EN Applications & Solutions

# Working for a better **future**

**Plastic Recycling Technologies**

> Post Industrial Recycling
> PET Improvement
> Post Consumer Recycling

NGR®
PLASTIC RECYCLING TECHNOLOGIES

All action alters the **future**. It's on us to change it for the **better**.

– Josef Hochreiter – CEO –

# WORK LIFE MISSION

Building recycling machines is much more than just a job. With our systems and plants we want to make a decisive difference: For you and for all future generations.

**Is it just a job, or is it a calling?**
**At NGR, it is a calling!**

As part of the NEXT GENERATION GROUP, we are proud to belong to a network of solution- and future-oriented companies. It is important to us to contribute to a better future with our products, to give our best every day and to continue to improve.
We are happy to invest in this development: after all, a company is only as good as its employees. And people become as good as the company encourages and challenges them to be. Our team works as a family in which everyone should feel that they are in good hands. Growing together, finding ever more efficient solutions for a future worth living – and having fun at the same time – is a working atmosphere that can only be found at NGR.

## Post Industrial Recycling (PIR)

Residual waste materials created by the industrial production of plastic products are a high-quality and valuable raw material. To ensure that they can be fed back into production, we build recycling machines with maximum technological sophistication to handle this task flawlessly. When building these machines, we focus primarily on economic and environmental sustainability. NGR solutions preserve the full value of the material between input and output (zero-waste production) in addition to minimizing labor and energy expenditure. The benefits speak for themselves.

## PET Improvement (PET)

With P:REACT, a revolution in PET recycling has reached the market! It only takes a few minutes to take PET from industrial waste or post-consumer PET and turn it into food-safe rPET. This groundbreaking innovation, which makes rPET material safe for food packaging (FDA, EFSA), is also of high interest to fiber manufacturers. This is because the Liquid State Polycondensation (LSP) method developed specifically for P:REACT ensures removal of the spinning oils without residual products during plastic processing. The advanced P:REACT technology is providing us with definitive proof that plastic recycling goes hand-in-hand with a brighter future.

## Post Consumer Recycling (PCR)

Nearly half of the plastic produced in the world gets thrown away after just one use. This waste could serve as a valuable resource if only we took advantage of it. Our one-of-a-kind recycling technologies are making crucial contributions to the solution. Through efficient material handling during the conversion process, minimized energy consumption and custom machine configurations, NGR makes sure that “one-way” plastics find their way back into the material cycle—giving the environment sustainable protection.



# Our solutions **for all requirements**

**Extrusion**

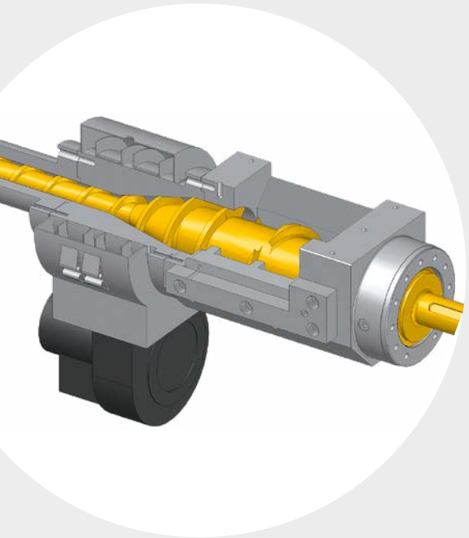


**PET Improvement**

Post Industrial Recycling

# E:GRAN

## CHOPPER-FEEDER-EXTRUDER COMBINATION






# The compact repelletizing solution **for any type of film**

More information online!

Compact, efficient and user-friendly. The **E:GRAN** combines maximum energy efficiency with simple, intuitive operation – for smooth workflows in daily use. With state-of-the-art technology, it ensures the effective reprocessing of thermoplastic films, edge trims and roll scraps. Whether as a stand alone or seamlessly integrated into the production process: the **E:GRAN** stands for maximum cost efficiency, sustainability and process reliability.

| | up to [kg/h]* | up to [lbs/h]* |
|---|---|---|
| E:GRAN 50-12 | 50 | 110 |
| E:GRAN 75-16 | 120 | 270 |

* Output values for LDPE according to NGR company standard, depending on material and quality. In addition, NGR provides all the equipment for conveying pellets such as blower, pipes, cyclones and much more.

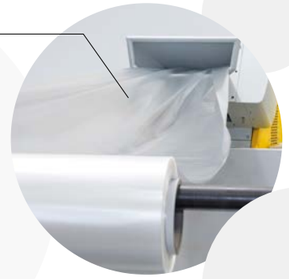
## AT A GLANCE

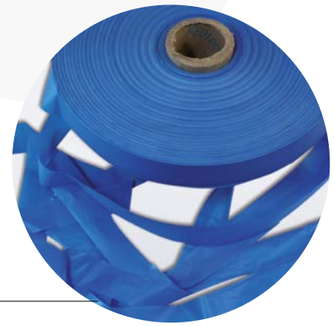
- **Small footprint**
- **Automatic speed control**
- **One-touch start-stop**
- **Clean, dust-free operation**
- **Continuous production since 2002**

