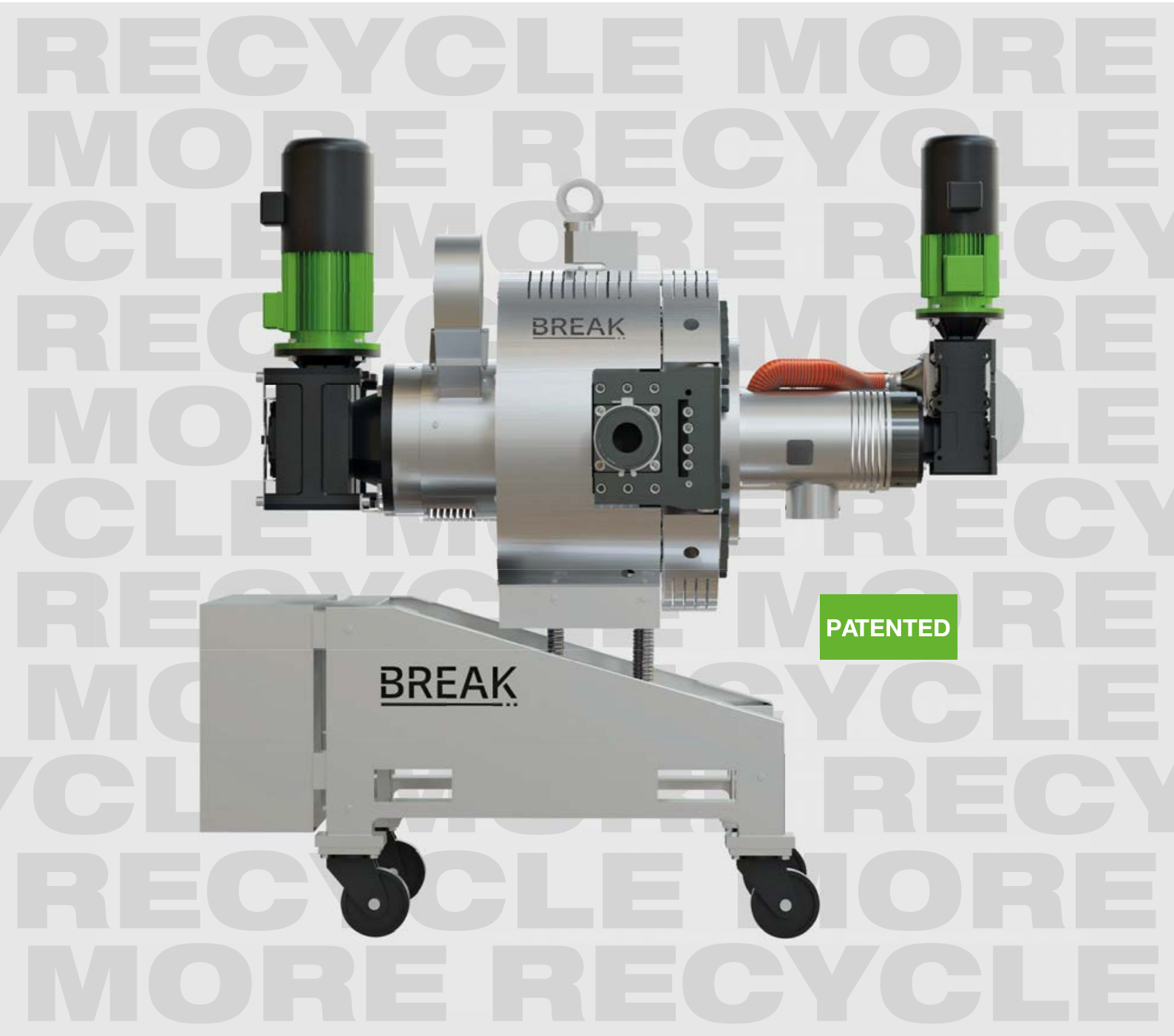
BREAK MACHINERY Recycling beyond together

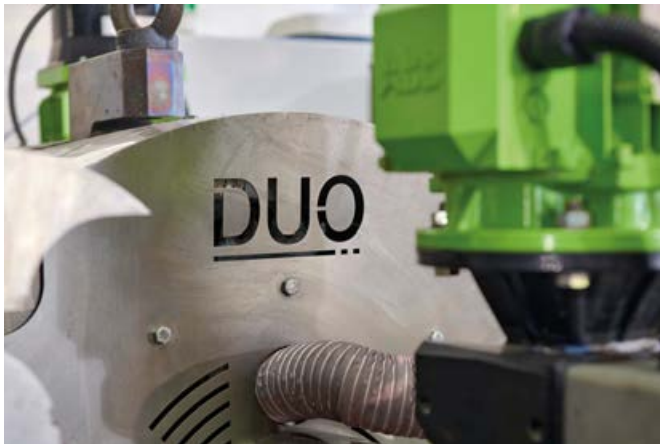
DUO

Automatic self-cleaning filtering system with constant pressure output



English

BreakMachinery.com/DUO



The filter that adapts to every need

DUO can be **installed on both regeneration and extrusion lines**, and responds perfectly to the constant pressure requirements typical of certain production lines, such as in the production of thin films and sheets.

It is suitable for filtering both poorly contaminated material, such as post-industrial, and highly contaminated material, such as post-consumer.

Finally, thanks to its technical characteristics, it can achieve very low filtrations (down to 60 microns), making it possible to obtain a final product suitable for the different market demands.

DUO

Mod. DUO 1750 DS

Mod. DUO 5000 DS

Constant pressure self-cleaning filtering system

It is a double screen system, operating at constant pressure for high process stability, which allows **maximum productivity** while ensuring high product quality.

The geometry of the **scraper disc** and the innovative **screw discharge system allow contamination to be removed in a rapid and controlled manner, and reduce the quantity of waste**.

