

Brabender[®] TwinLab-F[®] 20/40

Twin Screw Extruder in Hygienic Design
for Food & Feed Applications



Brabender[®]
... where quality is measured.



TwinLab-F 20/40

Process cereals, proteins, fibres and more -
conduct cost-efficient R&D trials at lab scale.

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 formulations or simulate processes under practical conditions, with just a fraction of resources used in comparison to extrusion at production scale.

With a rotational speed of up to 1200 rpm, this twin-screw extruder offers the user greater flexibility when it comes to different applications and screw/die combinations. What's more, the liner is split horizontally and is hinged at both sides, which makes the segmented screws easily accessible.

Technical Data

- Temperature control: partially or fully tempered liner
- Screw length (D : L): diameter 20, length 40
- Drive power: 3 x 400 V; 9,5 kW / 3 x 230 V; 16 kW
- Speed: 600 min⁻¹ – 1.200 min⁻¹
- Max. torque: 2 x 40 Nm
- Max. working temperature: 250 °C – 400 °C
- Max. throughput: 1 - 20 kg/h*
- Segmented screw: yes
- Screw rotation: co-rotating
- Special features: 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





Highlights

Hygienic Design

- Food-grade product-contacting parts
- Easy cleanability

Easy Handling

- Browser-based MetaBridge software, operable via touchscreen
- Openable liner for easy process control and cleaning
- Wheels - movable within the laboratory

Energy efficiency

- Accurate temperature distribution and control
- High-performance heating and cooling
- Easy setup via Plug & Play

Flexibility

- Wide application range
- Application-specific dies, screws and peripherals
- 6 feeding openings for solid or liquid materials
- Easy variation of parameters and material mixtures
- Segmented screws for easy adaptation to changing requirements (e.g. shear input)

Digitalization

- Automatic detection of components and peripherals
- Software optimized for touch and drag & drop
- Excel/PDF export



Cutting Device and other application-specific peripherals available

Applications



Directly-expanded Products:

- Products that expand when exiting the die. Their volume increases suddenly and their shape stabilises within a very short time.
- Temperatures above 100 °C
- Examples: balls, 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.
- The temperatures are below 100 °C and the water content is higher than for directly-expanded products.
- Examples: pellets, tubes, shaped snacks



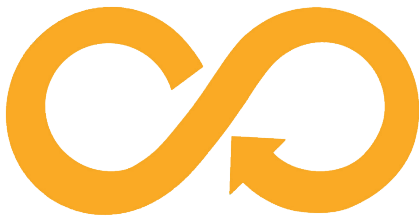
Formed Products:

- The shape of these products is determined by the die when they exit the extruder.
- The temperatures of the extruder stay below 100 °C.
- Examples: noodles/pasta, bars, candy laces, certain feed products