## PROCESSING EXAMPLES MATERIALS

HDPE irrigation tubing


LDPE film





PP edge trim

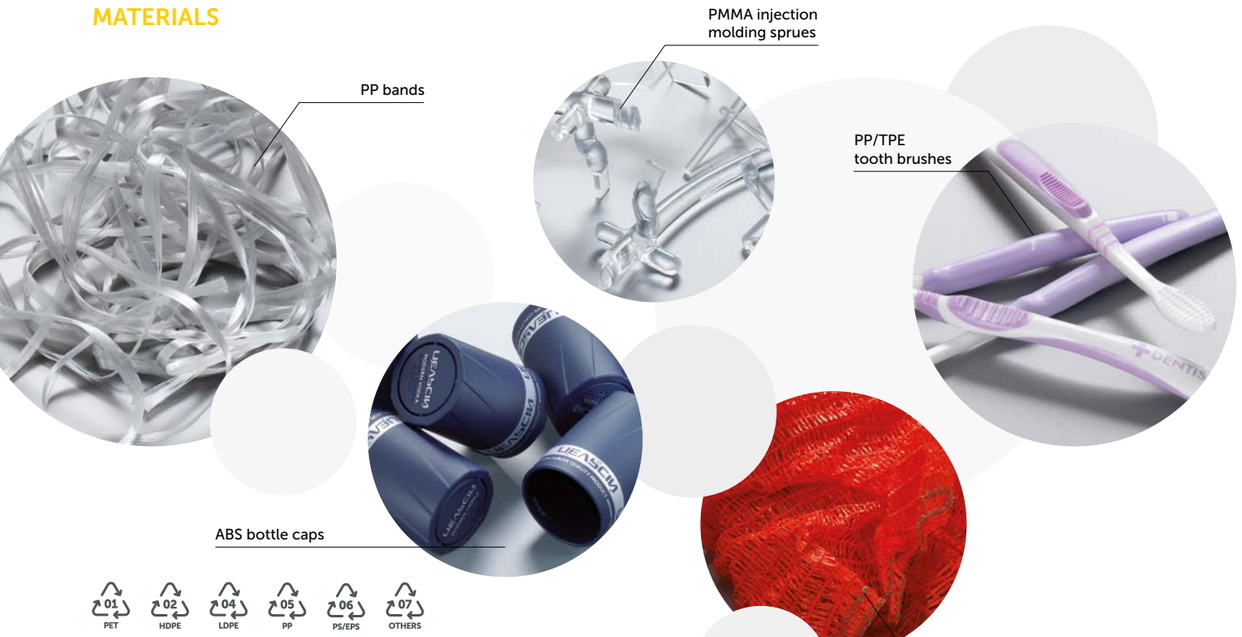
02 HDPE 04 LDPE 05 PP

Post Industrial Recycling

# A:GRAN

SHREDDER-FEEDER-EXTRUDER COMBINATION


## PROCESSING EXAMPLES MATERIALS




Additional materials: PA, PC, PPS, ABS, EVA, bioplastics, blends, ...

## The multi-talented, **high performer**

More information online!

**A:GRAN** is the compact technology for scrap plastic products created in industrial processes of any type. The solution focuses on high performance in a compact space. Do you have production waste that is created intermittently? No problem! This versatile solution switches on and off quickly and easily, enabling you to work efficiently and meet the needs of the shop floor.

| | up to [kg/h]* | up to [lbs/h]* |
|---|---|---|
| A:GRAN 65-40 | 100 | 200 |
| A:GRAN 70-40 | 120 | 270 |

* Output values for LDPE according to NGR company standard, depending on material and quality. In addition, NGR provides all the equipment for conveying pellets such as blower, pipes, cyclones and much more.

## AT A GLANCE

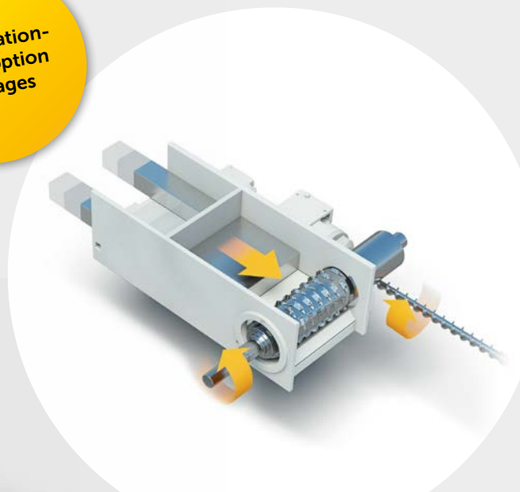
- **Processing industrial plastic waste of any kind**
- **Auto start and stop by a single push button**
- **Quick and easy start-up and shut-down at any time**
- **Minimum energy consumption**
- **Gentle shredding**

Post Industrial Recycling

# S:GRAN

SHREDDER-FEEDER-EXTRUDER COMBINATION


+ application-based option packages



## PROCESSING EXAMPLES MATERIALS


Additional materials: PA, PC, PPS, ABS, EVA, bioplastics, blends, ...

# The market leader for all types of **industrial plastic waste**

More information online!

The **S:GRAN** is the complete solution for PIR recycling: from rigid plastics to fibers and textiles – all without pre-shredding. An optimized guiding and sealing system, easy maintenance, and high-performance option packages for glass fiber and low-melt materials ensure maximum efficiency and process reliability.

## AT A GLANCE

- **Patented shredder-extruder technology for maximum process reliability**
- **Easy operation with “one-touch” start-stop**
- **Application-driven option packages for customized solutions**
- **Modular design with NXT:platform philosophy**
- **Proven worldwide with over 1,200 installations**

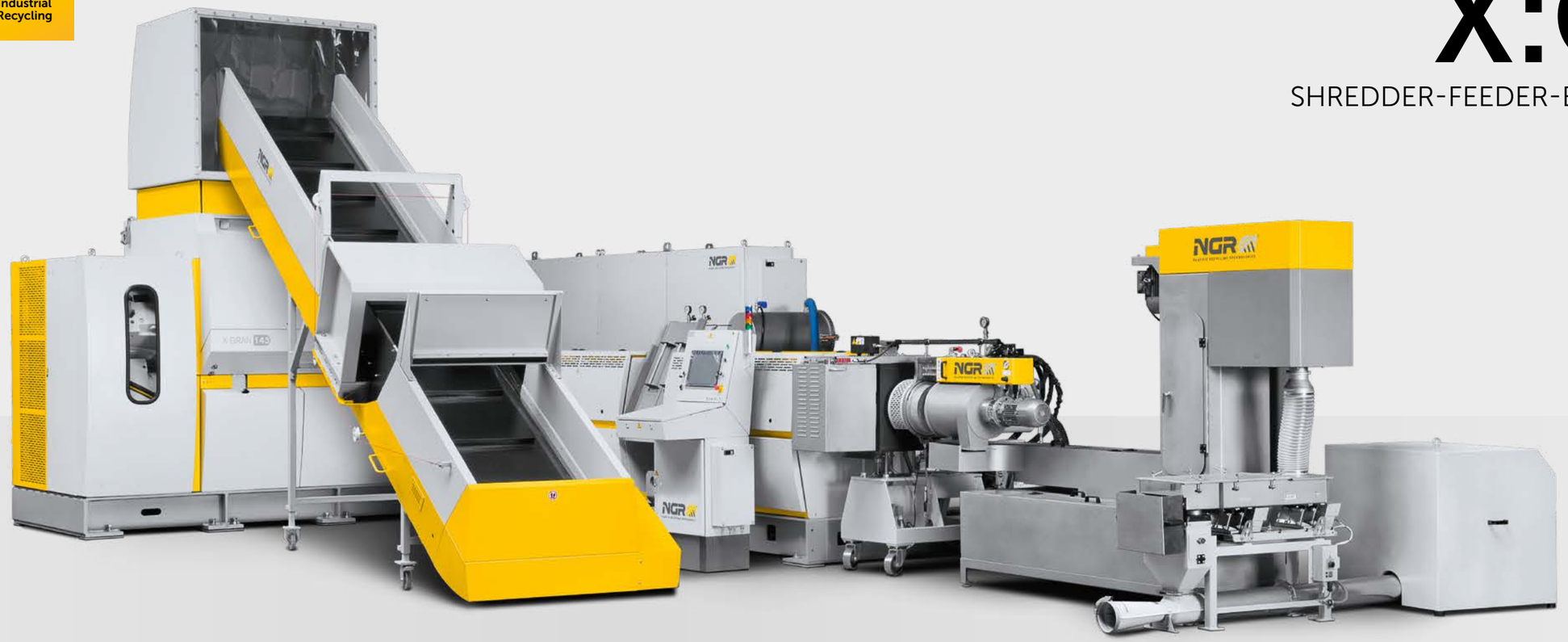
| | up to [kg/h]* | up to [lbs/h]* |
|---|---|---|
| S:GRAN 65-50 | 250 | 550 |
| S:GRAN 75-70 | 400 | 880 |
| S:GRAN 85-70 | 500 | 1100 |
| S:GRAN 95-70 | 600 | 1320 |
| S:GRAN 105-100 | 700 | 1540 |
| S:GRAN 125-100 | 900 | 1980 |

