English

INTAREMA® TVEplus® DuaFil®

Compact

Less length. More melt.

The energy-saving way to finest pellet quality.

CHOOSE THE NUMBER ONE.

EREMA®
PLASTIC RECYCLING SYSTEMS

INTAREMA® TVEplus® DuaFil®

Compact

Lower temperature, less energy needed.

For the finest double filtration quality in a compact design.

This is how strong “short” can be: The innovative INTAREMA® TVEplus® DuaFil® Compact saves significantly on extruder length. And gets more out of it for you: the finest, double-filtered and optimally degassed recycled pellets - produced at high throughput with extremely low energy consumption. This sets the benchmark for production efficiency in post-consumer recycling.

Proven system, enhanced with even more efficiency

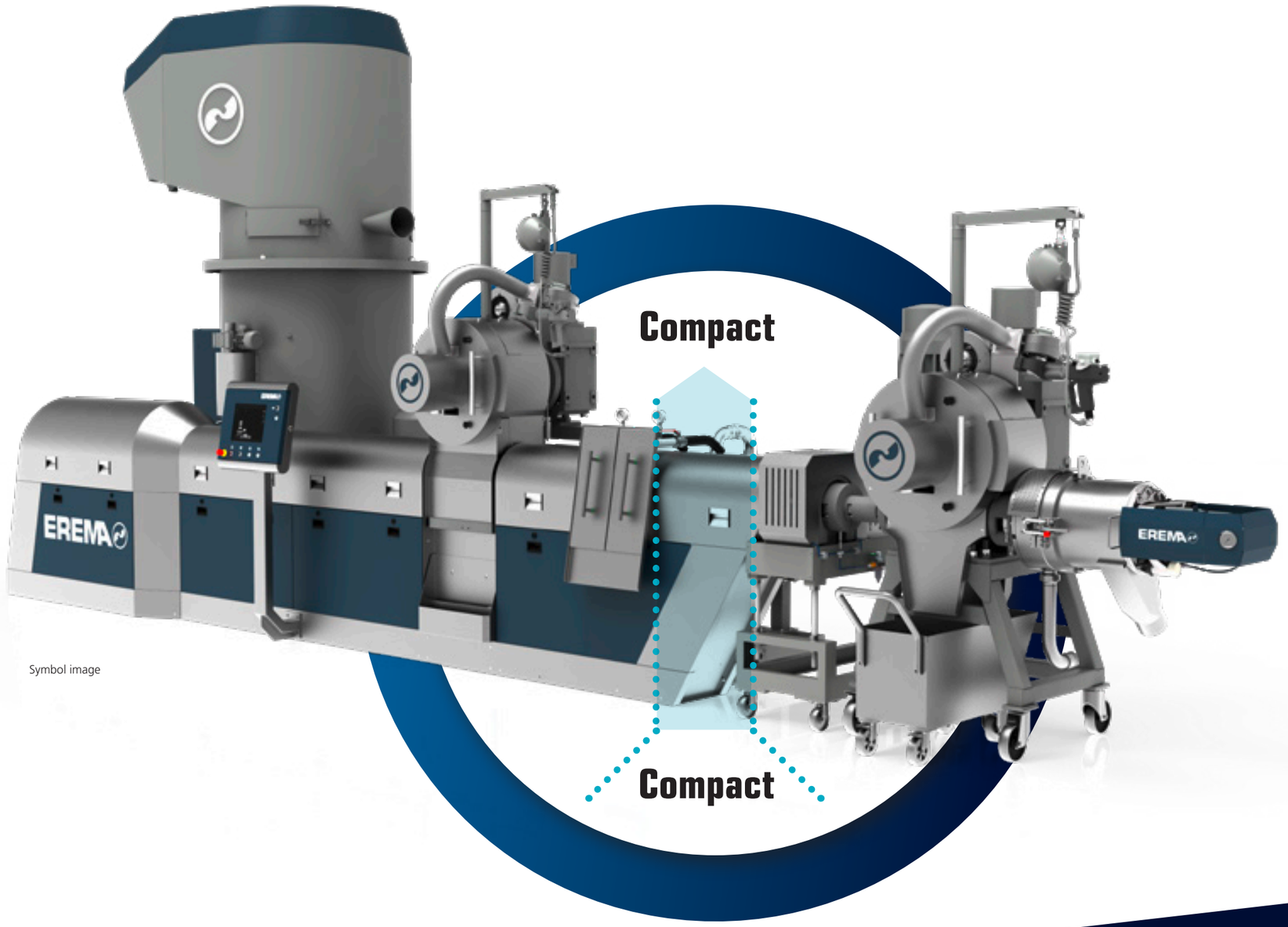
Highly flexible and at the same time extremely process-stable, the double filtration system handles the melt particularly gently, and does so throughout the entire machine. This is the result of combining TVEplus® technology, patented and proven thousands of times over, with the new, patented DuaFil® Compact design.