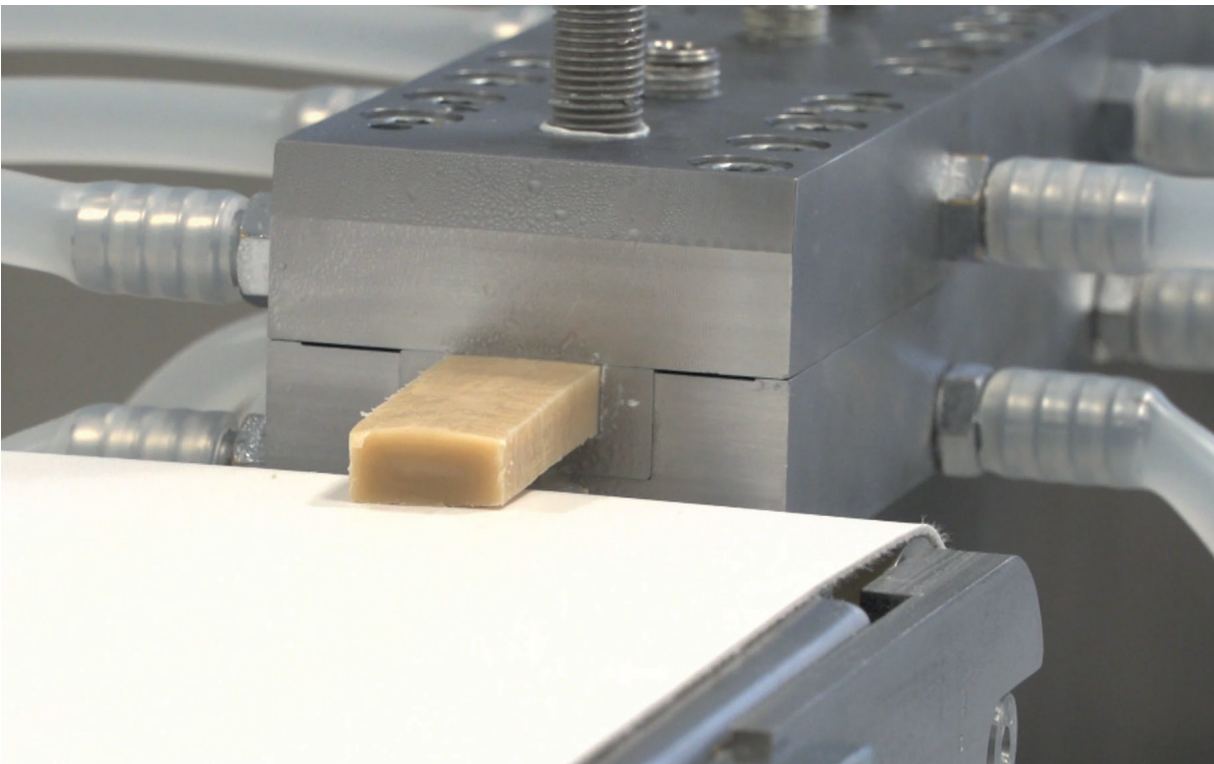
Low / High Moisture Extrusion / Protein Texturization

- Low-moisture extrusion: 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 extrusion: The cooling section allows cooling of the denatured protein in order to build a laminar structure.
- Examples: texturized protein chunks, vegan patties, pasta sauce or nuggets



Sidestreams:

- Further processing of by-products as additional value creation and waste reduction (e.g. fibres, hulls, dusts)

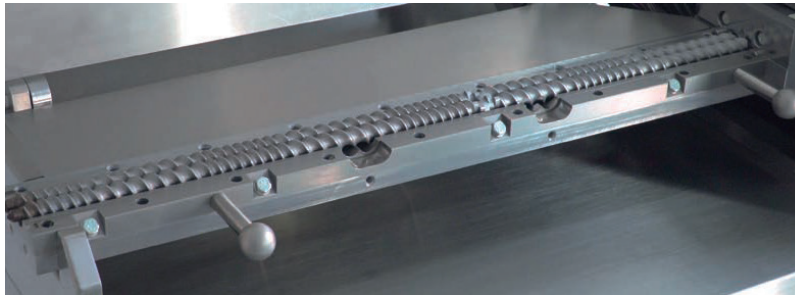


High-moisture extrusion process with Modular Cooling Die

Hygienic Design

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

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

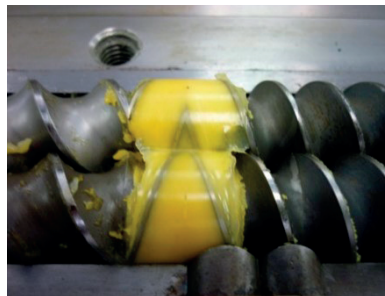


- Food-grade product-contacting parts
- Openable liner, easy to clean
- Hygienic grip elements

Observe and optimize your formulations and process parameters by using the clam shell design with the openable liner.



