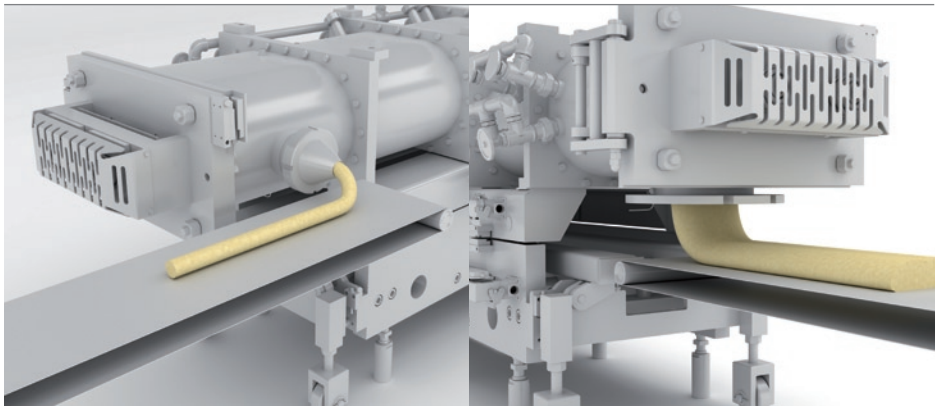
Picture 1 shows how the dough is moved inside the mixer. The rotating mixing tools scrape each other and the inside of the mixing chamber with only low clearance. This results in the complete discharge of the product stream.

The double jacketed mixing chamber and the hollow cast mixing tools can be temperature-controlled **(Picture 2)**. The dough temperature is measured in the product flow immediately before the discharge and displayed at the control cabinet. In case of very intense mixing or varying raw material temperatures, a temperature control unit with cold or warm water can be switched on (optional).

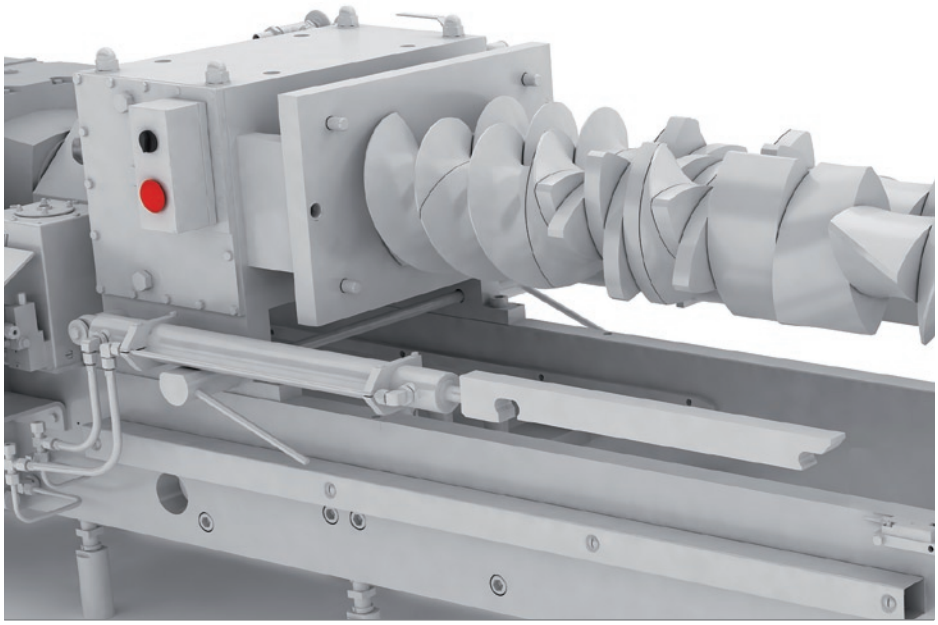
The finished, homogeneously mixed dough exits the mixing chamber through an adjustable discharge opening as uniform rope or strand. It is then transported via conveyor to the downstream processing equipment **(Picture 3)**.

For cleaning purposes, the mixing chamber can be pulled out providing free access for easier cleaning **(Picture 4)**. CIP cleaning features are optionally available. A safety switch prevents a start of the screw shaft as long as the mixing chamber and the door of the mixing chamber are not completely closed.

