ENTEX®

The Planetary Roller Extruder

Plastics Biopolymers Recycling Food Chemistry

The Planetary Roller Extruder L-WE 30

for Laboratory and Pilot Plant

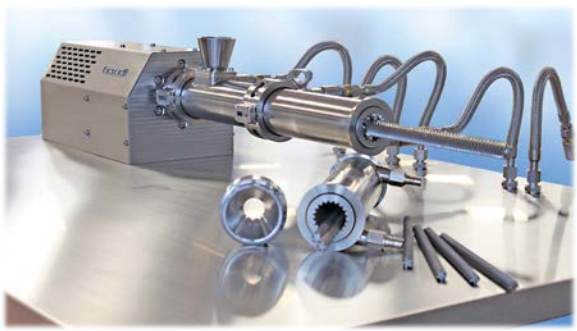
…extrusion without limits

In the beginning was the idea!

The youngest and smallest ENTEX extrusion system is the laboratory roller extruder L-WE 30. This size ranges in throughput capacity from smallest quantities up to approx. 10 kg/h and is intended to provide the development departments of the world new possibilities in addition to the already known laboratory equipment.
This is why we also call the L-WE 30 the Erlenmeyer flask of the 21st century.

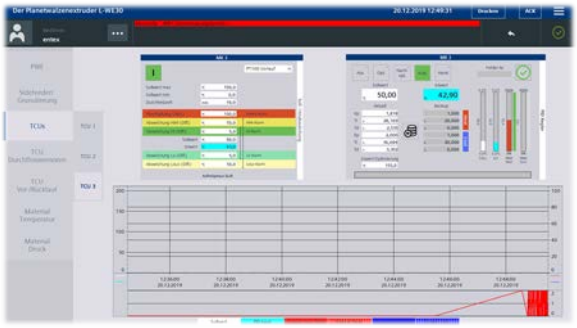
Many customers and users have already realized the advantages of the planetary roller extruder (PRE) compared to conventional extruder types and therefore know how to use the future-oriented unique selling points of the PRE for their purposes. In the past many new developments and processes were subject to secrecy.
With this new extrusion system, all target groups can now benefit from the advantages and the wide variety of possible applications and develop their specific new processes and products in their own facilities.

During the development of our L-WE 30, the focus was particularly on the small dimensions of the plant and the easy handling of the process components, so that every user is able to assemble or disassemble the process components without any lifting equipment, with just a few simple steps and in a very short time.



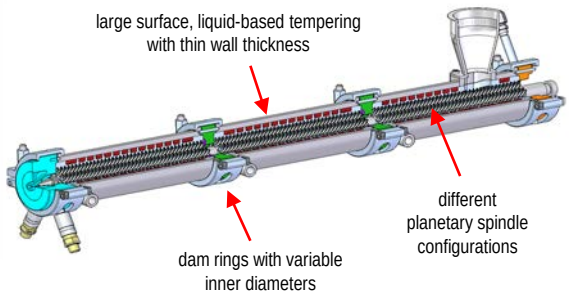
Effective cooling and heating only works with good material movement.
The well-known advantages of the planetary roller extruder, such as exact temperature control, optimal exchange surfaces with up to 12 roll-out gaps on the L-WE 30 (10 kW, 1,000 rpm), create the possibility of an almost perfect scale-up of processes to other machine sizes, e.g. the TP-WE 400 (2,300 kW, 103 rpm) with 28 roll-out gaps.

The specific process data as well as the entire energy consumption are recorded in real-time by the system software.



During the process, every step and every variation of each process parameter is recorded so that the data can also be transferred to other machine sizes (70, 150, 200, 250, 280 and 400) of the PRE modular system.

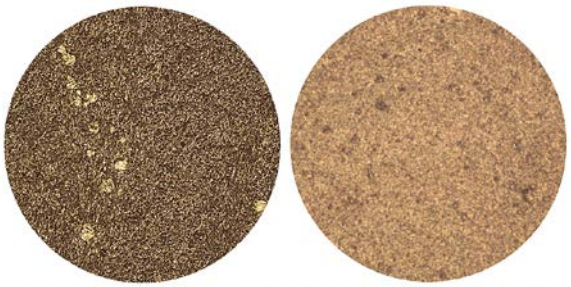
This small extruder offers unimagined process development opportunities. Groundbreaking new processes were already developed with the prototype. The basic version of the L-WE 30 is equipped with three roller parts, but can also be equipped with up to eight roller parts.