Mixture/ cold forming



Gelatinization / plastification



Starch destruction

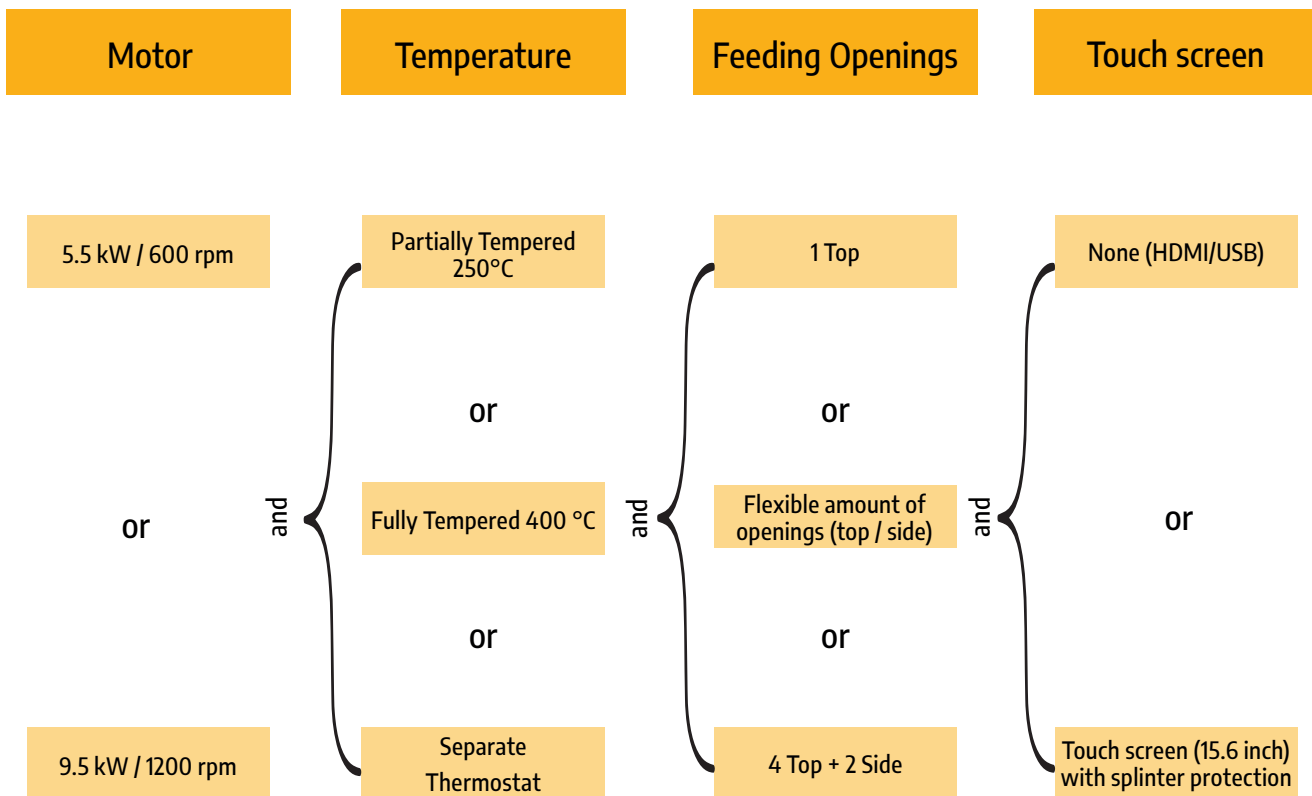
- Wheel well integrated in the housing avoids dirt accumulation
- Big wheels / increased height to simplify cleaning under the device
- Hygienic height adjustable stands