Picture 3



Picture 4



Features

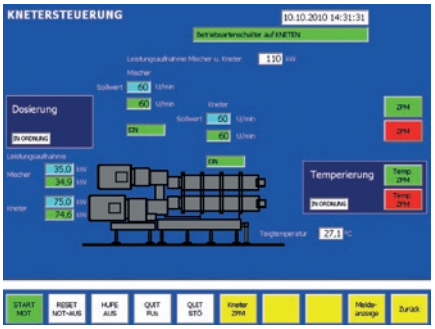
- All machine components made from stainless steel
- Mixer drive with frequency-controlled motor
- Sturdy construction for high operational safety
- Modular system with single and double machines for dough handling capacities in the range between 500 and 7,000 kg/h
- Modular mixing tool system for optimum adjustment to the dough
- Automatic control of the dough performance including dough temperature monitoring
- Motor-driven adjustable discharge opening for control of the dough discharge *(Option)*
- Raw material feeding depending on the technological dough requirements:
  – Doughs made with the all-in process
  – Doughs made with the all-in process followed by the addition of breakable ingredients
  – Dough for moulded baked goods with creaming and short mixing phase
- Tests for optimum machine configuration
- Continuous dough strand for a uniform dough resting time prior to dough make-up
- Quick product change-over to different types of dough with only little waste
- Manual cleaning possible by pulling the mixing chamber out which provides easy access to the mixing tools
- CIP cleaning *(Option)*

Plant control

During the mixing process, the control system records the effective power of the motors, the rpm of the mixing shafts and the dough temperature (in the last zone). These values are stored in a circulating storage and shown on the display.

The standard range includes

- Temperature and pressure sensor
- Central motor control
- Safety monitoring
- PLC with operator panel
- Data aquisition
- Comparison of actual and target values
- Trouble shooting assistance
- Recipe storage
- Turning the entire system on and off
- Interfaces to superior control systems



The plant control system optionally provided by **Werner & Pfleiderer** can be used as superior control system for the entire dough production process.

Benefits of the continuous mixing system **ZPM**

Uniform dough quality

- The precise monitoring and control of all ingredients as well as a completely identical mixing and kneading of all dough components ensure uniform dough quality. For products requiring a proofing process the ZPM offers optimum performance for uniform dough quality.

High availability

- Long-term experience in the design of advanced metering plants and their synchronization with ZPM continuous mixers ensure a high operational safety of the production line.

Waste reduction

- Start-up, stop and change-over processes are performed rather quickly as then only minor dough quantities are present in the system. The control enables a fast start and stop of the system thus reducing dough waste.

Improved hygiene

- All components of the system (except drive and motors) are made from stainless steel. CIP cleaning is available as optional feature.

Maximum performance with smallest footprint

- ZPM model 320/320 can process up to 7,000 kg/dough per hour and has a footprint of only 6 m^2. The ingredients are fed in from the top.

Unlimited flexibility

- The metering systems can be adjusted to the specific requirements of the raw materials. The ZPM system consists of individual modules. The different screw and mixing elements can be used to design a system that is the best for a specific type of dough.

Smooth product transfer to downstream equipment

- The ZPM system produces a continuous dough strand. This facilitates the transfer to the downstream processing machines.

Easy cleaning

- The preliminary work prior to cleaning is facilitated by hydraulic features.

The **ZPM** mixing system is suitable for the production of

- wheat bread
- rye bread
- mixed wheat or rye bread
- pan bread
- baguette
- rolls
- soft rolls
- Skorpor (rusk type rolls)