Mild short transport screw

Improved, temperature-reduced pressure build-up

Thanks to the DuaFil® Compact technology, the extruder screw is 10 L/D shorter compared to the previous EREMA double filtration solution because the discharge metering zone is no longer required. A mild, short transport screw with minimal shear stress for the melt is sufficient, as the pressure build-up for the second filtration unit is achieved by a melt pump customised to the application. This significantly reduces residence time, melt temperature and energy consumption. Further plus points: The very strong and reliable degassing thanks to a higher degassing volume and the particularly fine final filtration.

This makes the machine the first choice for many challenging materials. Especially when the application requires polymer-conserving processing as well as strong filtration performance in order **to produce an end product with the best recycling quality.**



Symbol image

counter current®

smart start®

ecoSAVE®

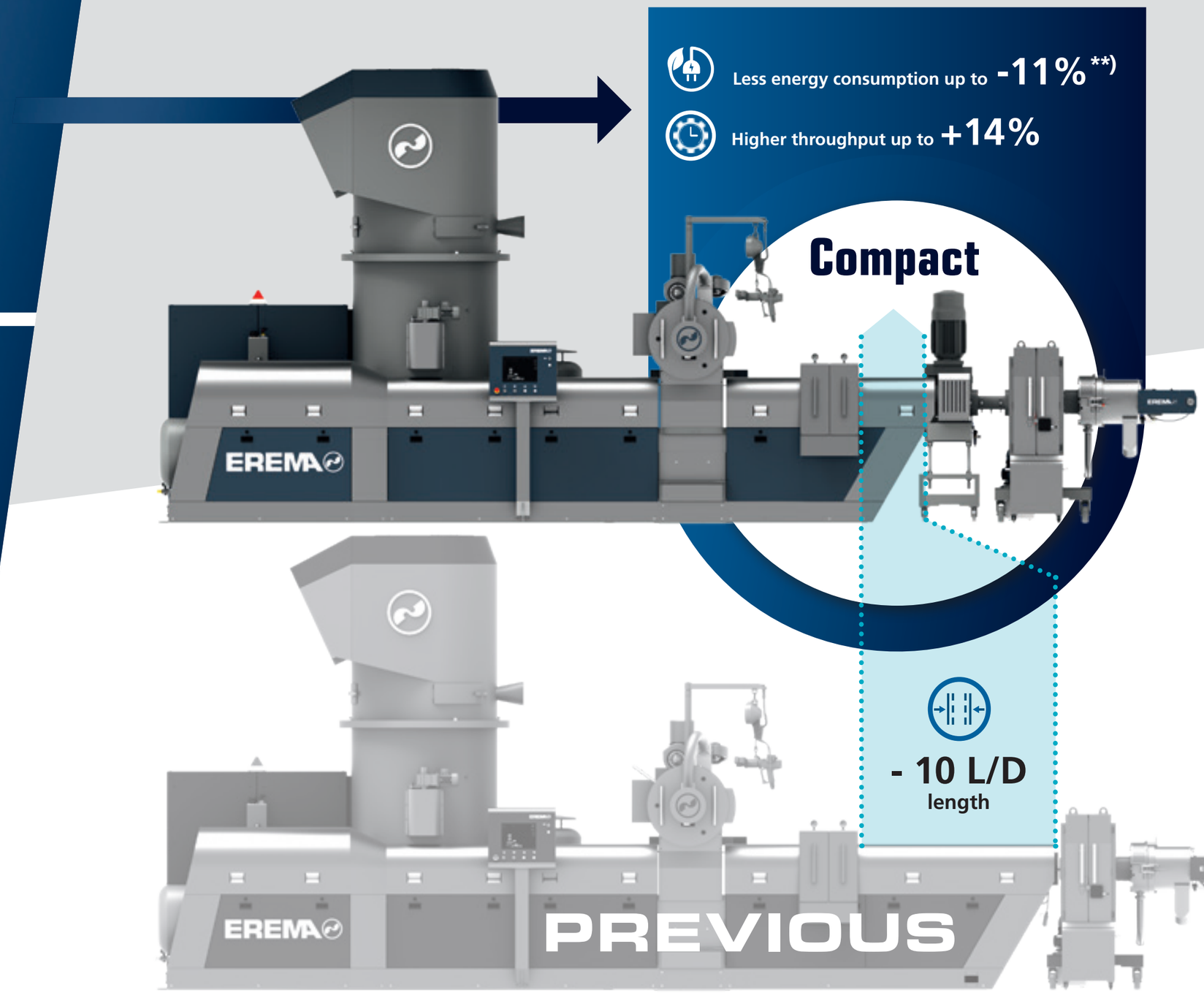
INTAREMA® TVEplus® DuaFil®

Compact

All the advantages*) at a glance:

- **10 L/D shorter**
- **Mild, short transport screw**
- Improved, **temperature-reduced pressure build up**
- **Lower melt temperature up to - 22°C** **)
- **Gentle melt treatment,** low shear stress
- **Stronger degassing performance, 12 to 33 %** higher degassing volume
- **Counteracts the subsequent outgassing** of already degassed melt
- **Against odours and discolouration,** e.g. in the case of paper and wood contaminants
- **Higher degree of automation:** process-specific melt pump control enables extruder speed to be precisely matched to the polymer
- Particularly **fine, final filtration**
- **Improved melt and pellet quality** for a top end product

SO SHORT. SO GOOD.



*) Compared to the previous EREMA double filtration solution

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HOW IT WORKS

INTAREMA® TVEplus® Duafil®
Compact

Intelligently combined: The extruder configuration in the patented TVEplus® combined with the new, patented DuaFil® Compact design makes the machine the benchmark for production efficiency in post-consumer recycling in terms of melt quality, throughput and energy efficiency.

*) Compared to the previous EREMA double filtration solution, the new INTAREMA® 1108 TVEplus® DuaFil® Compact achieves an approx. 22 °C lower melt temperature upstream of the second filter unit for DSD 323-2 (flexible PE und PP household waste), as well as an approx. 11 % lower total energy consumption (specific energy consumption kWh/kg) with an approx. 14 % higher throughput.

1 Ideal material preparation in the **PreConditioning Unit**

Cutting, homogenising, heating, drying, compacting, buffering and dosing – in a single stage. The dynamically controlled PreConditioning Unit (PCU) is multitalented. It prepares the plastic ideally for the extruder and sets the course for consistently high end product quality already at the beginning of the recycling process.

Counter Current technology

The heart of the preconditioning unit is our patented Counter Current technology. Thanks to the changed direction of rotation, the extruder handles more material in a shorter time. Thanks to the optimised intake system a wide range of materials can be processed at amazingly low temperatures, with great process stability, high throughput and absolute flexibility.

counter current®

2 **Gentle melting** with low shear stress

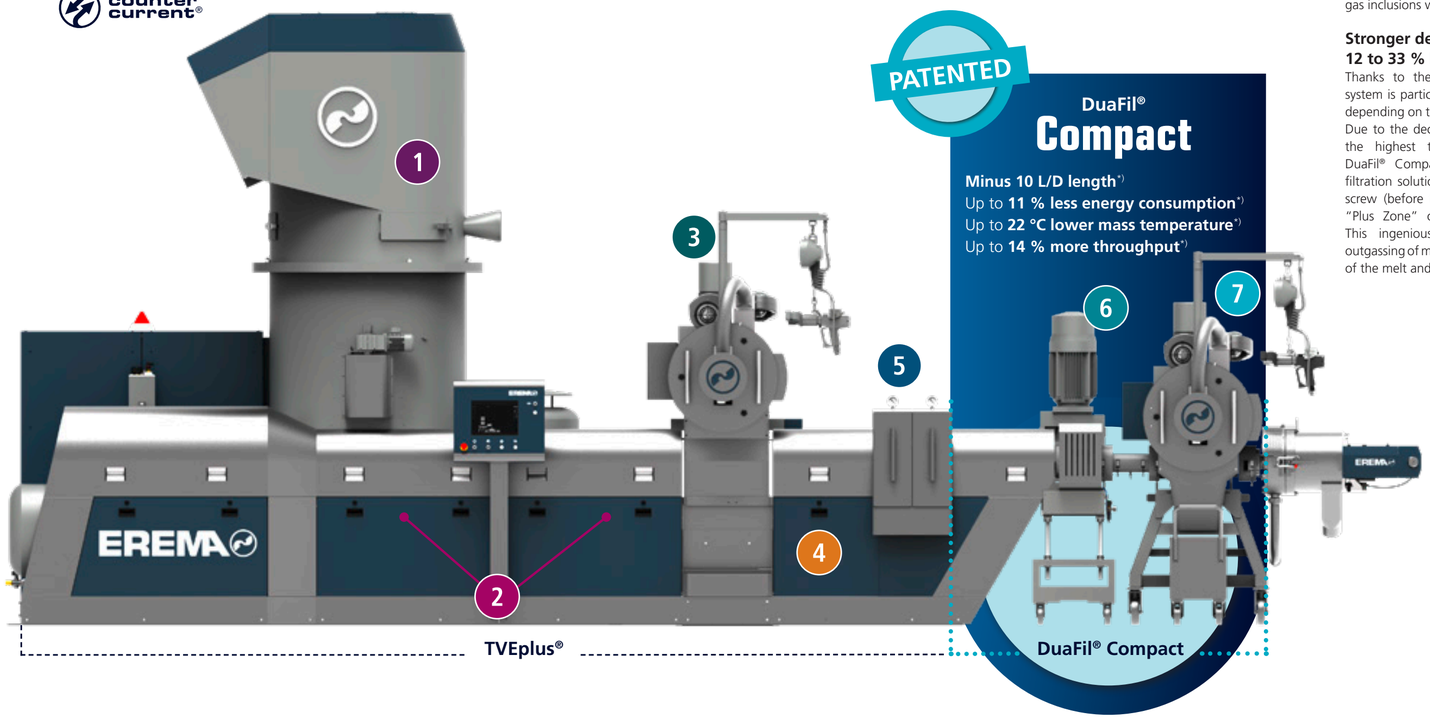
Thanks to the preconditioning unit the extruder is fed warm material instead of cold. The advantage over conventional systems: a relatively short extruder screw is enough to melt the already dry and thoroughly warmed material. The shear stress is extremely low as a result while the melt quality is high.