DUO	Filtering surface area [cm²]	Filter diameter [mm]	Heating zones	Max pressure [bar]	Max flow rate [kg/h][1]
1400 DS	1.418	2 x 340	7	350	2.000
1750 DS	1.756	2 x 370	7	350	3.000
1750 DS Auto	1.756	2 x 370	7	350	3.000
2800 DS	2.859	2 x 470	7	350	5.000
3500 DS	3.515	2 x 515	7	350	6.000
5000 DS	5.029	2 x 610	7	350	8.500
7000 DS	7.025	2 x 710	7	350	12.000
10000 DS Twin	10.058	4 x 610	14	350	17.000
14000 DS Twin	14.050	4 x 710	14	350	24.000

(1) The flow rate depends on various factors: melt viscosity, filtration finess, type and percentage of contaminant, production line.
Break Machinery reserves the right to modify this information without prior notice.

Advantages

Mod. DUO 1750 DS Auto

Savings

The efficiency of the cleaning system in continuous mode extends the life of the laser screen, resulting in less consumable purchases.

Productivity

The constant-pressure continuous filtration system maximises line productivity by keeping the melt passage area free of contamination at all times.

Labour

The innovative design reduces cleaning and replacement time for filters and blades.

The presence of the operator is significantly reduced.

Routine and extraordinary maintenance operations are also simple, fast and can be carried out directly at the customer's production site.

Minimum waste

The screw rotates independently of the scraper disc. In this way, waste can be minimised depending on contamination, and disposal costs are reduced.

This configuration makes it possible to process even highly contaminated materials.

Advantages

Continuous filtration, constant pressure

The operating principle of **DUO** guarantees the possibility of working in continuous mode and at constant pressure.

Dual screen

DUO uses two filters. This makes it possible to reduce the size of the filtration chamber and to have large screen surfaces in order to increase the production volume.

Cleaning efficiency

The special geometry of the independent, 6-blade rotating scraper disc enables excellent cleaning even at low rotational speeds. Its design prevents filtered contaminants from re-entering the melt.

Percentage of impurities

DUO can be used to filter materials with high percentages of impurities (up to 15% by weight, depending on the type of pollutant).

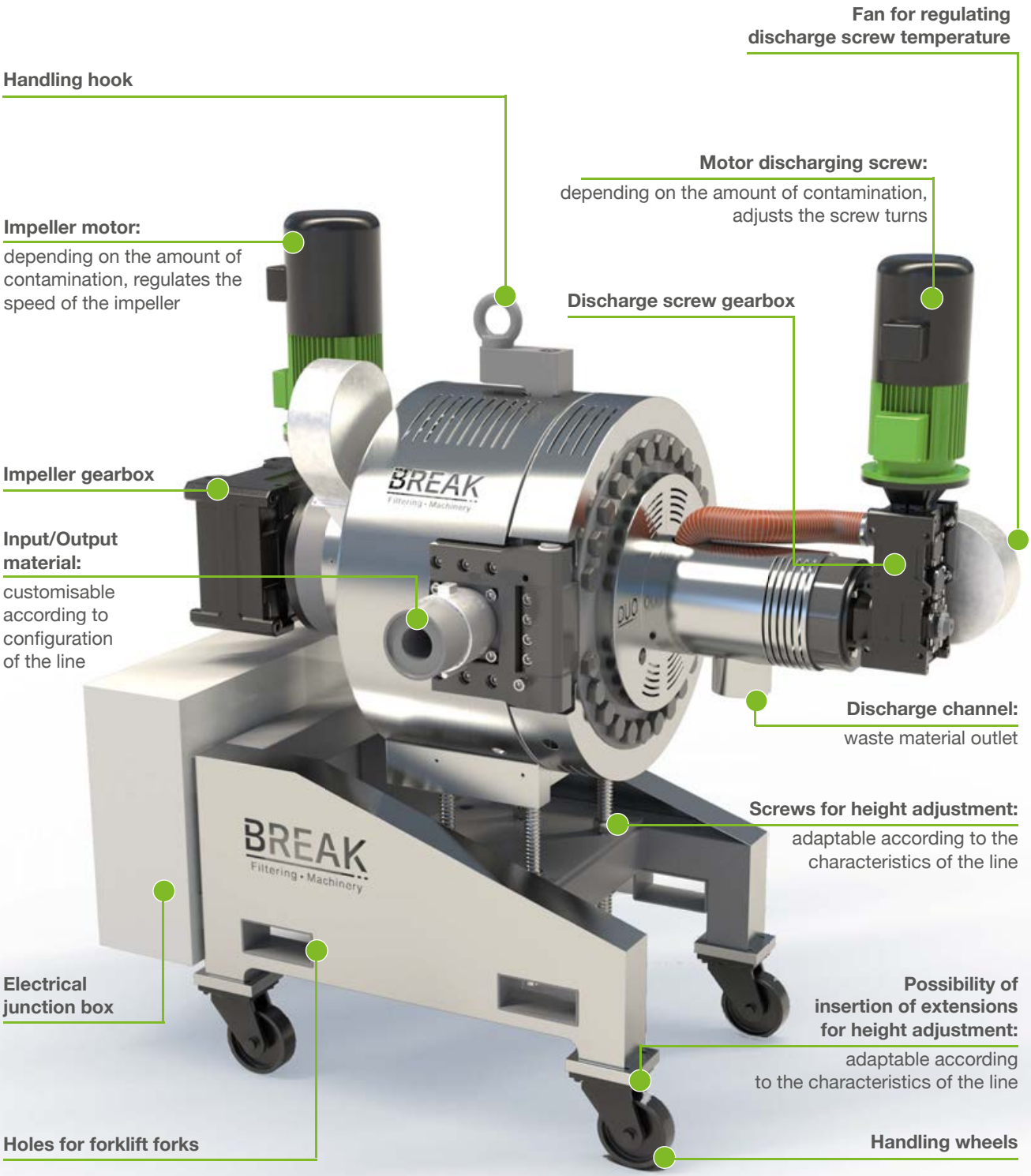
Single independent discharge screw

Contamination collected by both screen surfaces is discharged by means of a single independent screw, which is capable of conveying the contamination to the outside.