The different roller parts can be tempered individually — in the food and pharmaceutical version from -40 °C to +160 °C and in the plastic, elastomer and chemical version from -40 °C to +330 °C, in exceptional cases even up to +430 °C. For this reason the planetary roller extruder has the highest performance capacity of all extrusion systems.
It is well known, what the Erlenmeyer flask has meant for chemical development processes in the past. But the Erlenmeyer flask of the 21st century, the L-WE 30, can additionally provide the entire spectrum of process engineering including energy balance.

Application

With the L-WE 30, the unique process features of the planetary roller extruder — absolute temperature control, mixing according to the active ingredient, low-shear thin-layer rolling and large surface exchange — can now be applied especially in material-critical areas.



Conventional Compounder
Rubber-Bitumen Compound
Based on
Rubber **Powder**

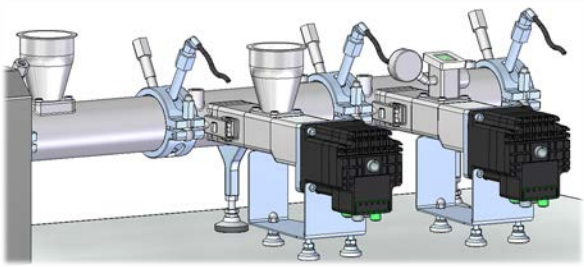
Planetary Roller Extruder
Rubber-Bitumen Compound
Based on
Rubber **Crumb**

Application Examples

The L-WE 30 can be used for a large number of different processes in various industrial fields of application:

- **Preparation and compounding processes**
- **Chemical reaction processes**
- **Recycling processes**
- **Food processes**
- **Mixing and dispersing processes**
- **Degassing processes**
- **Drying processes**
- **Cooling processes**

Due to the multiple mechanical and thermal configuration options, the possible applications are extremely variable.



Flexibility

The enormous tempering spectrum and the wide range of equipment allow a great variety of configuration options and make this system extremely flexible for many different applications and processes.

Handling

The easy handling of the individual process part components ensures a quick mechanical adjustment of processes with a few simple steps, low tooling requirements and without the need for any other aids.

Advantages

With its integrated secondary mixing circuits, the L-WE 30 offers many advantages for laboratory operation:

- **Low space requirement due to compact design**
- **Simple and quick assembly/disassembly of the process part**
- **Ergonomic adaptability through height adjustment at the touch of a button**
- **Many different process part configurations possible in a very short time**
- **Different feeding options for solid and liquid materials of different viscosities**
- **Different degassing possibilities**
- **Good self-cleaning**
- **Enormous tempering range with very short heating and cooling times, enabling many trials in a very short time**
- **Precise temperature control in individual tempering zones**
- **Process data recording and evaluation software**
- **Possibility of scale-up to other machine sizes by direct data utilization**
- **Possibility of using existing primary energy, e.g. tempering systems, cooling water**
- **High energy efficiency and economy**