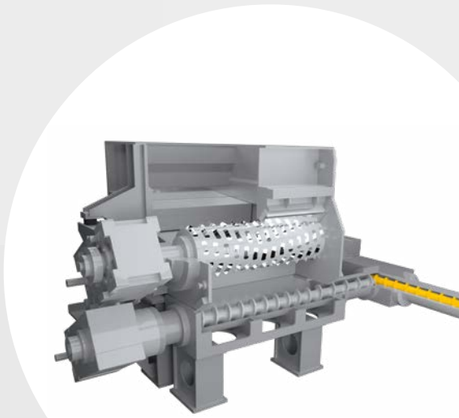
* Output values for LDPE according to NGR company standard, depending on material and quality. In addition, NGR provides all the equipment for conveying pellets such as blower, pipes, cyclones and much more.

Post Industrial Recycling

# X:GRAN

SHREDDER-FEEDER-EXTRUDER COMBINATION





## PROCESSING EXAMPLES MATERIALS


Additional materials: PA, PC, PPS, ABS, EVA, bioplastics, blends, ...

# The power package for **all shapes and sizes**

More information online!

A Robust, and flexible machine capable of handling bulky materials including, large bales, off-specification rolls, and automotive parts, amongst many others. A one-step solution that does not require additional size reduction.

## AT A GLANCE

- **The largest form factor in the market, up to 180cm shredder**
- **Gentle size reduction and processing, the largest particle size for high-quality filtration**
- **'one touch' start-stop**
- **NXT:platform, modular design philosophy**
- **High efficiency, proven technology**

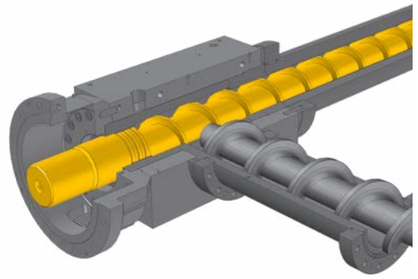
| | up to [kg/h]* | up to [lbs/h]* |
|---|---|---|
| X:GRAN 125-140 | 800 | 1760 |
| X:GRAN 145-140 | 1100 | 2430 |
| X:GRAN 165-180 | 1400 | 3090 |
| X:GRAN 185-180 | 1800 | 3970 |
| X:GRAN 205-180 | 2100 | 4410 |
| X:GRAN 225-180 | 2500 | 5500 |

* Output values for LDPE according to NGR company standard, depending on material and quality. In addition, NGR provides all the equipment for conveying pellets such as blower, pipes, cyclones and much more.

Post Consumer Recycling

# F:GRAN

FEEDER-EXTRUDER COMBINATION



## The efficiency star for pre-shredded material

More information online!

In recycling of ground up plastics, predominantly from plastic washing systems, there is no better choice than the **F:GRAN**. Flakes, even of varying size, are processed at a consistently high throughput rate. F:GRAN is distinguished by its efficient material handling. The flakes to be processed are continuously circulated by rotors in a storage silo measuring up to 30 m³. This prevents problems caused by bridging from the beginning.

| | up to [kg/h]* | up to [lbs/h]* |
|---|---|---|
| F:GRAN 105-20 | 600 | 1320 |
| F:GRAN 125-20 | 800 | 1760 |
| F:GRAN 145-20 | 1100 | 2430 |
| F:GRAN 165-25 | 1400 | 3090 |
| F:GRAN 185-25 | 1800 | 3970 |
| F:GRAN 205-25 | 2100 | 4410 |
| F:GRAN 225-25 | 2500 | 5510 |

* Output values for LDPE according to NGR company standard, depending on material and quality. In addition, NGR provides all the equipment for conveying pellets such as blower, pipes, cyclones and much more.

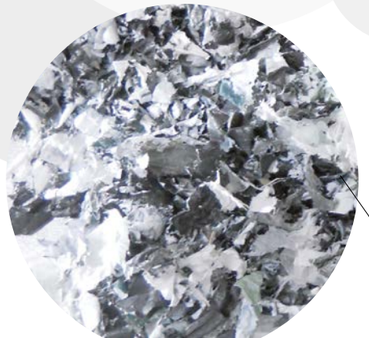
### AT A GLANCE

- **Processing regrind and film flakes**
- **Auto start and stop by a single push button**
- **Simple, stable process**
- **Storage silo up to 30 m³ for material buffer**
- **Maximum ease of use, possibly operator free**