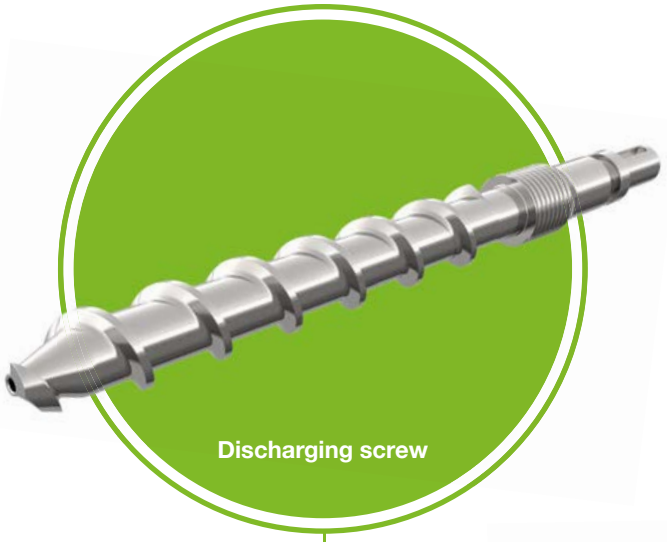
Customisation

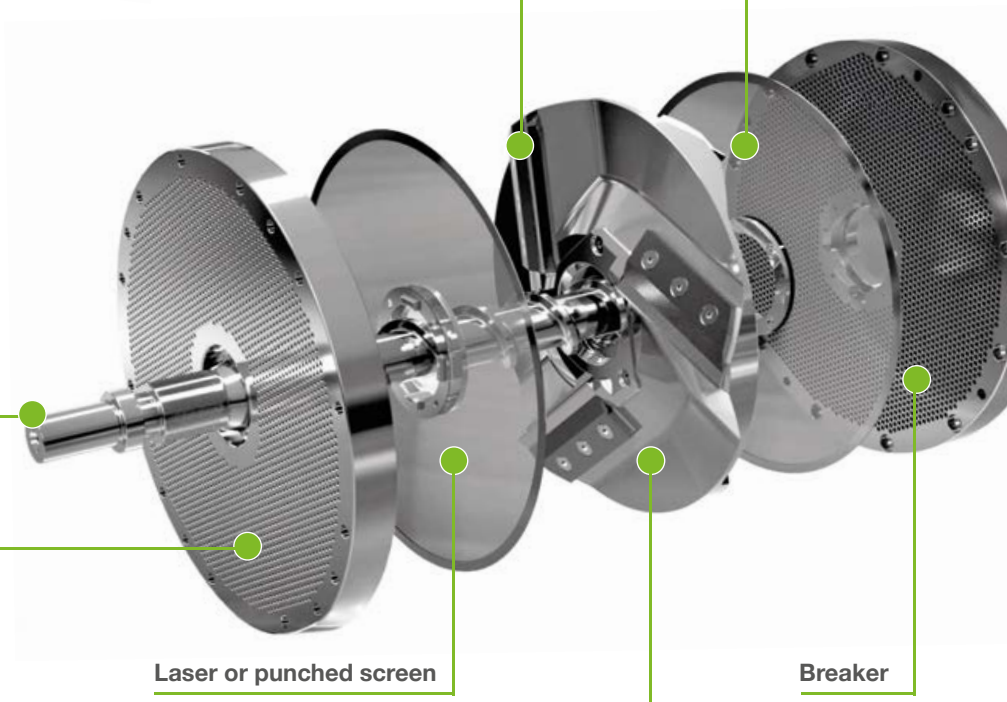
DUO is customisable and adaptable to the customer's needs: the configuration includes an adjustable height, a lid that can be opened to the right or left, positioning of the switchboard defined according to the available space and connection to any extrusion line, thanks to custom-made flanges.

DUO: details


Fan for regulating discharge screw temperature
Handling hook
Motor discharging screw:
depending on the amount of contamination, adjusts the screw turns
Impeller motor:
depending on the amount of contamination, regulates the speed of the impeller
Discharge screw gearbox
Impeller gearbox
Input/Output material:
customisable according to configuration of the line
Discharge channel:
waste material outlet
Screws for height adjustment:
adaptable according to the characteristics of the line
Electrical junction box
Possibility of insertion of extensions for height adjustment:
adaptable according to the characteristics of the line
Holes for forklift forks
Handling wheels
BREAK
Filtering • Machinery
DUO

DUO: components





Electrical cabinet

and control panel

The control panel is equipped with an HMI that allows the operator to manage and dialogue with the machine in a simple and intuitive way.

The graphic interface is equipped with an alarm system to understand what is really happening on the machine; there are also graphs to allow an immediate visual reading of the phenomena that the various sensors detect.

The HMI makes it possible, via pages, to set the temperatures, operating mode (pressure/torque) and cleaning parameters for optimal operation of **DUO**.

Function menù

Temperature graph

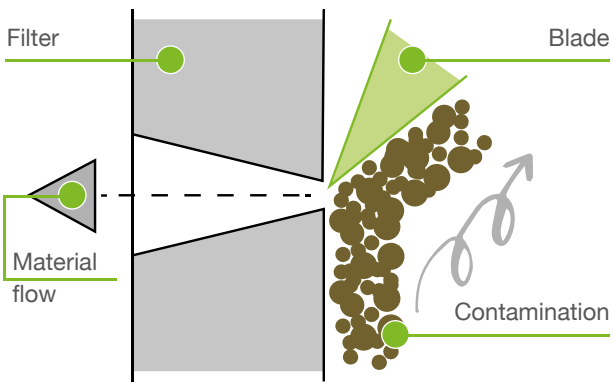
The Break system allows you to store a recipe book, which can be parameterised by the customer, so that he can quickly recall the data entered.