3 **Fine filtration**

High-performance filtration: Part 1

Efficient filtering is one of the central strengths of the new DuaFil® Compact. Thanks to the gentle preparation in advance, the EREMA high-performance Laserfilter has an easy time. That is because dirt particles and impurities such as paper (e.g. from labels), fragments of wood (e.g. from pallets) and foreign polymers are hardly reduced in size beforehand and are therefore large enough for them to be easily removed from the melt. Thanks to the ingenious design of the Laserfilter scraper geometry, contaminants are lifted particularly quickly and continuously – and thus filtered even more effectively.

The early removal of unwanted materials means they can later no longer outgas and no unpleasant smells develop – a decisive quality bonus for the melt.



4 **Perfect homogenisation** of the melt

The final homogenisation of the melt in the Plus Zone of the extruder, i.e. downstream of the first filtration unit and upstream of degassing, enhances the subsequent degassing performance and improves the characteristics of the melt.

5 Even stronger degassing performance

Temperature advantage

The new DuaFil® Compact features impressive, high-performance degassing. This takes place very effectively in three stages: initial degassing already occurs in the preconditioning unit. Step two is reverse extruder degassing – made possible through optimised screw design. The final double venting degassing at the extruder is particularly effective and removes gas inclusions which are still present from the melt.

Stronger degassing performance
12 to 33 % higher degassing volume

Thanks to the design of DuaFil® Compact, the degassing system is particularly effective. Overall, the new machine has - depending on the speed - 12 to 33 % higher degassing volume. Due to the decoupling of pressure and temperature build-up, the highest temperature in the overall system of the DuaFil® Compact machine - in contrast to other double filtration solutions - does not occur at the tip of the extruder screw (before the second filtration unit), but already in the "Plus Zone" of the extruder, i.e. upstream of degassing. This ingenious arrangement counteracts the subsequent outgassing of melt components – a clear advantage for the quality of the melt and recycled pellets.

6 **Melt pump** for temperature reduced pressure build up

Because there is no discharge metering zone and the melt pump is custom designed to the application, the pressure build-up required for the second filtration unit is highly efficient and needs a much lower temperature*. The extruder therefore does not need to build up pressure and can be much shorter (minus 10 L/D compared to the previous EREMA double filtration solution). Another advantage of the melt pump handling pressure build-up is that the extruder speed can be optimally matched to the polymer - without compromising on throughput.

The lower melt temperature of the DuaFil® Compact in this area significantly reduces energy consumption. That has a positive effect on the quality of the melt. This is reflected in the lower tendency to develop unpleasant odours or discolouration, which is much higher in systems that operate at higher temperatures. This is a real quality bonus, especially in applications involving cellulose-based materials such as paper or wood - like in supermarket film recycling, for example.

Only pre-filtered and degassed melt in melt pump

Another bonus of the plant design is the particularly advantageous location of the melt pump in the TVEplus® process sequence: filtration > degassing > melt pump. This means that only cleaned and degassed melt flows through the melt pump – an advantage for the service life of this component.