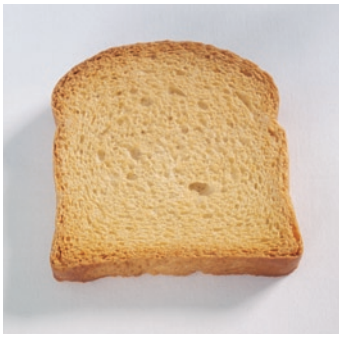


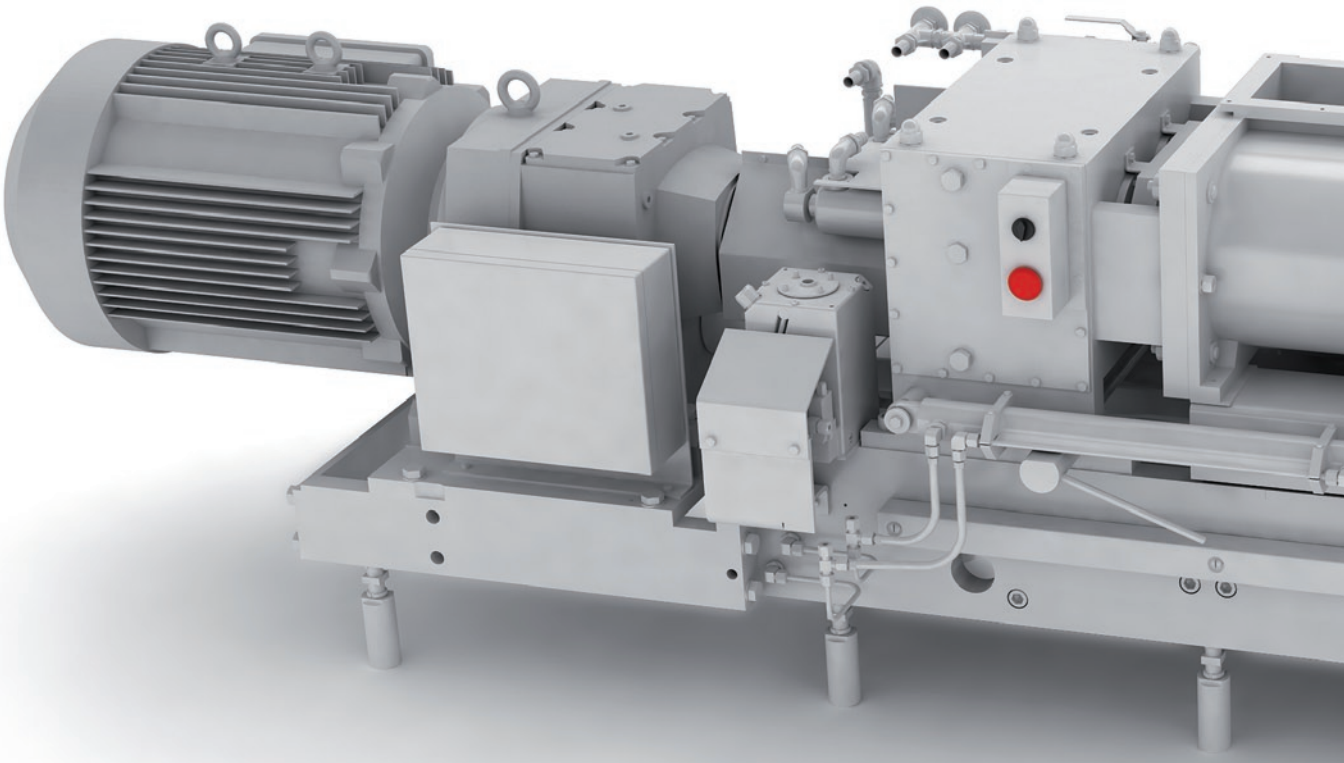

- crispbread
- rusk
- frozen dough pieces
- hard biscuits
- cracker
- lye-treated baked goods
- soft biscuits
- cakes
- batters for bars
- potato chips
- candy masses
- batter for pet food