The PLC allows, via the OPC-UA protocol, to exchange input and output data with other PLCs, SCADA or management systems.The switchboard is equipped with a tele-management router, which allows the plant to be monitored even from remote; in this way Break can guarantee continuous and immediate assistance to the customer.

Screens

The laser screen is one of the key elements in the filtration process, which is why Break Machinery handles its production directly (Made in Italy).
From 60 to 2000 microns with laser and punched filters.

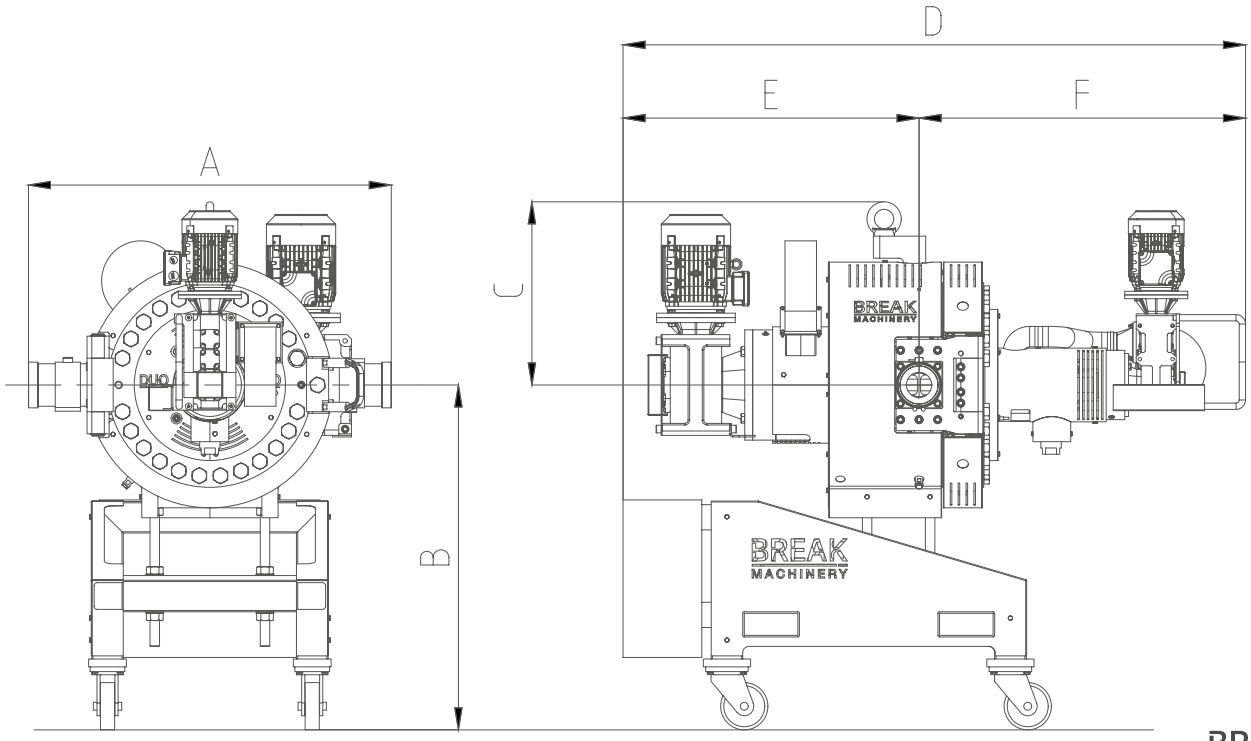
Laser screen DUO



Technical data

Mod. DUO 7000 DS

DUO	A (mm)	B (minimum) (mm)	C (mm)	D (mm)	E (mm)	F (mm)
1400 DS	1.122	950	567	1.977	940	1.037
1750 DS	1.152	950	582	1.977	940	1.037
1750 DS Auto	1.152	950	582	1.900	863	1.037
2800 DS	1.277	1.000	564	2.097	990	1.107
3500 DS	1.322	1.000	587	2.097	990	1.107
5000 DS	1.442	1.050	647	2.161	1.010	1.151
7000 DS	1.572	1.100	712	2.166	1.016	1.151



Fields of application

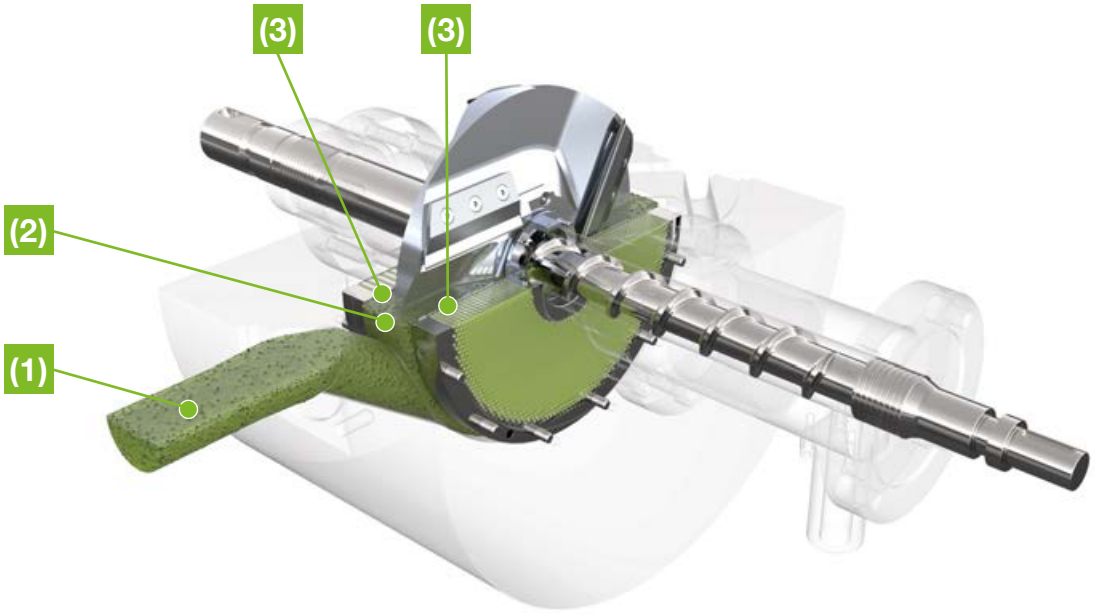
DUO is compatible with all extrusion lines on the market and can be installed not only in recycling lines but also in film or sheet extrusion processes.