### PROCESSING EXAMPLES MATERIALS








01 PET · 02 HDPE · 04 LDPE · 05 PP · 06 PS/EPS · 07 OTHERS

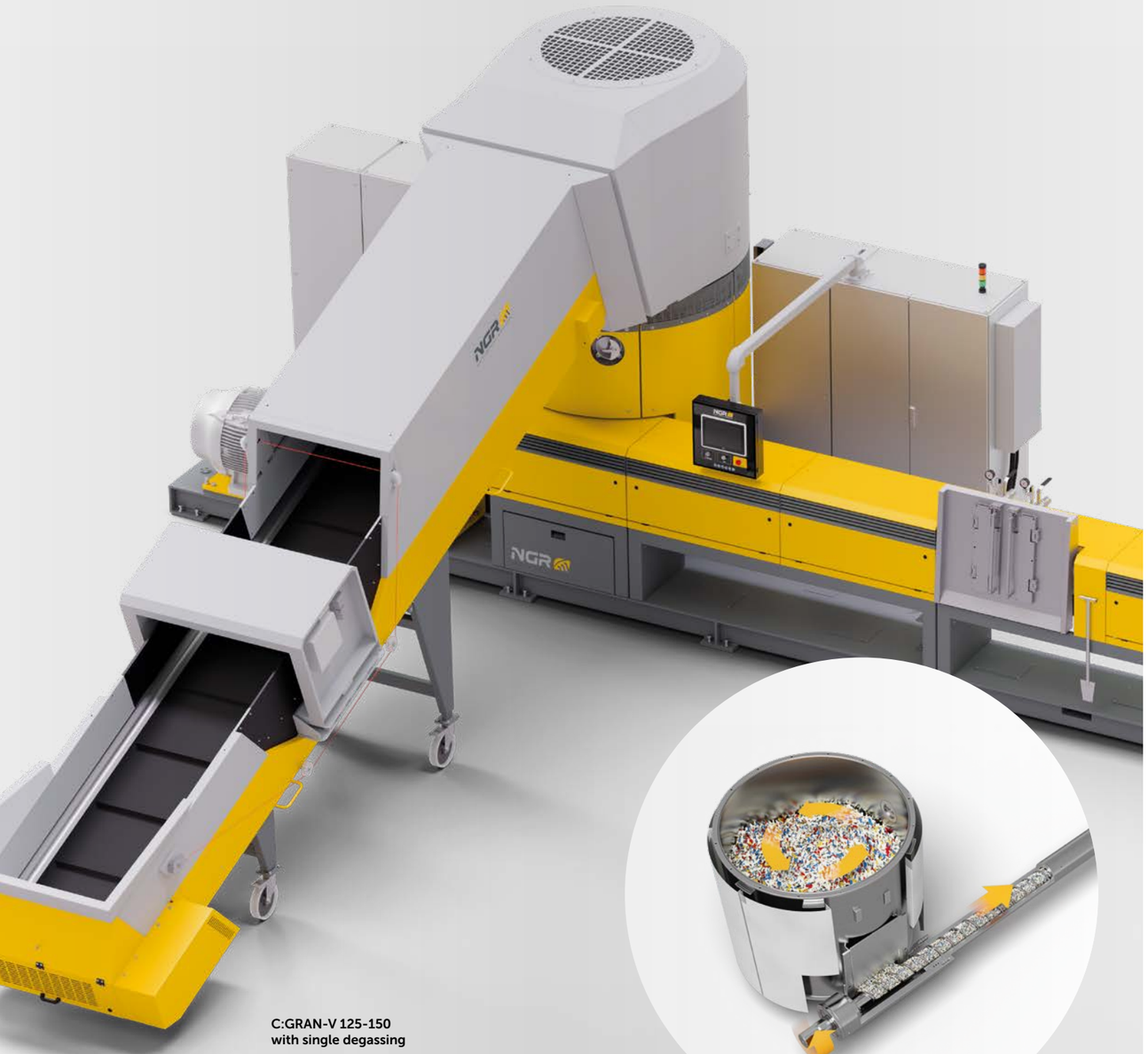
Additional materials: PC, PPS, ABS, blends, ...

Post Consumer Recycling

Post Industrial Recycling

# C:GRAN

## CUTTER-COMPACTOR-EXTRUDER COMBINATION





**C:GRAN-V 125-150**
**with single degassing**

**Modular design in the following versions:**

C:GRAN (extruder without degassing)

C:GRAN-V (extruder equipped with degassing)

C:GRAN-CAS (with single-screw cascade incl. power venting section)

C:GRAN-TWIN-CAS (with twin-screw cascade)

# The best solution for **high moisture content materials**

More information online!

The **C:GRAN** is the ideal solution for materials with low bulk density and high input moisture. Flakes, regrind or films can be optimally processed thanks to the excellent pre-drying and compaction properties of the cutter compactor.

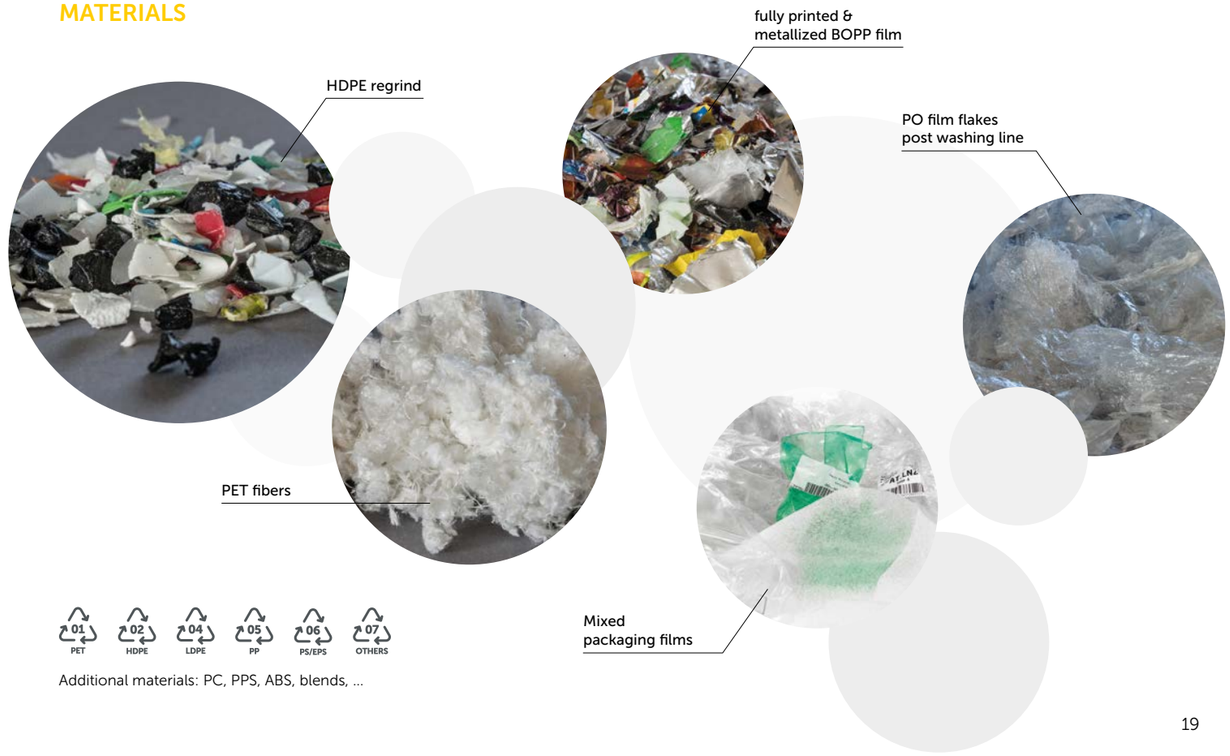
## AT A GLANCE

- **Processing of flakes, regrind and films – even with high residual moisture**
- **Fully automated operation with Auto-Pilot**
- **With cascade, achieves unparalleled degassing performance, specifically designed to meet the most demanding applications.**
- **Customized solutions through the NXT:platform**
- **Minimal energy consumption thanks to Thermo-Shield**

| | up to [kg/h]* | up to [lbs/h]* |
|---|---|---|
| C:GRAN 085-130 | 600 | 1320 |
| C:GRAN 105-150 | 850 | 1870 |
| C:GRAN 125-150 | 1150 | 2540 |
| C:GRAN 145-170 | 1500 | 3310 |
| C:GRAN 165-170 | 1850 | 4080 |
| C:GRAN 185-200 | 2250 | 4960 |
| C:GRAN 205-200 | 2700 | 5950 |
| C:GRAN 225-220 | 3000 | 6610 |

* Above mentioned throughputs are expected values. The actual achievable throughput depends on the viscosity of the polymer to be processed, the material properties, the input moisture, the type and quantity of any impurities present, the particle size, the degree of printing, the melt filtration, etc.

