



# Brabender TwinLab-F 20/40

Food-grade Twin Screw Lab Extruder



**Brabender®**  
... where quality is measured.

## TwinLab-F 20/40

Texturize proteins, process cereals, snacks and more – TwinLab-F 20/40

The TwinLab-F 20/40 scores highly for being a compact extrusion solution with an integrated drive. This space-saving and economical solution processes the widest range of different materials. Develop new formulas and standards or simulate processes exactly to scale.

With a rotational speed of up to 1200 rpm, this extruder offers the user greater flexibility when it comes to energy input and throughput. What's more, the cylinder is split horizontally and is hinged at both sides, which makes the segmented screws easily accessible.

### Highlights

- Hygienic Design
- Easy Handling
- Energy efficient
- Flexibility
- Digitalization

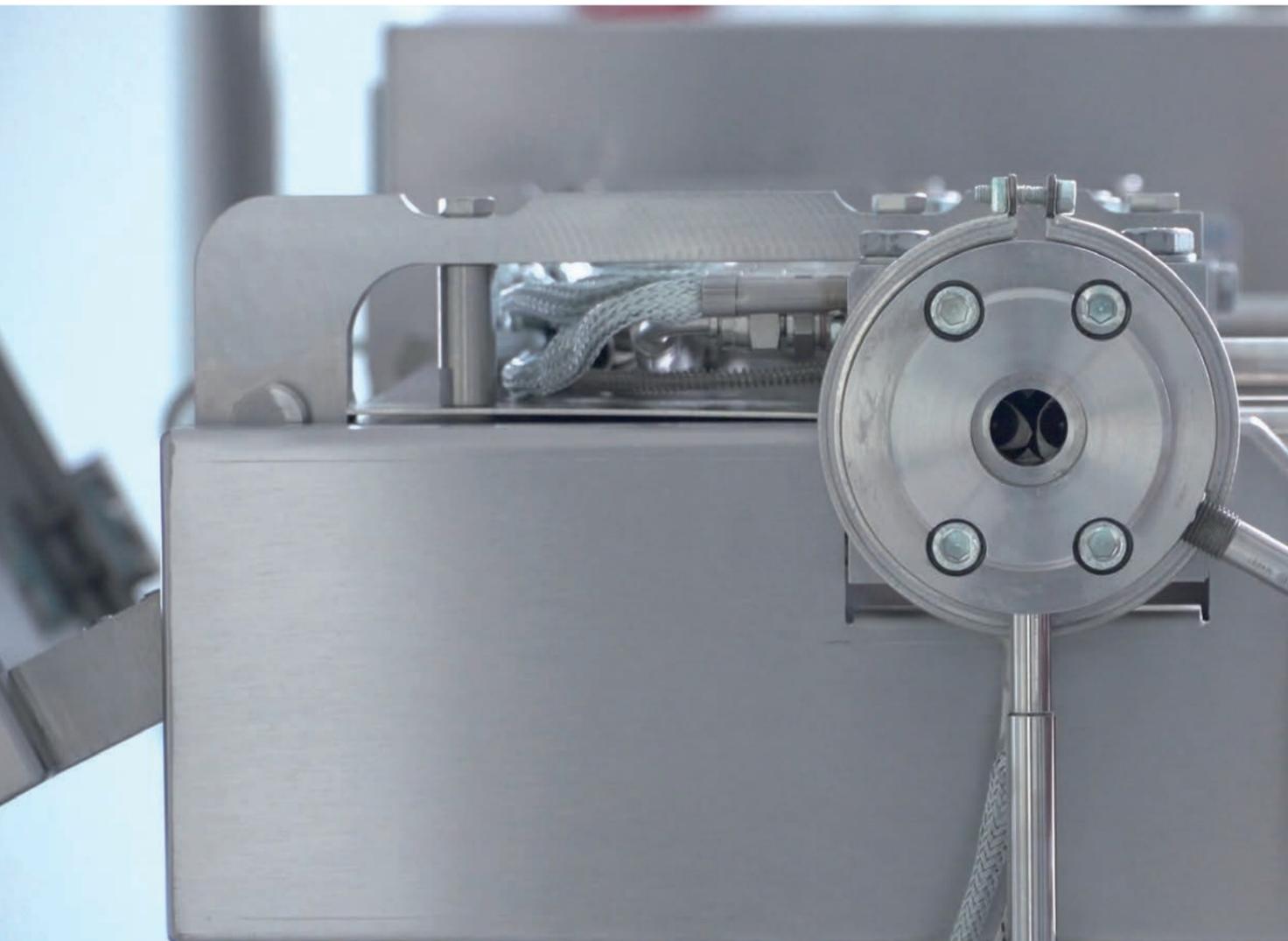
### Use-Cases

- Quality control and analysis of raw materials
- Testing of the extrusion properties of different materials
- Research and optimization of processing characteristics
- Product development and recipe optimization
- Less raw material disposal
- Production independent development and optimization