DUO is designed to filter many types of plastics such as PP, PE, HDPE, LDPE PA, PS, PET, etc. and is capable of removing the most diverse types of contamination i.e. paper, aluminium, copper, wood, powders rubber, silicone, etc.

The installation of **DUO** can result in:

- production increases of up to 20%;
- waste reduction of up to 50%;
- reduction in machine downtime of up to 75%.

Scraping operation

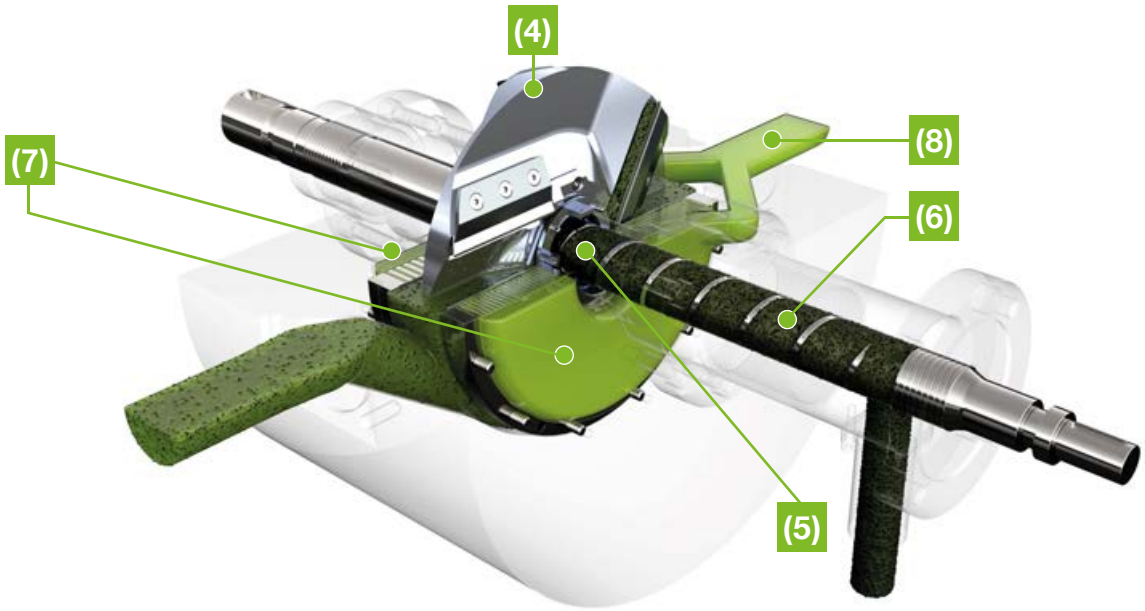


The molten plastic material **(1)** is conveyed into the filtration chamber **(2)** and goes through two screens **(3)** facing each other.

Between the two screens there is a scraper disc **(4)**, equipped with six interchangeable blades, which rotates to remove the contamination from the screens by driving it into the disc itself **(5)**.

The core of the scraper receives the contamination, which is then transferred to the independent discharge screw **(6)** that ejects it.

The plastic material, filtered **(7)** by the two screens, then rejoins the output channel **(8)** to move on to the next process.



DUO 10000 DS TWIN and 14000 DS TWIN:

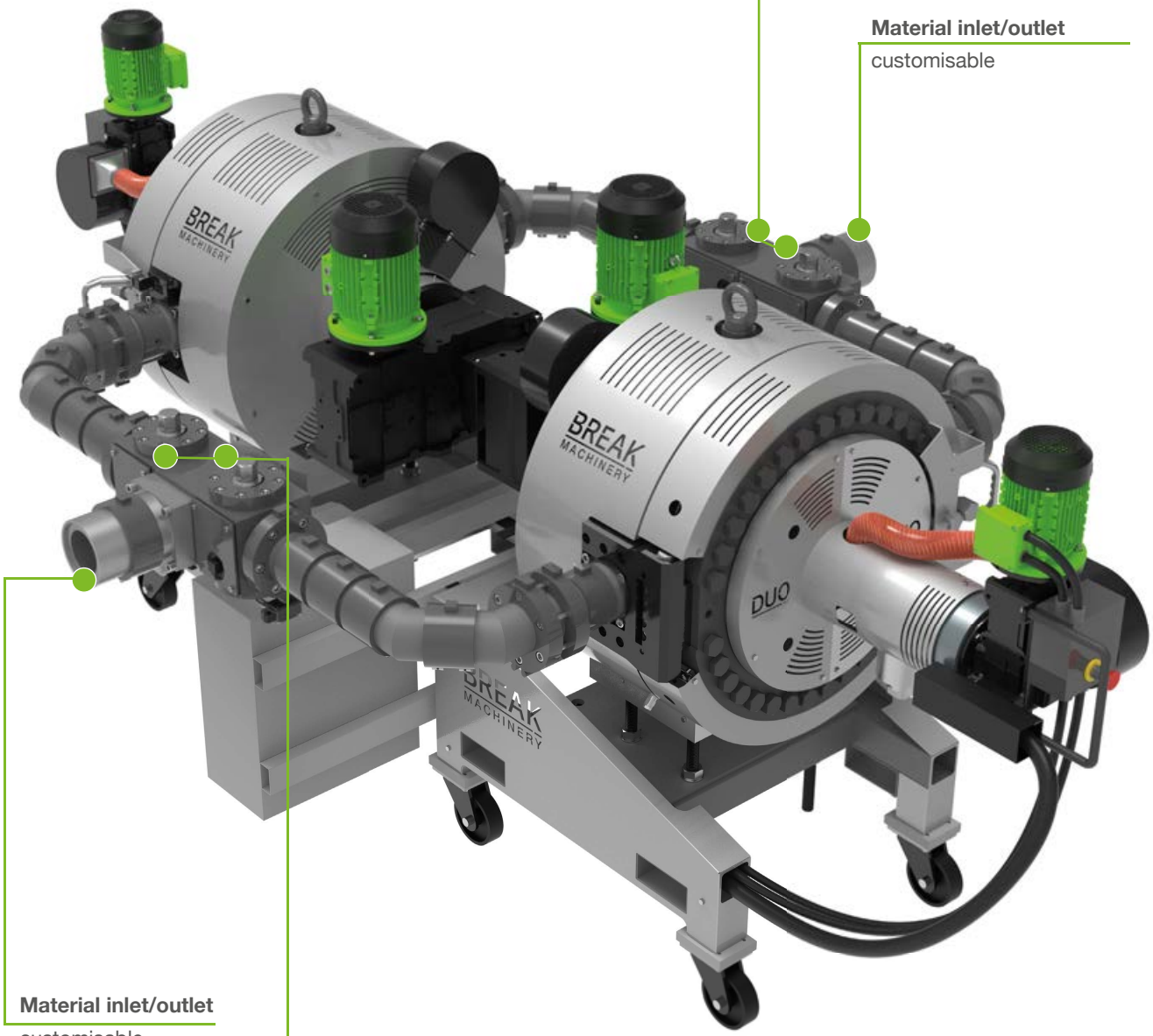
continuous production

Opening/closing valve

to allow/exclude the flow of material in the branches of the line

Material inlet/outlet

customisable

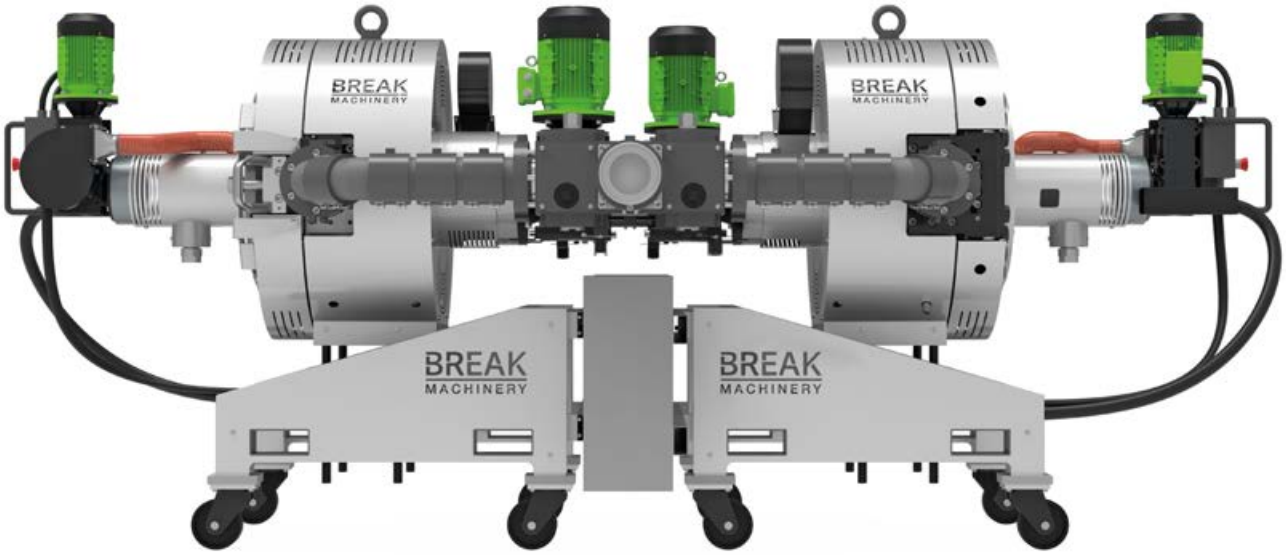


Material inlet/outlet

customisable

Opening/closing valve

to allow/exclude the flow of material in the branches of the line



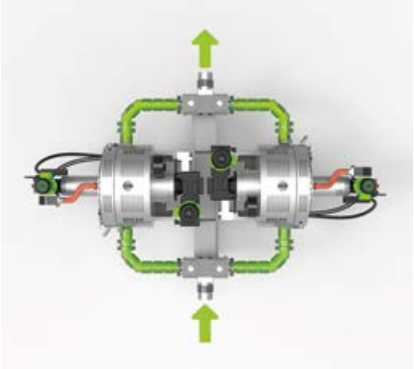
DUO 10000 DS Twin and 14000 DS Twin,

screen change without downtime

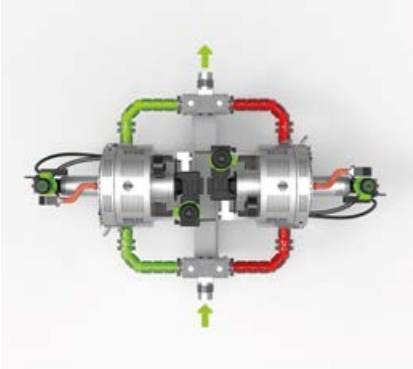
DUO 10000 DS Twin and 14000 DS Twin, consists of two **DUO**, screen changers, of the same size, running in parallel. When it becomes necessary to change the screen in the first machine, the flow of that branch of the line is stopped, and production remains active only on the other branch, connected to the second screen changer.

In this way, production is not interrupted and the screen can be changed, without having to stop the line. The same process is then carried out for changing the screen in the second machine.