## PROCESSING EXAMPLES MATERIALS




01 PET · 02 HDPE · 04 LDPE · 05 PP · 06 PS/EPS · 07 OTHERS

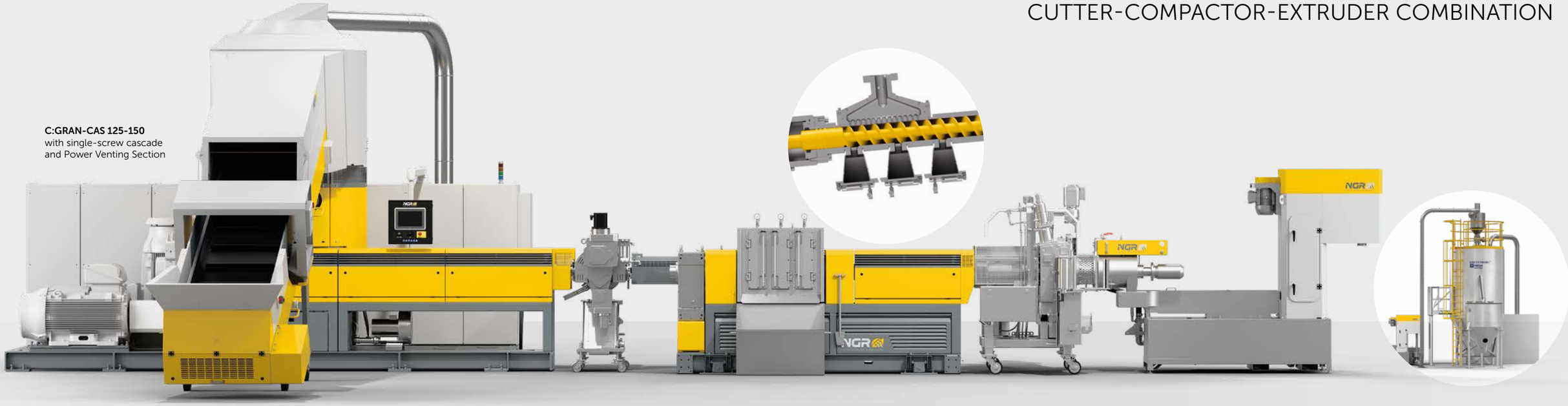
Additional materials: PC, PPS, ABS, blends, ...

Post Consumer Recycling

Post Industrial Recycling

# C:GRAN-CAS

## CUTTER-COMPACTOR-EXTRUDER COMBINATION



**C:GRAN-CAS 125-150**
with single-screw cascade
and Power Venting Section

1 C:GRAN: Drying, melting, homogenization — 26 L/D

2 Melt filter

3 Cascade extruder with Power Venting Section — 18 L/D

4

5 Pelletizer

Only 44 L/D procedure length

## AUTO-Pilot
stable, efficient, fully automatic

The AUTO-Pilot control system developed by NGR enables fully automatic operation without operator intervention. It automatically adapts the process parameters to fluctuating material qualities, ensuring stable conditions and consistently high pellet quality – with optimized energy use at the same time.

### AT A GLANCE

- **Fully automatic operation without operator intervention**
- **No melt-downs in the cutter-compactor**
- **Operation without water injection**
- **Controlled, highly efficient energy input**

## ThermoShield
efficient, targeted insulation

ThermoShield specifically reduces heat losses at the cutter-compactor caused by radiation and convection. The applied energy remains in the system and is optimally used for material processing – for maximum thermal efficiency and a stable process. ThermoShield is exclusively available with AUTO-Pilot.

### AT A GLANCE

- **Minimized heat loss through insulation**
- **Higher thermal efficiency, reduced energy demand**
- **Process stability through constant temperature**

## Cascade
top quality at full performance

Melt filtration takes place before degassing. The Power Venting Section ensures highly efficient degassing through continuous surface renewal. Two independent drives create optimal conditions for melting and degassing. An optional second filtration stage can be integrated – without the need for an additional melt pump.

### AT A GLANCE

- **Clear separation of melting and degassing process**
- **Power Venting Section for maximum degassing performance**
- **44 L/D process length for minimal thermal stress on the melt**

## Conditioner
deodorization of regranulate

Remaining volatile contaminants are reduced in a thermo-physical process. In the specially developed conditioner, the combination of hot air, temperature, and residence time ensures effective deodorization and decontamination of the regranulate.

### AT A GLANCE

- **Significant improvement of regranulate quality**
- **Extended application possibilities of recyclates in high-quality applications**
- **Modular design – easy to retrofit at any time**

Post Consumer Recycling

Post Industrial Recycling

# C:GRAN-TWIN

## COMPACTOR-EXTRUDER – TWIN SCREW-COMBINATION

**The combination of C:GRAN + twin-screw extruder** unites recycling and compounding in a well-thought-out process – t**wo technologies, one goal: high-quality regranulate** with maximum process reliability and flexibility.ät.


1 C:GRAN: Drying, compacting, melting, homogenising

2 Twin-screw extruder: Compounding & refining

3 Pelletizer

# C:GRAN + Twin-Screw Extruder
## Compounding, Degassing, Refining

### STEP 1

**Efficient preparation – flexible, robust, proven**

The **C:GRAN** system forms the heart of the recycling line. It combines the **cutter-compactor** and **single-screw extruder** into a highly automated and robust solution for material preparation.

**In just one thermal step**

Even challenging materials with **high moisture** content are no problem. Optionally, this machine can be equipped with a modular degassing unit.

### THE C:GRAN STANDS FOR

- **Drying, densifying & homogenizing in the cutter-compactor**
- **Gentle melting with a robust single screw**
- **Automatic process adjustment through Auto-Pilot**
- **Melt filtration tailored to the process**

### YOUR BENEFITS

- **Robust single-screw extruder for the melting process**
- **High process stability even with fluctuating material quality**
- **No separate pre-drying required**
- **Compact design, low maintenance effort**

### STEP 2

**Compounding & upgrading directly integrated**

The **processed and filtered material** is transferred directly into the **twin-screw extruder** without remelting – saving energy and protecting the polymer. At the same time, the twin screw enables **targeted upgrading of the material**, making it ideal for high-value applications..