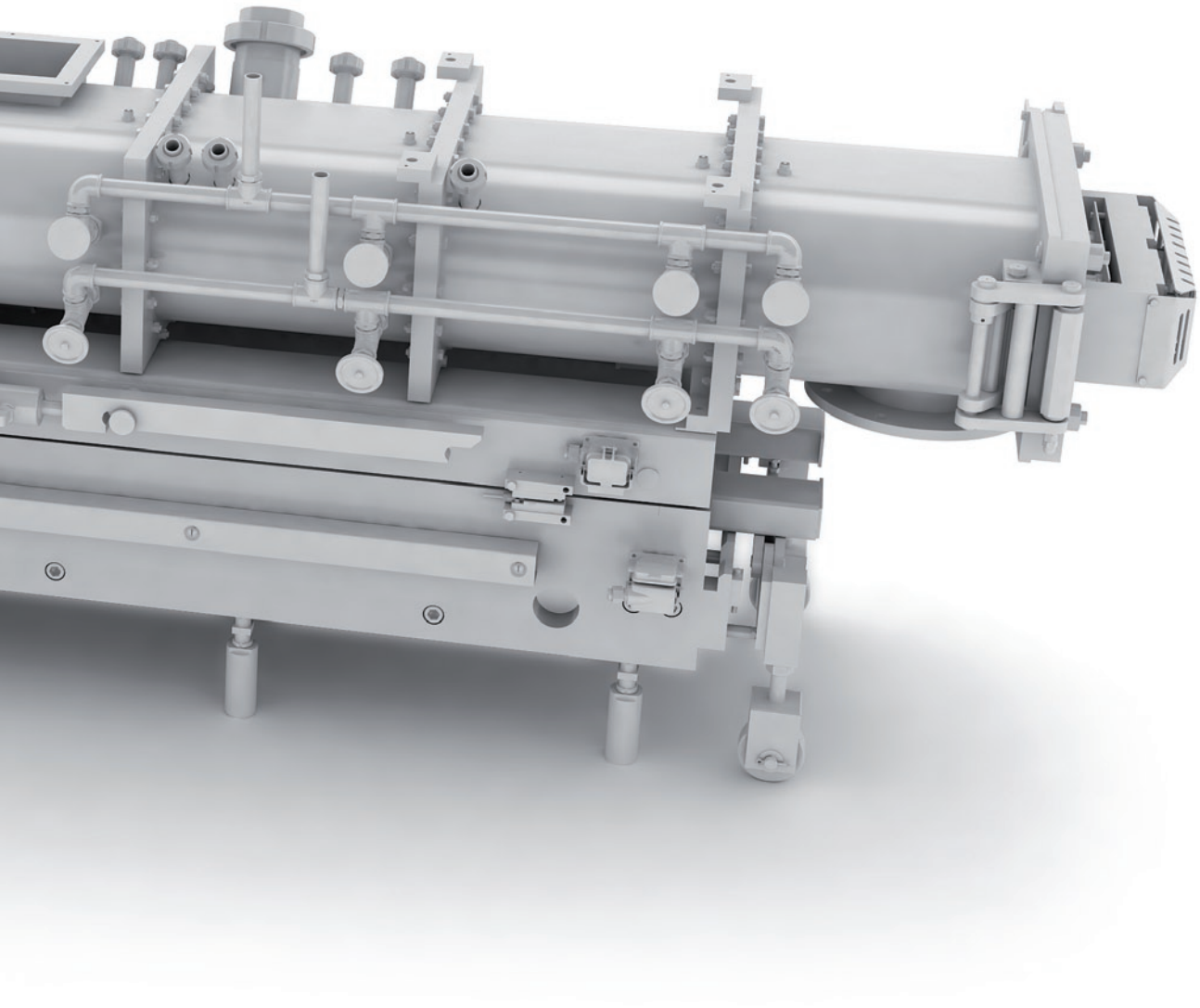


Werner & Pfleiderer – Your competent partner

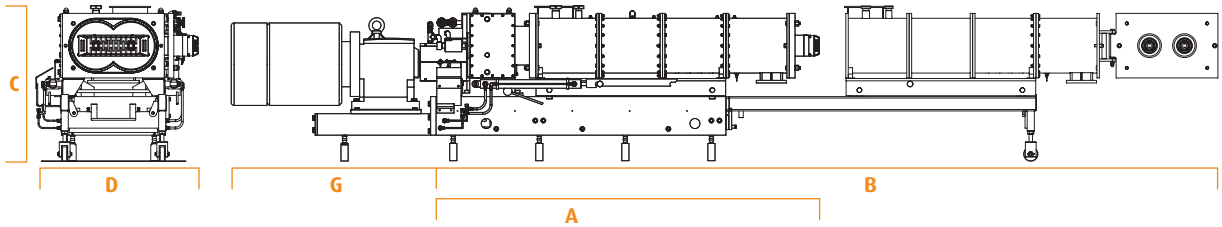
A continuous dough mixing system is more than merely hardware. It fulfils a number of individual functions from process development to commissioning. **Werner & Pfleiderer Industrial Bakery Technologies** supports you with their know-how and experience. A completely furnished pilot plant is available for test purposes.

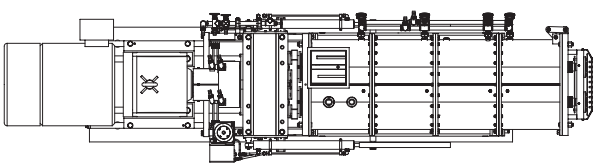


Continuous mixing system

Technical data			ZPM 120/3	ZPM 120/4	ZPM 240/4	ZPM 120/3–240/4	ZPM 240/4–240/4	ZPM 320/4	ZPM 120/3–320/4	ZPM 240/4–320/4	ZPM 320/4–320/4
Mixer length (operating position)	A	mm	5,368	3,905	2,670	2,670	2,670	2,670	2,670	2,670	2,670
Mixer length (cleaning position)	B	mm	5,260	6,140	5,320	5,320	5,320	5,450	5,450	5,450	5,450
Height feed opening	C	mm	1,000	1,000	1,000	1,200	1,300	1,050	1,400	1,600	1,700
Width	D	mm	725	725	870–1,500	870–1,500	870–1,500	870–1,500	870–1,500	870–1,500	870–1,500
Total length = mixer length + length of drive unit	G		The required space is defined by the size of the drive unit								
Length of mixing chamber		mm	1,326	1,768	1,768	1,768	1,768	1,768	1,768	1,768	1,768
Diameter of mixing elements		mm	120		240			320			
Dough capacity (wheat dough, maximum capacity is depending on type of flour and type of dough; it will be determined in dough tests)		kg/h	400	500	2,000	2,400	4,000	2,700	3,200	5,000	7,000
Speed of mixing tool (frequency-controlled)		U/min	40–120	40–120	40–100	40–100	40–100	40–100	40–100	40–100	40–100
Drive motor rating		kW	15–22	15–22	22–75	15–75	22–75	45–90	15–90	45–90	55-90
Drive hydraulic pump		kW	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55