MINUS 18.5 °C MELT TEMPERATURE *)

MINUS 10 % ENERGY CONSUMPTION*)

AGAINST ODOUR AND DISCOLOURATION

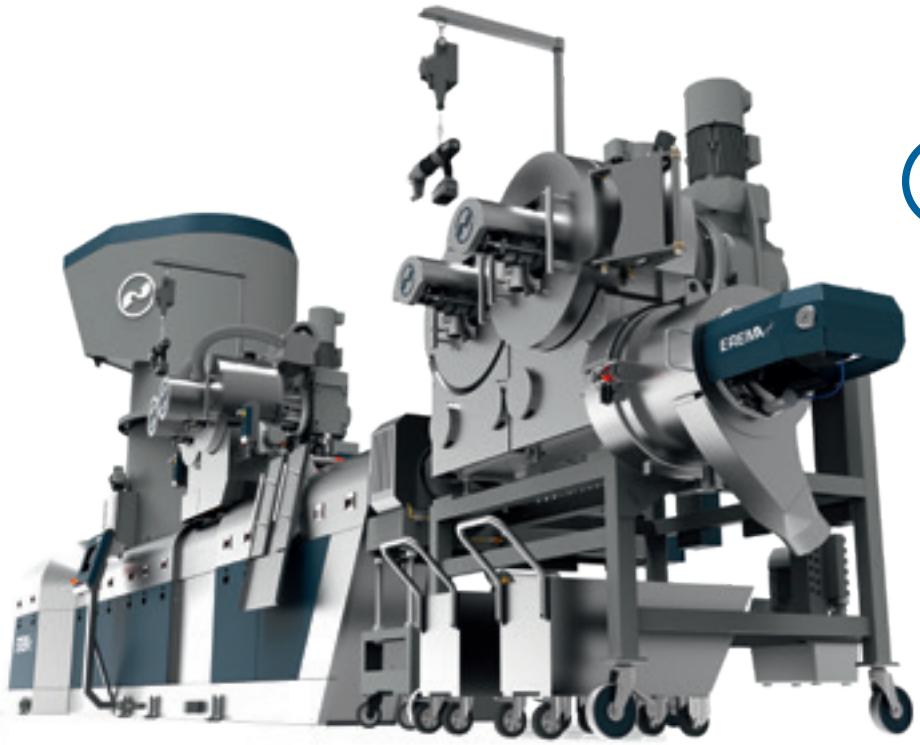
7 Final fine filtration

High-performance filtration: Part 2

In the second filtration unit, the already degassed plastic melt is filtered again at the ideal pressure, which is built up by the energy-saving melt pump. This additional filtration step significantly raises the quality level of the recycled pellets.

Thanks to the DuaFil® Compact design, the filtration fineness of the second filter can now be particularly fine - even finer than the first filter, depending on the application. This supports further processing into end products of particularly high quality.

FOR CHALLENGING
POST-CONSUMER MATERIALS



up to -22 °C
melt temperature

up to -11 %
energy consumption

up to +14 %
higher throughput

High and varying moisture

High level of contaminants
e.g. paper, wood, foreign polymers

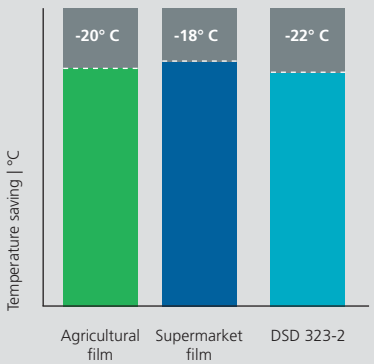
Agricultural film

LDPE supermarket film containing paper

Film from household waste

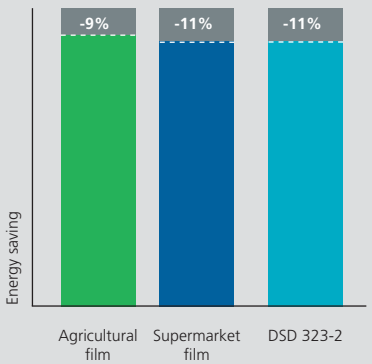
Temperature saving | °C

up to **-22 °C**



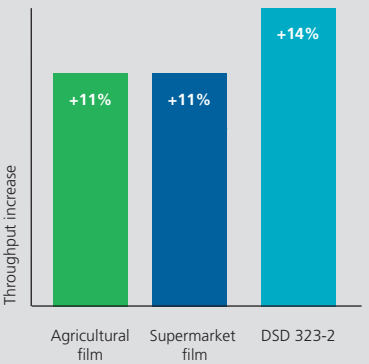
Energy saving

up to **-11 %**



Throughput increase

up to **+14 %**



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