### THE TWIN SCREW STANDS FOR

- **Incorporation of additives, fillers, colorants, stabilizers, glass fibers, and more**
- **Homogenization and dispersion at the highest level**
- **High-quality, multi-stage melt degassing**
- **Effective VOC reduction through stripping process**

### YOUR BENEFITS

- **Customized pellets – adaptable to market requirements**
- **One melting process – two process steps**
- **Minimal energy consumption with low production costs**
- **Maximum dispersion / homogenization**

**C:GRAN-TWIN,**
the right answer to the ever-increasing quality requirements of the circular economy.

PET Improvement

# P:REACT

LSP: LIQUID STATE POLYCONDENSATION

**More than 10 years** of experience in LSP

## PROCESSING EXAMPLES MATERIALS


# The future of **PET recycling**

**P:REACT** makes it possible to revolutionize the PET recycling process. It transforms PET waste and PET bottle flakes into food-grade recycled PET in minutes. Thanks to the advanced LSP (Liquid State Polycondensation) process, the PET melt phase is used to trigger the polycondensation of PET. The reaction speed in the PET melt is significantly higher than in the solid phase. The clear advantage: IV values, controlled with pinpoint accuracy, that can be even higher than those of the original starting material – depending entirely on your objectives.

## AT A GLANCE

- **PET recycling at the highest level**
- **Continuous process with enormous process stability**
- **Fast iV build-up and automatic, continuous adjustment of iV values**
- **100% food grade quality with FDA and EFSA approval and brand owner confirmation**

More information online!

| | up to [kg/h] | up to [lbs/h] |
|---|---|---|
| P:REACT 600 | 700 | 1540 |
| P:REACT 1200 | 1400 | 3080 |
| P:REACT 2000 | 2200 | 4850 |
| P:REACT 3000 | 3000 | 6610 |
| P:REACT 4000 | 4000 | 8820 |

In addition, NGR provides all the equipment for conveying pellets such as blower, pipes, cyclones and much more.

# The process steps, **perfect solutions for any application**

# P:REACT

LSP: LIQUID STATE POLYCONDENSATION

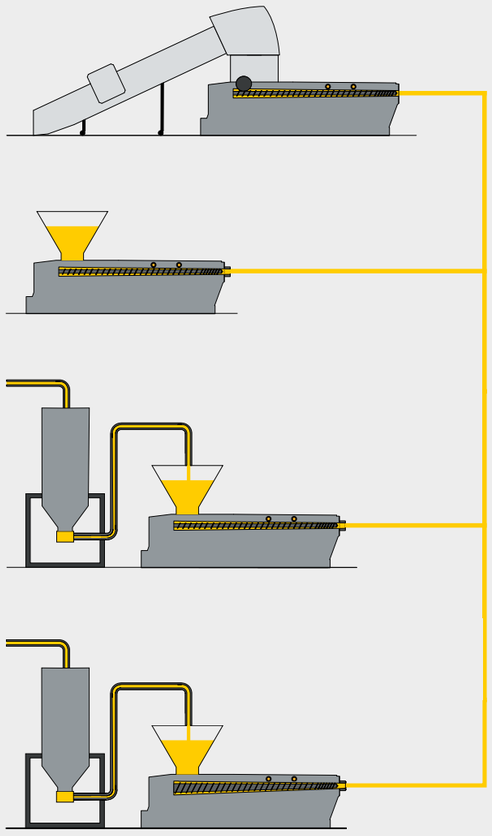
**Melt preparation** ▸ **Decontamination** ▸ **Follow-up process**

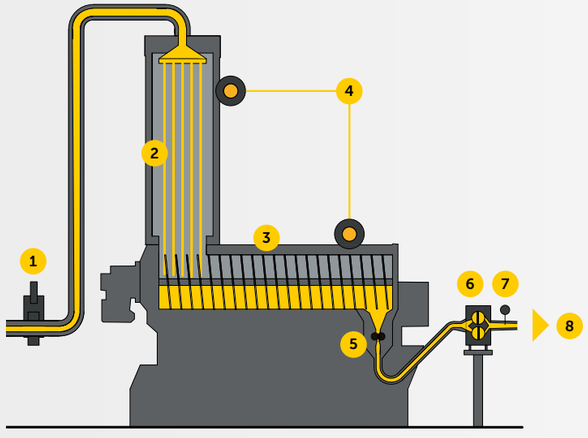
**Shredding and extruding**

**Extrusion**

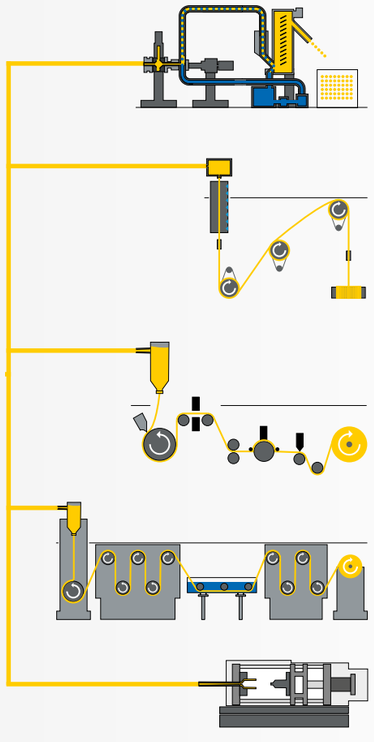
**Drying and extruding**

**Extrusion and high-efficiency venting**






1) Bypass
2) Vacuum container (melt reactor)
3) Horizontal drum
4) Discharge of decontaminated substances
5) Melt discharge pump
6) Filtration
7) Viscosity measurement
8) Transfer to a downstream production system