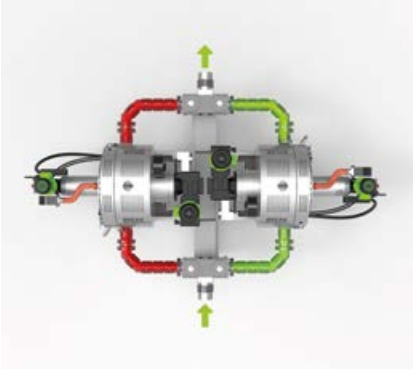
DUO 10000 DS Twin and 14000 DS Twin: operating mode



The flow of material passes through both channels.



When cleaning the right screen changer, the flow of material only passes through the left channel.

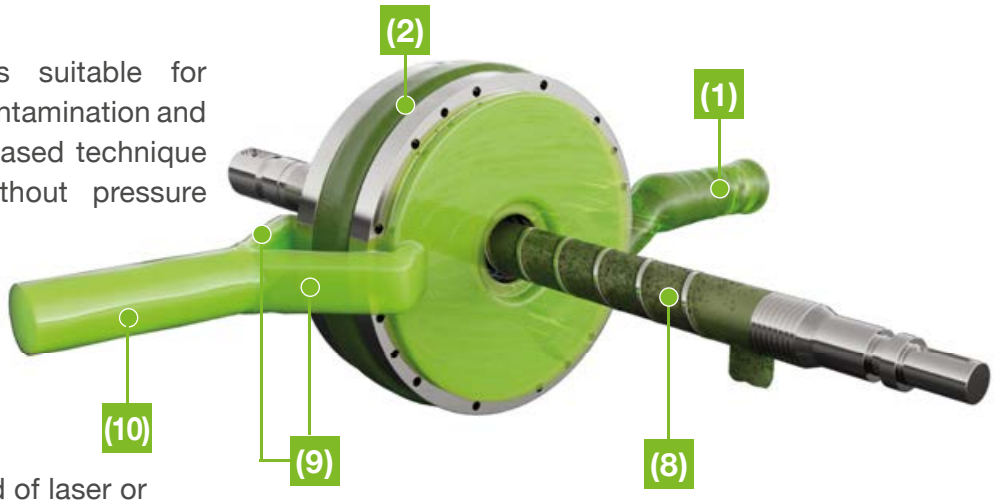


When cleaning the left screen changer, the flow of material only passes through the right channel.

OPTION

ECO-MODE setting

The ECO-MODE setting is suitable for materials with a low level of contamination and uses an innovative vacuum-based technique that removes impurities without pressure fluctuations.



Main Advantages:

- Minimal material waste (as low as 0.1%), for more sustainable production,
- Use of mesh screens instead of laser or punched filters, reducing consumable costs,
- Ability to achieve very fine filtration, even below **60 microns**,
- Constant-pressure process,
- High productivity with a single filtration chamber,
- Each machine can switch from scraping mode to ECO-MODE simply by replacing the internal component kit.

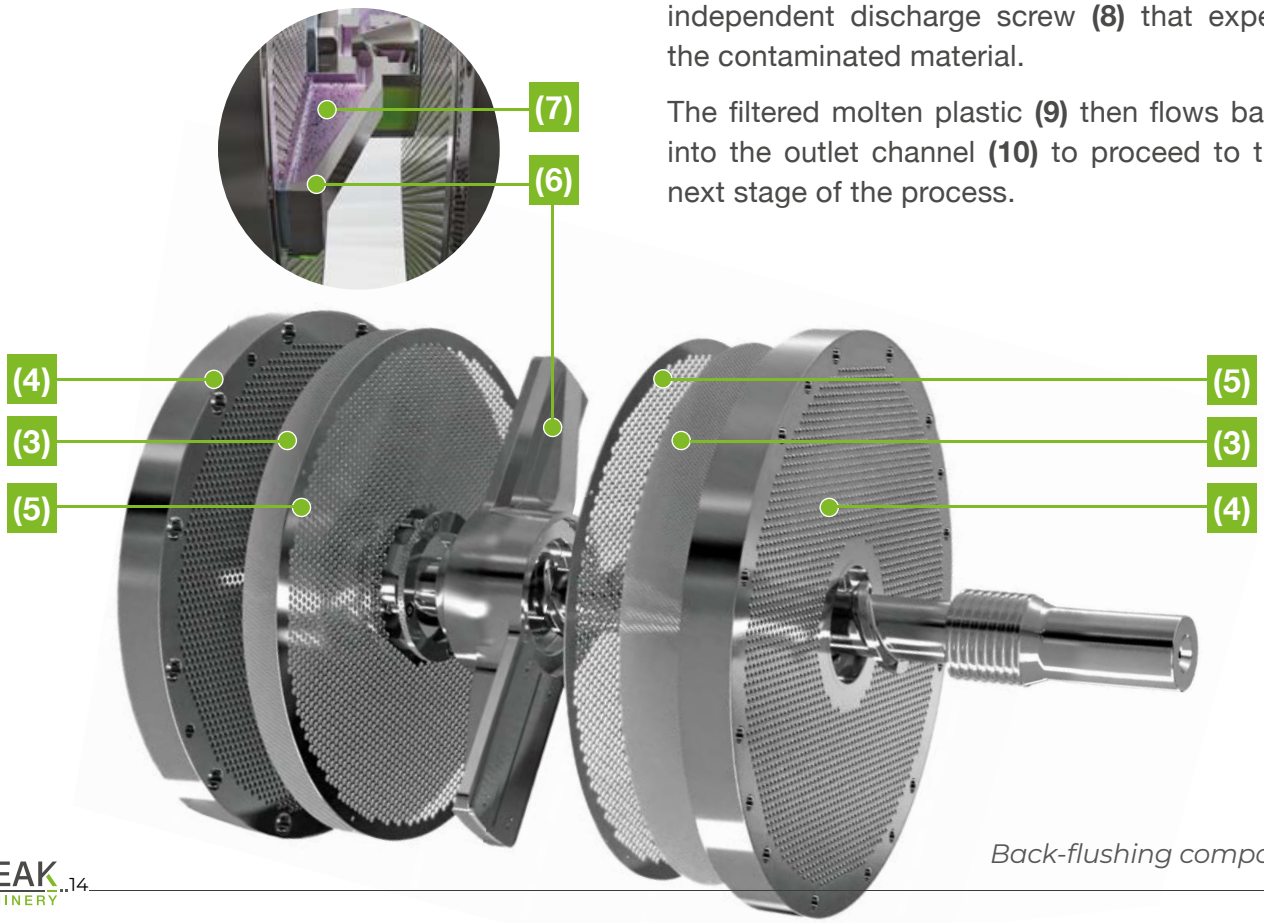
Operating principle:

The molten plastic **(1)** is conveyed into the filtration chamber **(2)** and passes through two opposing mesh screens **(3)** both positioned between two breakers: a support breaker **(4)** and a protection breaker **(5)**.

Resting on the two protection breakers is a cleaner **(6)** that vacuums the contamination **(7)** deposited on the mesh screens.

The center of the cleaner is connected to an independent discharge screw **(8)** that expels the contaminated material.

The filtered molten plastic **(9)** then flows back into the outlet channel **(10)** to proceed to the next stage of the process.



Back-flushing components

Automatic opening system

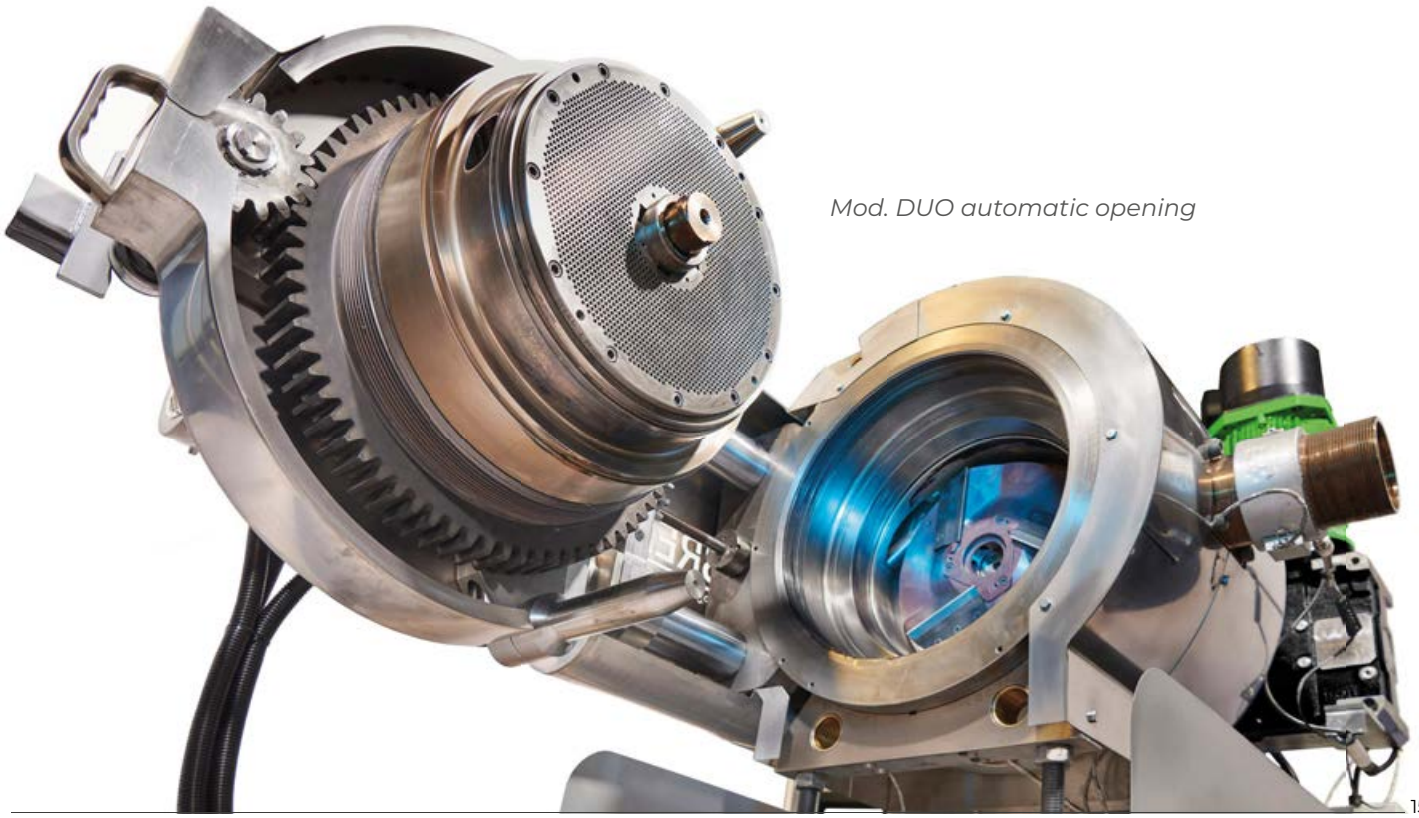
DUO is also available with an automatic opening system that makes opening and closing lid's operations easier, faster and safer.

This system consists of a threaded lid that screws directly onto the machine body, and by a drive which controls both the screwing and the translation of the lid.

These two movements occur simultaneously thanks to a mechanism and a special clutch that allows the screw and female thread to couple during the closing phase.

Operation is activated via a single selector switch located on the front of the **DUO**.

With this system the time required to open and close the lid is reduced, as it is no longer necessary to loosen and tighten the bolts manually; the operator's work is therefore easier and much safer.



Mod. DUO automatic opening

Environmental sustainability
is always at the core of our vision.

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