### Hygienic Design

The hygienic design of the TwinLab-F 20/40 is mainly represented through easy cleanability and food-grade materials

- Straight surfaces
- Stainless steel
- Removable covers: Gear box / motor
- Openable cover for functional unit
- Hinges integrated in the cover
- Less raw material disposal
- Production independent development and optimization



- Food-grade liner materials
- Openable liner
- Avoidance of water gatherings
- Improved accessibility for cleaning
- Hygienic grip elements

Understand and optimize your recipes and process parameters by using the clam shell design with the openable liner



Mixture/ cold forming



Gelatinization/ plastification



Starch destruction

- Wheel well integrated in the housing avoids dirt accumulation
- Big wheels / increased height to simplify cleaning under the device
- Hygienic height adjustable stands



## Key Features

This twin screw extruder has been tailored for food applications and provides you the following features

- Co-rotating twin screw extruder
- Hygienic Design
- Diameter / Length: D = 20 mm / L/D = 40
- Motor Power: Up to 9.5 kW
- Speed / Torque: 1200 rpm @ 2 x 40 Nm
- Temperature: 400 °C / 4 Zones
- Throughput: Up to 20 kg/h
- Feeding Openings: 4 x Top / 2 x Side
- Interfaces: Touch screen, HDMI, USB, Ethernet, CANOpen, LIMS
- Software: Extruder and peripherals operated by



## Variants

The TwinLab-F is available in different configurations for an optimal cost-effectiveness



## TwinLab-F Configurations

Motor	Temperature	Feeding Openings	Touch screen
5.5 kW / 600 rpm	Partially Tempered 250 °C	1 Top	None (HDMI/USB)
9.5 kW / 1200 rpm	Fully Tempered 400 °C	Flexible 4 Top + 2 Side	Touch screen (15.6 inch) with splinter protection
	Separate Thermostat		

## Fields of Applications

### Texturize proteins, produce cereals, snacks and more – TwinLab-F 20/40

The TwinLab-F 20/40 is highly versatile and allows modern foodstuffs to be developed under extremely realistic process conditions. Modify and texturise various materials, such as for example proteins, starch, fish food, cereals and pasta.



### Directly-expanded Products

- Products that expand at the die upon exiting the extruder. Their volume increases suddenly and their shape stabilises within a very short amount of time.
- The prerequisites for the manufacturing of expanded products are a defined water content and suitable pressure and temperature conditions.
- Examples: flips, balls, cereals, flatbread



### Indirectly-expanded Products

- The extrudate is made to expand in an additional process step with the use of a microwave, hot oil, or a stream of hot air.
- Unlike directly-expanded products, the process parameters vary.
- The temperatures are below 100 °C and the water content is higher than for directly-expanded products.
- Examples: snacks, face (pellets in the shape of figures)



### Formed Products

- The shape of these products is determined by the die when they exit the extruder.
- The temperatures of the extruder lie below 100 °C.
- Examples: noodles/pasta, fruit strings and strips