Dimensions

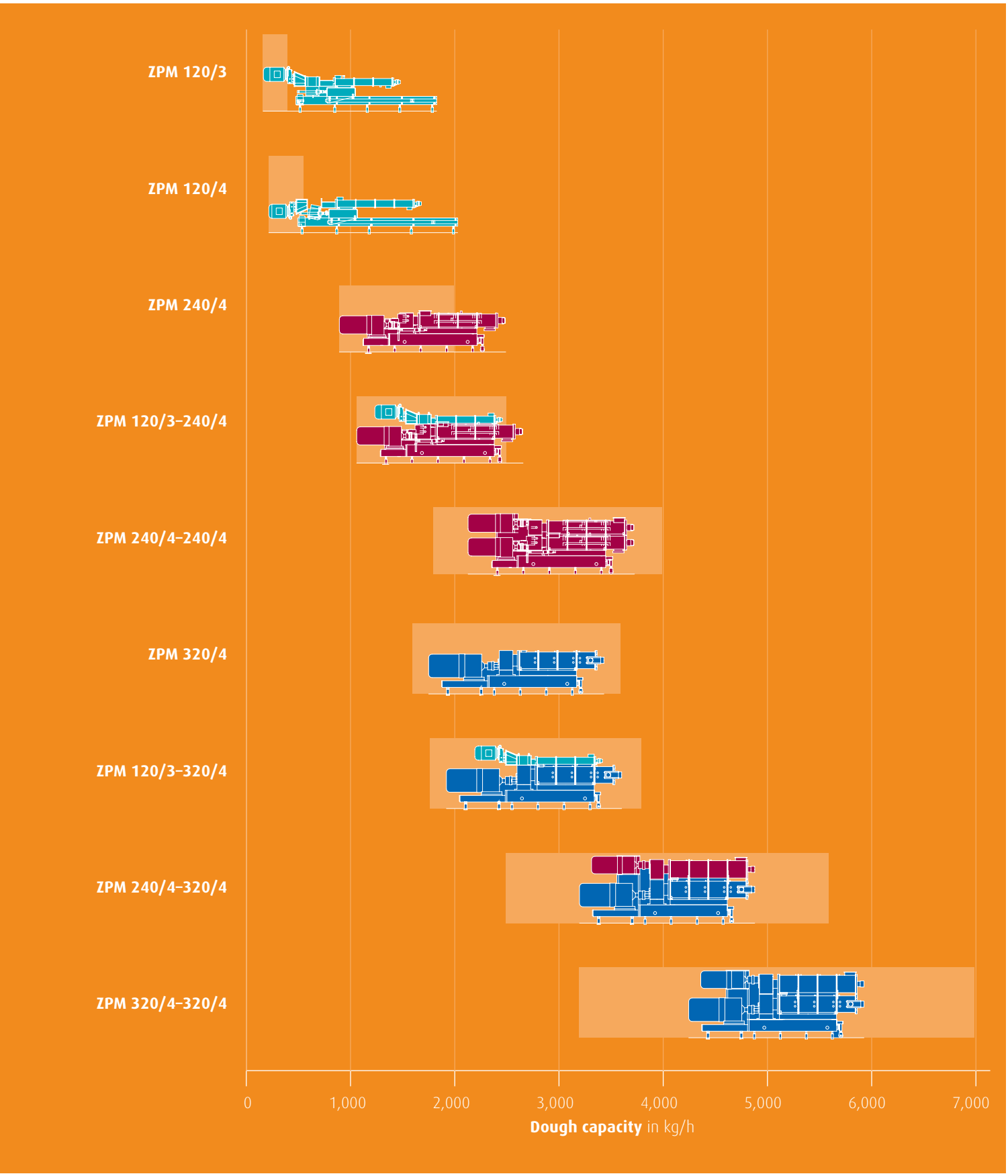




Possible mixer combinations

The maximum performance of the machines can vary due to special recipes and make-up processes.

The values stated refer to wheat dough.
The minimum value with an unchanged set of mixing tools is approx. 60% of the maximum value.



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*The **WP BAKERY**GROUP has subsidiaries in France, Italy, Belgium, Russia and the US.*

Furthermore, it is represented with its service stations everywhere in the world.

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