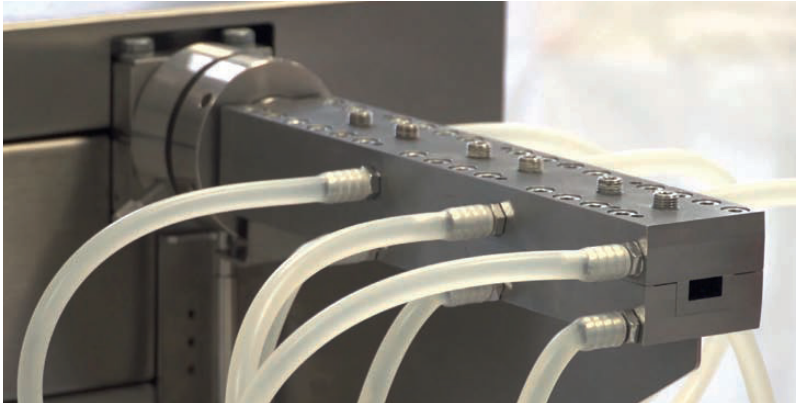
Variants



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

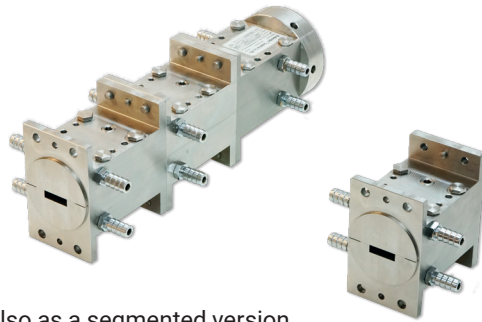


Accessories

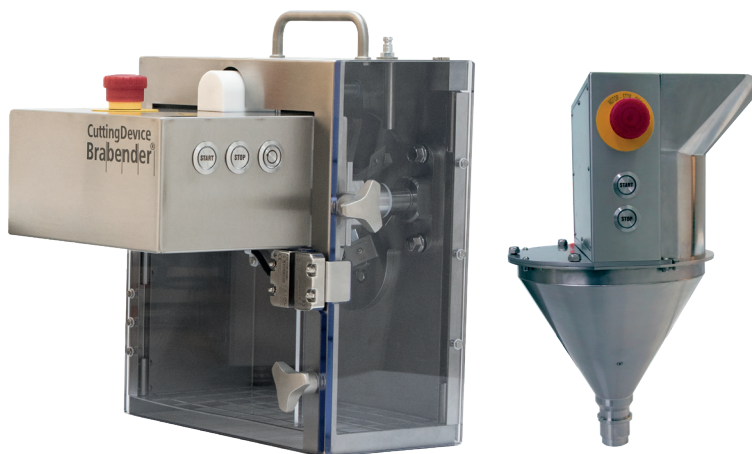


Modular Cooling Die

Processing proteins is playing an increasing role in the food industry. The Modular Cooling Die has been specially designed for low and high moisture extrusion of proteins at laboratory scale. Its flexible design enables different product sizes (width / height) to be modelled. Six openings for material temperature and pressure measurement deliver a full process control capability. The die is also available in a segmented version with variable cooling lengths.



Available also as a segmented version



Cutting device and forced feeder

Peripherals / Downstream

- Volumetric and gravimetric feeders
- Forced feeder
- Cutting device
- Conveyor belt
- Various thermostats (on request)
- Pressure transducers
- Melt/stock thermocouples



Conveyor elements



Inverse elements



Kneading blocks



Rupture elements

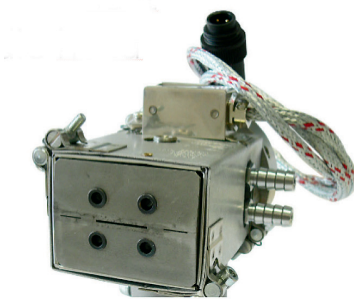
Screw Elements

Screw configuration is an integral part of the design of an extrusion process.

It influences the processing environment and therefore the product characteristics. A wide range of configurable screw elements are available for twin screw extruders, e.g.:

- Conveyor elements
- Kneading blocks
- Inverse elements
- Rupture elements

The configuration of a screw can be easily done via the MetaBridge software.