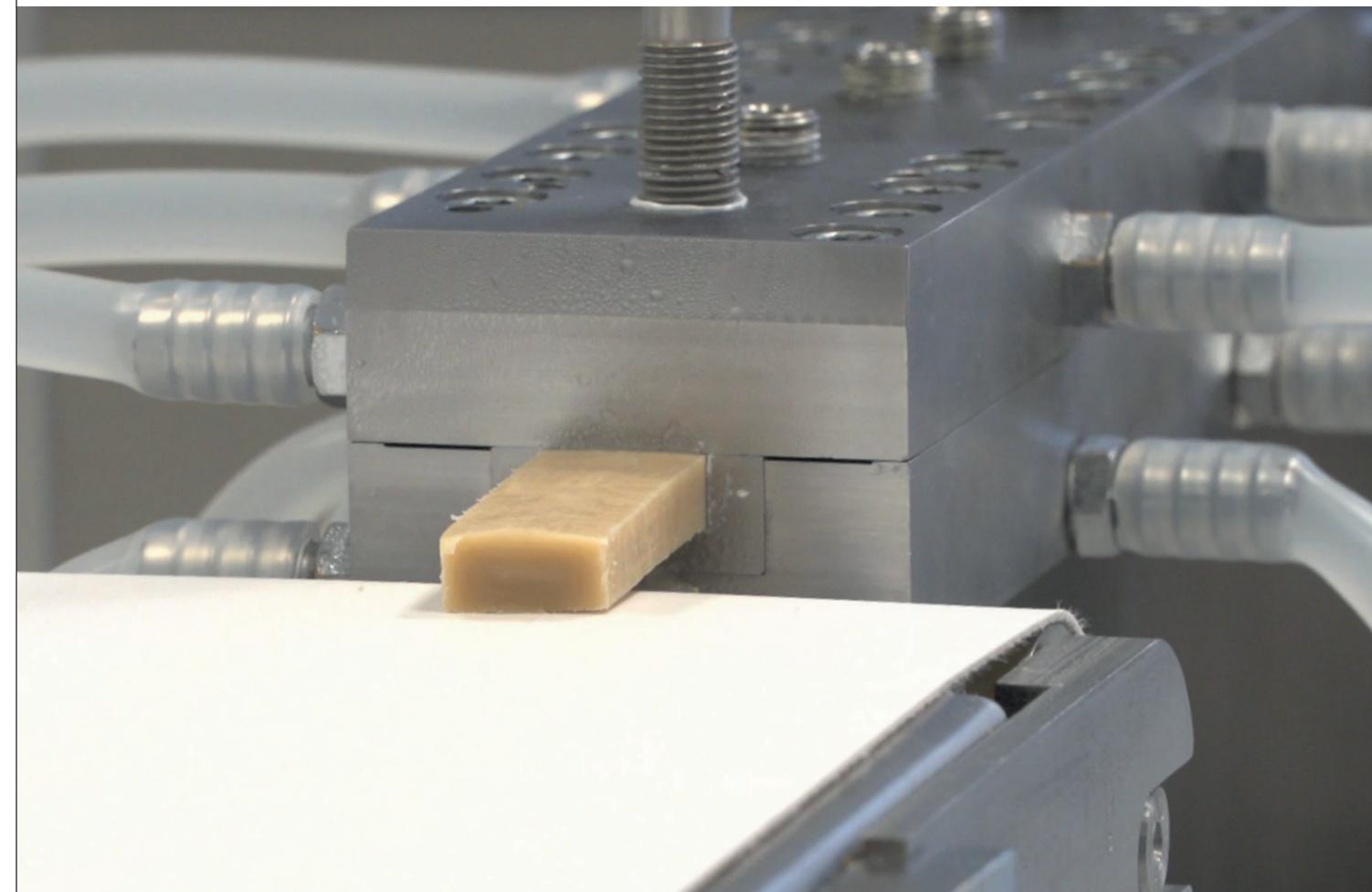
### Gelatinized Products

- Refers to product in which the starch grains swell up and expand in the presence of water and warmth, causing the cell walls to burst.
- Examples: noodles



### Dry / high Moisture Protein Texturization – TVP

- **Dry Texturization:** After being denatured in the screw section of the TwinLab-F 20/40, the proteins are flash-expanded in the die section. Dry extruded proteins are hydrated after extrusion and often optionally coated with flavors.
- **High Moisture:** With a high moisture content and no moisture loss by cooling down the product during the extrusion process, no rehydration is required. The long cooling section allows cooling of the cooked protein and directional shear in order to build a laminar structure
- Examples: texturized protein chunks, flakes, strips, burger patties, stews, nuggets, pasta sauces, sausage rolls, burritos



## Accessories and Components

Screw elements, dies, peripherals and downstream



### Screw Elements

Screw configuration is an integral part of the design of an extruder. It influences the processing environment and therefore product characteristics. Brabender provides a range of different screws for single screw extruders. A wide range of configurable screw elements are available for twin screw extruders.