**Pelletization unit**

**Spinning system**

**Film manufacturing**

**Manufacturing strapping**

**Preform**

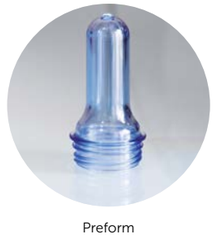
**SEE ANIMATION**

Pelletization unit

Spinning system

Film manufacturing

Manufacturing strapping



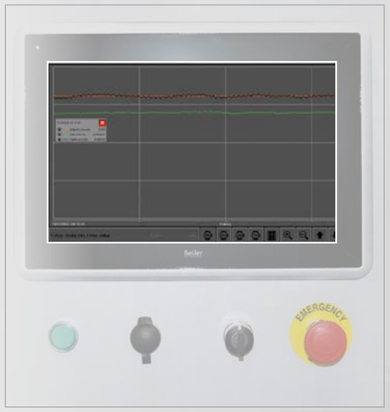
Preform

# P:REACT

LSP: LIQUID STATE POLYCONDENSATION

PET Improvement

## The next dimension of PET recycling **for the standards of tomorrow**





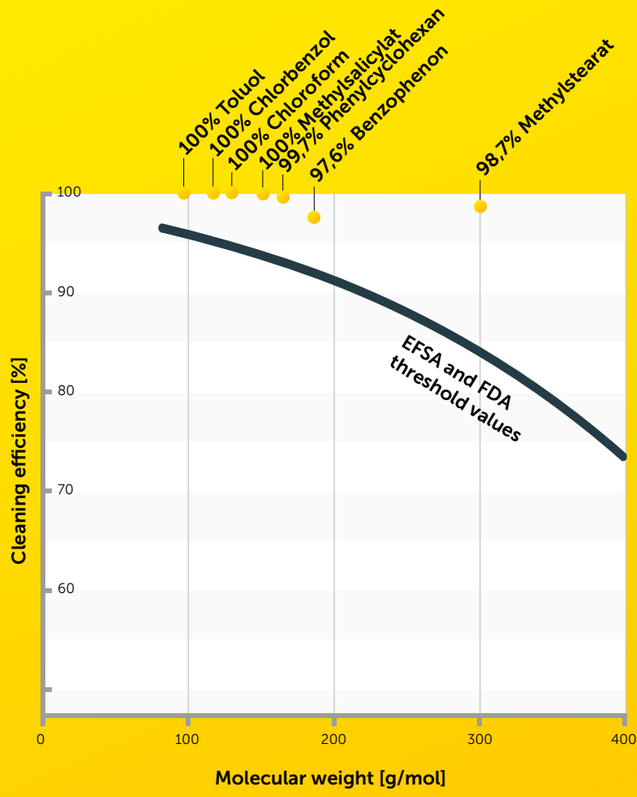
### UNIQUE iV CONTROL

- > **Permanent online measurement and control of the intrinsic viscosity (iV) of the emerging melt**
- > **Adjustable setpoint of the iV target value**
- > **Automatic control of the set iV through LSP vacuum control**

### PROCESS STABILITY

- > **Dust-free due to condensation in the melt phase**
- > **Energy efficiency and flexibility in the mixing ratios and properties of the input materials**
- > **PET-G is fully recyclable**

SEE ANIMATION




| Before purification | After purification |
|---|---|
| Inpurities SSP | Remaining impurities in the core |
| **Inpurities LSP** | **Effective purification due to enormous surface area of the material strands** |

### FDA AND EFSA CONFIRM: VALUES FAR BELOW THE LIMITS

In addition to the high mobility of the molecules in the liquid phase, the enormous surface area exposure of the melt strands is another factor in effective cleaning. This means that the quality of the decontaminated material far exceeds the acceptable limits specified by EFSA and FDA.

Reliable decontamination performance, certified for **100% food contact**.

efsa European Food Safety Authority

FDA

BRAND OWNER APPROVED

# P:REACT

BOTTLE-TO-BOTTLE

PET Improvement

## The ECO-Twin Extruder
Efficiency in Perfection

With the conical, co-rotating ECO-Twin extruder, NGR sets new standards in the processing of PET regrind. Extremely low energy consumption, combined with a very gentle melting process and highly effective melt degassing, makes this extruder the embodiment of efficiency. The concept fulfills the physical and rheological requirements of an extruder almost perfectly.

The drive consists of an extremely robust and compact beveloid gearbox, which can optionally be equipped with a monitoring system. With this constant monitoring, necessary maintenance cycles can be precisely planned.

The ECO-Twin 220, currently used in LSP systems with a total throughput of up to 4 t/h (higher throughputs are possible with this extruder), is equipped with 2 synchronous motors, ensuring a short overall length. Torque fluctuations are measured very precisely, enabling exact control of PET regrind feeding into the extruder.

### AT A GLANCE

- **Gentle processing of PET regrind**
- **Very low specific energy input (kWh/kg)**
- **Robust beveloid gearbox with optional condition monitoring**
- **Very short process unit with consistently low melt temperatures**



## LSP Bottle-to-Bottle
Recycling at the highest level: safe, efficient, compact

With **LSP technology** (Liquid State Polycondensation), NGR has set new standards in bottle-to-bottle recycling. The system impresses with **exceptionally high decontamination performance**.
The LSP system processes washed bottle flakes directly in the melt phase for **consistently high product quality** and 100% food safety in compliance with **EFSA and FDA**.
In combination with the powerful **ECO-Twin extruder**, the total throughput of the system has now been expanded to an impressive **4.000 kg/h** – another milestone in industrial PET processing.

**Automatic iV control –**
**quality that regulates itself**
A **fully automatic iV control** with permanent online measurement ensures the desired viscosity, regardless of fluctuations in the input material, and guarantees the highest process stability.

**SCADA system –**
**intelligent control for maximum oversight**
The newly developed **SCADA system** enables central, intuitive operation of the entire plant. All parameters are clearly visualized and can be flexibly adjusted – for maximum transparency, easy maintenance, and high operational reliability. **In short:** the LSP bottle-to-bottle system is the answer to the growing demands for quality, sustainability, and efficiency in PET recycling. It is not only a technological milestone – it is a clear statement for the future of the circular economy.

### AT A GLANCE

- **Extremely high decontamination performance compared to SSP technologies**
- **100% food grade – EFSA, FDA and brand-owner approved**
- **Automatic iV control for consistent mechanical properties**
- **Combination with ECO-Twin extruder enables throughput up to 4,000 kg/h**
- **Very low energy consumption and compact design**
- **High flexibility in processing different flake qualities**

**BOTTLE-TO-BOTTLE**

**Bottle flakes**

**Pellets**

**Preform**

**Bottle**

# PLASTICS RECYCLING **REIMAGINED**

## CUSTOMIZED PERIPHERALS

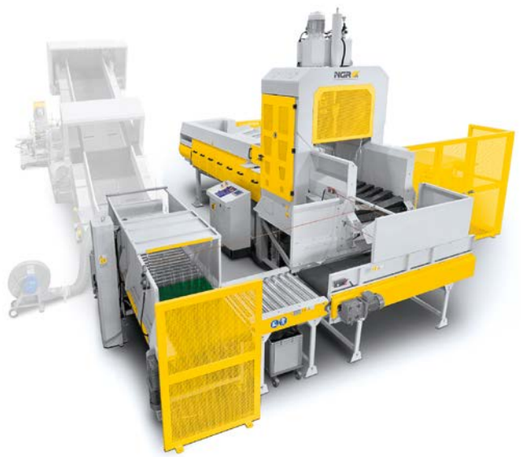
As varied as the properties of the starting materials are, the requirements of our customers are consequently no less varied regarding production sequences, process and quality of the output downstream of the recycling procedure. Because of this, our philosophy at NGR is to understand your needs across the entire process chain and to develop a plastics recycling solution that matches them optimally. It is our goal that in the future, you will work with the technology that is ideal for you and your requirements and achieve a perfect result.

### BEST PRACTICE
### FILM MANUFACTURING SPAIN

**Starting material**
Film rolls with a length of 3,500 mm and a diameter of 600 mm

**Requirements**
> Easy material handling
> De-coring
> Repelletizing (zero waste production without loss of material)

**THE CUSTOMIZED NGR PERIPHERALS SOLUTION**
After a conveying lift has been loaded with film rolls, a conveyor belt picks up the rolls and transports them to the hydraulic splitter, where they are manually de-cored. Any unwanted residual particles are removed in the wind tunnel.





