

GEA CONTEX CONTINUOUS EXTRACTION



Continuous extraction solutions

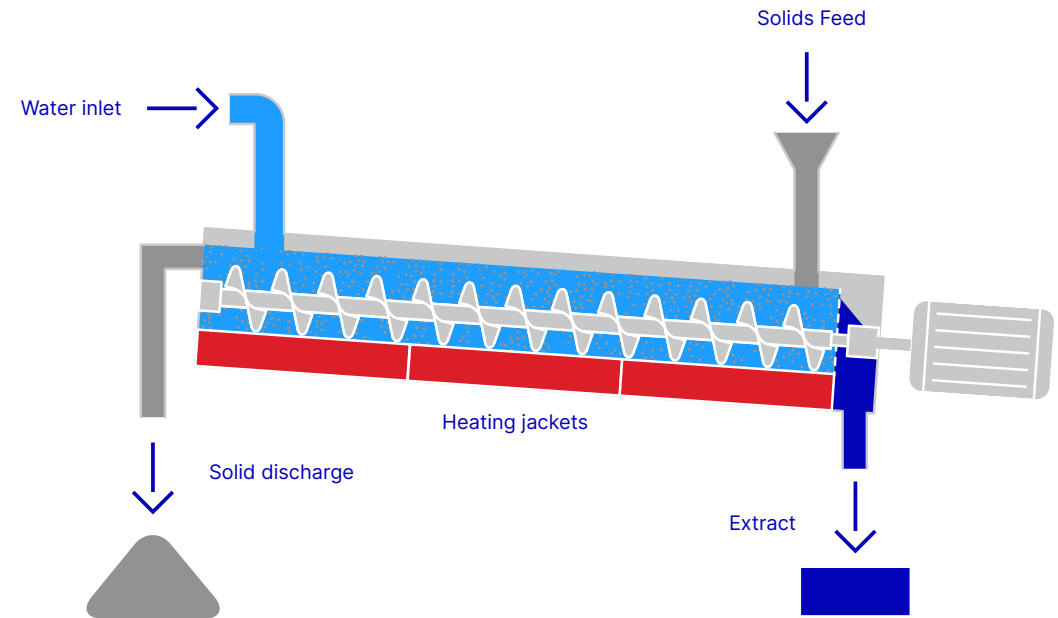
The continuous extraction process has been a focus of dedicated research and development for many years at GEA, resulting in the successful application of the technology to a wide range of products in the food and beverage industries.

We offer six standard plant sizes with volumes of 27, 180, 300, 830, 1400 and 2750 liters to process ingredients as diverse as barley and rye, tea, coffee, health foods and natural medicines, to name a few.

Incorporating four extraction steps in one, this versatile yet robust equipment offers short extraction times and higher quality extracts in a continuous process. Reducing the number of concentration stages means that fewer decanters are needed, resulting in a more cost-effective and efficient process.

CONTEX Standard Sizes	27	180	300	830	1400	2750
Processing capacity, dry feed*						
Roast coffee (kg/h)	6	40	65	145	230	450
Black tea (kg/h)	10	48	85	120	184	280

*course particle size, 2-3mm



Typical product applications

- Barley
- Camomile
- Chicory/coffee substitutes
- Coffee
- Frangula
- Ginger
- Ginseng
- Health foods
- Hibiscus
- Natural medicines/herbs
- Rye
- Tea

The GEA continuous extraction unit

Our state-of-the-art counter current extraction unit features an inclined trough surrounded by heat transfer jackets to control the process temperature. Solid raw materials enter the lower end of the trough and are transported upwards by two helicoidal conveyors in a gentle spiral movement. The optimized plug-flow conditions ensure that each particle is subjected to the exact same extraction conditions.

The extraction liquid (water) enters the system at the upper end of the trough and percolates downward through the rising solids. The slope of the trough can be adjusted to accommodate the gravity assisted liquid flow rate.

The process extract drains from the base of the trough, whereas spent solids are recovered from the top. Integrated self-cleaning filters eliminate product loss and maintain high levels of purity.

Key benefits include

- low operating costs
- easy scale-up
- high solids content
- repeatable and reliable extraction
- high yields
- uniform and controllable residence times for efficient extraction



High quality extracts

Solid phase residence time

The residence time of particles in the solid phase is controlled by the speed of the heliocoidal conveyors. Typical time distributions are shown in Figure 1: the actual plug flow curve (green) demonstrates how efficiently the solids residence times can be achieved.

Liquid phase plug flow

The plug flow characteristics of the liquid phase, optimized for counter current processing, deliver an excellent concentration profile (Figure 2). As the extract content is low when the solid phase exits the unit and high at the point of entry, the volume of extraction liquid is minimized while, at the same time, high yields are maintained.

As the liquid phase residence time is an important extract quality factor, near-ideal liquid flow extraction conditions occur within the unit. The slope of the extractor can be adjusted to optimize the flow rate, according to the application.

Process temperature control

The heating jackets, supplied with heating/cooling media as required, maintain a precise temperature profile throughout the extraction process.

Pilot plant facilities

A 27 liter pilot plant is available for trials and validation tests, enabling you to optimize your process and application prior to scale-up to production capacity.

Figure 1
Residence time of solids phase

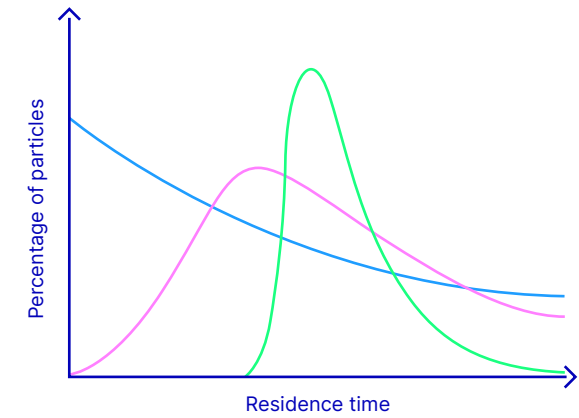
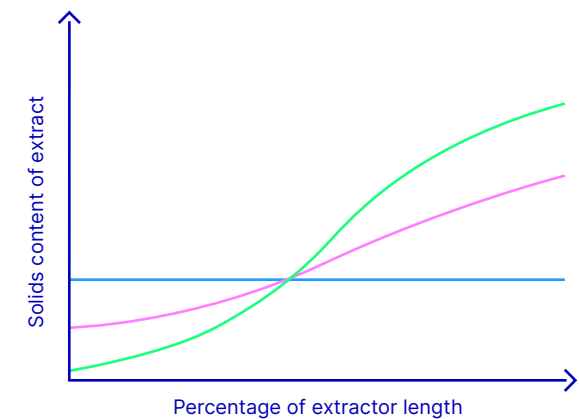


Figure 2
Plug flow of the liquid phase



— Actual plug flow
— Back mix flow
— Non-ideal flow

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