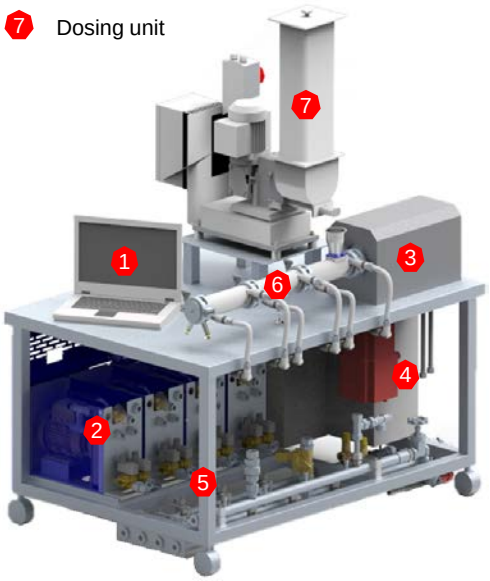
Technical Data L-WE 30

	Standard version	High temperature version
Throughput capacity	approx. 0.5 – 10 kg/h *	approx. 0.5 – 10 kg/h *
Drive power	10 kW	10 kW
Extruder speed	1000 rpm	1000 rpm
Drive torque	200 Nm	200 Nm
Max. process pressure	50 bar	50 bar
Max. process temp.	160 °C	330 °C
Current	400 V / 63 A	400 V / 63 A
Circulation medium	Water	Heat transfer oil
Integrated secondary mixing circuits	Yes	No
Weight	approx. 400 kg **	approx. 280 kg **
Dimensions L x B x H	1300 x 900 x 950 mm	1300 x 900 x 950 mm

** depending on the recipe, the conveyed material and the process parameters*

*** depending on equipment*

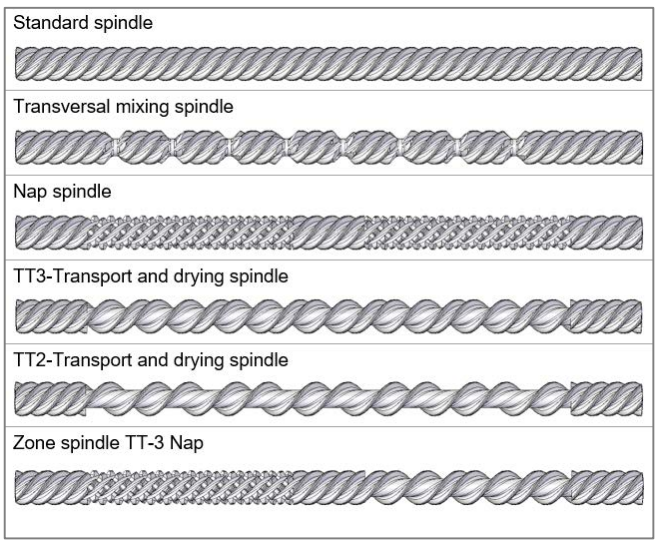
1. Control
2. Secondary mixing circuits
3. Gear motor
4. Control cabinet
5. Height-adjustable base frame
6. Process part
7. Dosing unit



Accessories and Equipment

Of course, in addition to the standard version, other configurations and additional equipment are also available, for example:

- **Additional planetary feed cylinder with cylinder support (turned by 90°, the planetary feed cylinder can also be used as a roller cylinder with side feeder port)**
- **Side feeder for solids side feed or vacuum extraction**
- **Vacuum dome for side feeder (also fits on the opening of the planetary feed cylinder)**
- **Different planetary spindle types and lengths**
- **Dispersion ring inserts with different inner diameters (17, 19, 21, 23 and 25 mm)**
- **Toothed intermediate rings**
- **Central spindles in different lengths with or without dispersing undercuts**
- **Injection valves for liquid injection**
- **Different injection pumps**
- **Various discharge dies or front rings with different inner diameters**
- **Additional melt pressure sensors and melt temperature sensors**
- **Patented radial granulator**
- **Additional dosing units (gravimetric, volumetric)**
- **Additional height-adjustable table**
- **etc.**



All equipment attributes of the already known laboratory plant sizes can also be applied to the L-WE 30.

Service

Our team of experts supports you in the planning and execution of laboratory trials, pilot productions and in the conception of plant layouts for the development of new processes.

Generous technical centers with different extruders and comprehensive equipment for state-of-the-art applications are available in Bochum and Shanghai (China) for a wide range of trials and process development.

Complete plant concepts can be configured and built from our extensive equipment portfolio, to some extent on a smaller scale, tailored specifically to your trial and application needs.

ENTEX Technical center 1 in Bochum

Here our customers can realize their ideas together with experienced ENTEX process engineers and develop new products and innovative manufacturing processes.

ENTEX Technical center 2 and laboratory in Bochum

Benefit from our knowledge and experience and use our innovation lead today for your products of tomorrow.

For trials in one of our technical centers and for any technical questions, please contact our sales or service department.

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...extrusion without limits