**Twin extruder screw details that can be custom-configured:**

- Conveyor elements
- Kneading blocks
- Inverse elements
- Tooth mixing elements

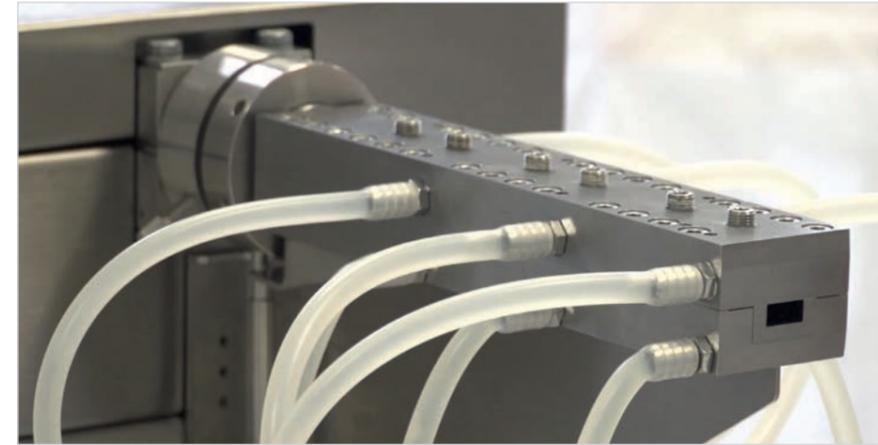


### Dies

Dies help you to give your products the shapes you require. Brabender provides dies for all standard applications in the food and animal feed industry.

All dies are available in a range of different sizes.

- Conveyor elements
- Kneading blocks
- Inverse elements
- Tooth mixing elements
- For ribbon-like products: ribbon die head
- For pasta production: noodle die head
- For round-strand products: round strand die head
- For macaroni and similarly shaped products: tubing die head



### Modular Cooling Die

Processing proteins is playing an increasingly more important role in the food and animal feed industry. The Modular Cooling Die has been specially designed for laboratory-scale wet texturization of plant proteins. Its flexible design enables different product sizes (width / height) to be modelled. Six apertures for material temperature and pressure measurement deliver a full process control capability. The Modular Cooling Die consists of two half shells, which can be combined with one another depending on the duct dimensions. Three temperature zones are available for independent temperature control via a thermostat.



### Peripherals / Downstream

- Cutting device
- Conveyor belt
- Various thermostats (on request)
- Pressure transducers
- Thermocouples
- Volumetric and gravimetric feeders



# MetaBridge®

Brabender®

## Efficiently interconnect your devices

Brabender's cross-device software solution provides a consistent user experience between all Brabender units. The MetaBridge comes with various data evaluation functionality, customizable measurement methods in order to meet application specific requirements. Regular updates improve and expand your device and let you automatically benefit from the latest trends and developments.