Ribbon die head



Noodle die inserts



Round die inserts



Tubing die insert

Dies

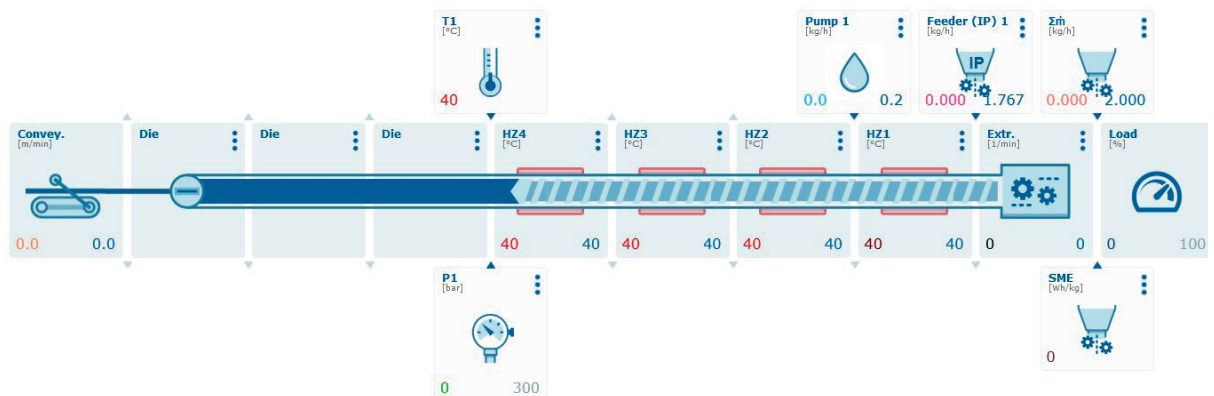
Dies help you to give your products the shapes you require. Brabender provides dies for all standard applications in the food and feed industry. All dies are available in a range of different sizes.

- For ribbon-like products: ribbon die head
- For pasta production: noodle die head
- For macaroni and similarly shaped products: tubing die head
- For round-strand products: round strand die head
- Dies and die inserts in different diameters and sizes
- Manufacture of dies according to customer requirements

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, e.g. dosing and cutting units
- Configurable view
- Total mass flow balance (automatic adjustment of feeders and pumps)
- New evaluation functions, e.g. SME (Specific Mechanical Energy) input



Technologies



MetaBridge

Brabender's cross-device software solution provides a consistent user experience between all Brabender units. The MetaBridge comes with various data evaluation functionality, pre-implemented standards and 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.



MetaBridge Connect

The MetaBridge Connect technology provides various data exchange interfaces and flexible connectivity features. Data sharing between all Brabender MetaBridge devices in one network allows for smart workflows and process efficiency. Moreover, the integrated web-based software interface (WebAPI) connects and automatically exchanges data with native-connected database systems and / or 3rd party laboratory information and management systems (LIMS) or ERP solutions.



MetaBridge Correlation

MetaBridge Correlation is an optional software package for performing correlation studies across multiple data sets. It allows for comparison of multiple measurements and parameters in a tabular and in an interactive graphical view. Particularly for quality control purposes, the compliance with a pre-defined tolerance is automatically evaluated and highlighted.



MetaBridge Database

The MetaBridge Database represents a local data center in the customer network and a basic laboratory information and management system (LIMS) for Brabender devices. Connected Brabender devices transfer measurement results automatically into the central MetaBridge database. Besides of the backup functionality, statistical analysis and crossdevice correlations between multiple data sets can be performed.

Also available: Up2Date - User Management - Language packs - Lab Folder Support, Ext-MB

Brabender® GmbH & Co. KG

Headquarter Germany
sales@brabender.com
www.brabender.com

C.W. Brabender® Instruments, Inc.

USA
sales@cwbrabender.com
www.cwbrabender.com

000 Brabender®

Russia
000.brabender@brabender.ru
www.brabender.ru



Headquarter Germany



Contact us 24/7: +49 203 7788-131

Brabender agencies worldwide.
© 2022 Brabender® GmbH & Co. KG

All trademarks are registered. Subject to design
and technical modifications without notice.

Brabender®
... where quality is measured.