## Highlights

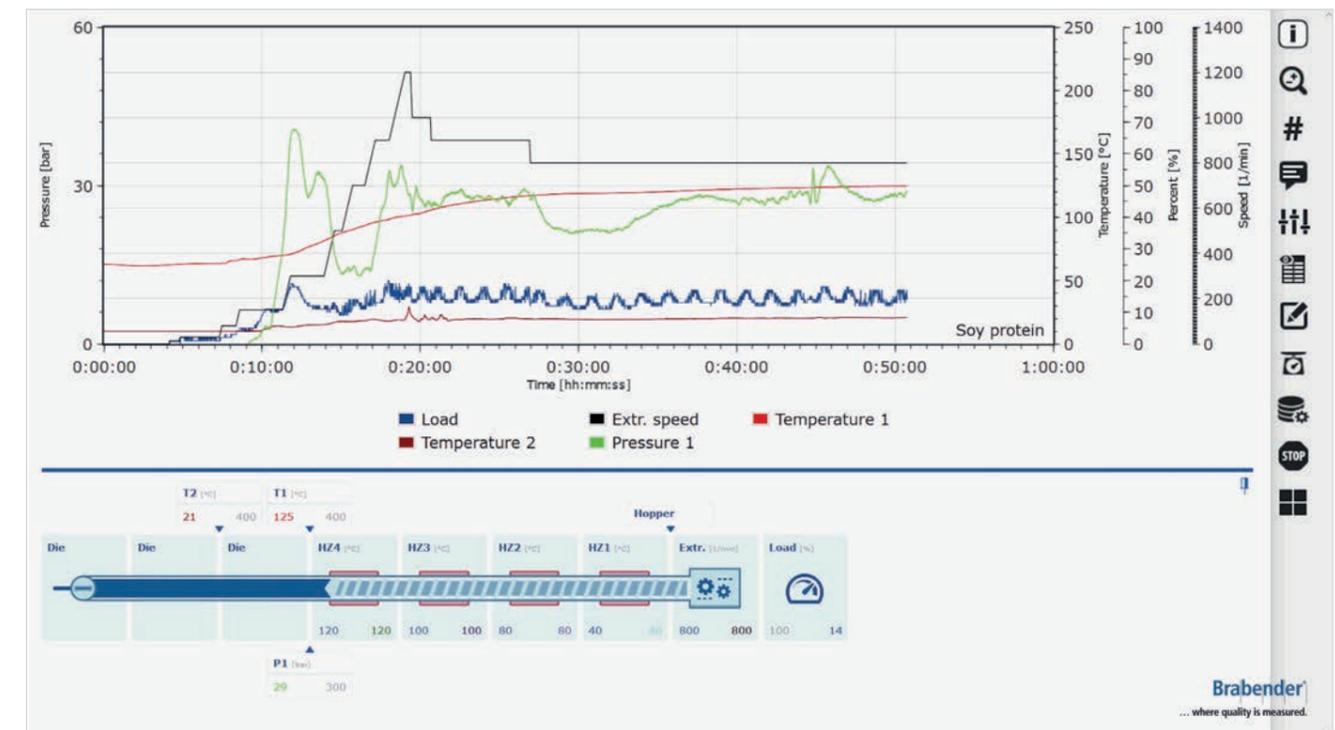
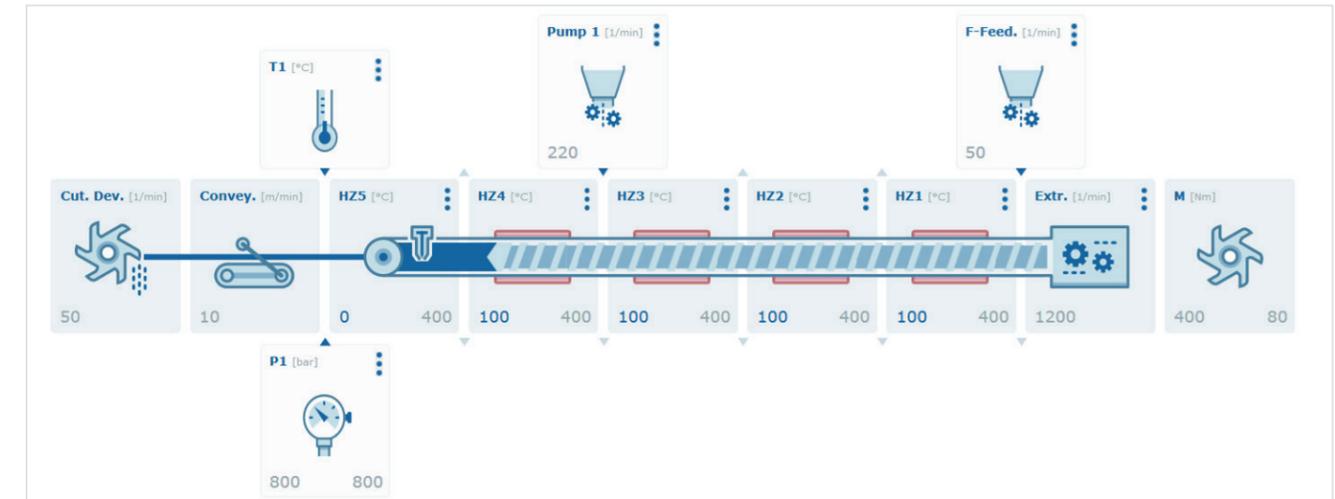
- Intuitive and modern UI
- Responsive design
- Web-based
- Touch support
- Various data evaluation and visualization functions
- Various export functions
- Web-API for Smart Workflows / Automation / Industry 4.0
- LIMS interface



## Software Interface

The MetaBridge device interface automatically detects the components and peripherals. It highly simplifies the extrusion setup procedure.

- Optimized for touch and drag-and-drop
- All connected components and peripherals are identified automatically
- Configurable View
- Mass flow balance (automatic adjustment of feeders and pumps)
- New evaluation functions e.g. SME (Specific Mechanical Energy)



# TwinLab-F 20/40

Temperature control	fully tempered or partially tempered	
Screw length (L : D)	40	
Drive power	10 kW	5.5 kW
Speed	1200 min <sup>-1</sup>	600 min <sup>-1</sup>
Max. torque	2 x 40 Nm	
Max. working temp.	400 °C	250 °C
Max. output	1 - 20 kg/h *	
Segmented barrel/screw	No/Yes	
Screw rotation/ special features	Co-rotating horizontally split barrel	
Dimensions (L x W x H)	2013 x 606.5 x 1566 mm	
Weight	approx. 480 kg	

\*depending on raw material and application

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