### BEST PRACTICE
### INJECTION-MOLDED BOXES GERMANY

**Starting material**
HDPE boxes in sizes up to 1,200 × 1,000 × 600 mm

**Requirements**
> Easy material handling
> Size reduction
> Recycling (zero waste production without loss of material)

**THE CUSTOMIZED NGR PERIPHERALS SOLUTION**
After a conveyor belt has been loaded with containers and boxes, the process circulation is started at the central control unit. The materials are conveyed automatically through the cutting area, where they are cut into pieces approximately 200 × 200 mm in size. The pieces then drop onto the conveyor belt of the downstream S:GRAN (shredder-feeder-extruder combination).

### BEST PRACTICE
### PIPE MANUFACTURING BELGIUM

**Starting material**
HDPE pipes with a length of 4,000 mm and a diameter of up to 400 mm

**Requirements**
> Easy material handling
> Size reduction
> Recycling (zero waste production without loss of material)

**THE CUSTOMIZED NGR PERIPHERALS SOLUTION**
After a charging hopper has been loaded with PE pipes with a length of 4,000 mm, the process circuit is started at the central control unit. The pipes are conveyed forwards hydraulically and cut into rings between 500 and 600 mm in size using a guillotine. Then they drop onto the conveyor belt of the downstream S:GRAN (shredder-feeder-extruder combination).

### BEST PRACTICE
### FILM MANUFACTURING FRANCE

**Starting material**
Film rolls with a length of 600 mm and a diameter of 400 mm

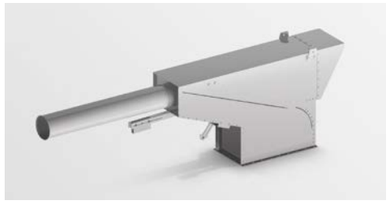
**Requirements**
> Automated material handling
> Low space requirement
> Recycling (zero waste production without loss of material)

**THE CUSTOMIZED NGR PERIPHERALS SOLUTION**
The machine is loaded automatically by an integrated lifting/tipping device for containers, thus eliminating the need for a conveyor belt and any manual labor.

# Feeding and degassing
# Accessories for all needs

## FEED IN

**Depending on the application and form of material, different feeding options are used. If necessary, dosing stations for additives can be installed downstream from the material shredding process.**



**Air seperator**
The air separator is used in the production process to continuously recycle film edge trim, which is fed pneumatically into the machine. With "inline operation" further material handling is unnecessary, and the NGR recycling machine is now fully automated.

**Roll feeder**
With variable feed speed, roll scrap is treated in a process-controlled manner. The virtually unmanned machine is fed continuously. The roll feeder can be operated at the same time with other types of feeding (e.g. conveyor belt).

**Conveyor belt**
The conveyor belt transports the input material through a metal detector into the feeding hopper. If metallic contaminants are detected, the belt stops automatically to safely remove them.

**Dosing unit**
Additives such as colour pigments, $CaCO_3$ and compatibilizers can be automatically added to the material stream in a single step. For this purpose, dosing systems are available for both granulate and powder additives.

**Conveyor screw**
Screw conveyors enable the efficient and uniform transport of free-flowing materials such as flakes, ensuring reliable feeding of the machine or subsequent process steps.

## DEGASSING

**Depending on the degree of contamination and volatile substances in the melt flow, different modular degassing units are used. Homogeneous melt without entrapped gas is the result.**

**Single venting**
Designed for light printing and low humidity. The vacuum degassing system includes a vacuum pump and is connected to two venting ports on the extruder.

**Double venting**
Designed for highly printed plastics, for example, on all surfaces and/or moist plastics.

**Cascade extruder**
The cascade extruder expertly manages the filtered melt, utilizing the Power Venting Section to achieve exceptional degassing efficiency through its enlarged surface area. The metering zone facilitates a gentle and controlled build-up of pressure, while a dedicated drive system optimizes degassing conditions.

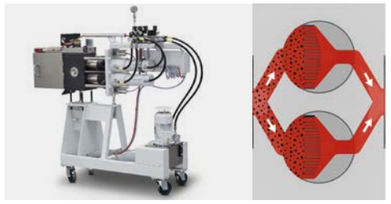
**Water ring pumps with closed circuit**
The water ring pumps are equipped with a separator tank and are available in various sizes – adapted to machine through-put and application. Thanks to the closed circuit, the required water volume is reduced to a minimum.

**High-performance vacuum**
The high-performance vacuum pump is particularly suitable for demanding applications such as the processing of PET. It is equipped as standard with a separator unit to ensure safe and efficient operation.

# Filter & pelletizing
# Accessories for all needs

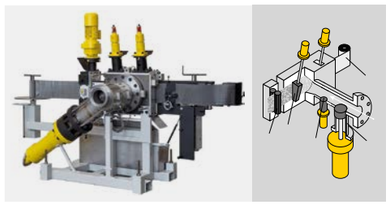
## FILTER

**Depending on the application, customized melt filter solutions are used. For higher contamination levels, scraper filters are applied, while for already very clean materials or fine filtration, mesh filters are used, which filter particularly efficiently thanks to lower pressure differentials.**



**Double-piston screen changer**
For light impurities. The hydraulically operated double-piston screen changer allows continuous filtration of the melt. This allows a screen change without process shutdown.

**Back-flush screen changer**
For heavily contaminated materials. The hydraulically operated double-piston screen changer filters the melt in a process-controlled and continuous manner. The integrated backwash device automatically cleans the screens. The number of back-flushes and the related service life of the screens depend on the degree of contamination of the material.



**Band melt filter**
The belt melt filter is used primarily for fine filtration tasks. Thanks to its low pressure differential, it enables gentle and efficient fine filtration with minimal melt loss.

**High-performance melt filter**
The high-performance melt filter is used for lightly to heavily contaminated materials. It enables a pressure-constant process with long screen service life and at the same time very low melt losses. Thanks to the permanently rotating filter drum, contaminants are continuously and efficiently removed.

**Rotating scrapers**
Rotating scrapers remove the contamination and transport the contaminated melt into the hollow shaft of the scraper. Through a discharge valve, the contamination is expelled from the process by the melt pressure in the filter.

## PELLETIZING

**Thanks to our NXT:platform, the ideal pelletizing system can be used for the application, depending on the type of plastic to be processed, the material properties, and the specific customer requirements.**

**Hot-die waterring pelletizer (HD)**
For thermoplastics with a higher viscosity. The melt exits through the wear-resistant die plate, and is cut by the pelletizer blades. The pellets cooled in the water ring are flushed out, dried in the centrifuge and discharged. By adjusting the blade pressure, pelletizer blades provide a long service life; replacement is quick and easy.

**Strand pelletizer (SP)**
For low-viscosity melts. The melt emerges from strand nozzles, is cooled in a water bath, dried by means of a fan and cut to the desired length in the pelletizer. The result is cylindrical, dust-free pellets with excellent mixing properties.

**Automatic strand pelletizer (A-SP)**
In addition to the benefits of the SP, the A-SP option offers the added convenience of fully automated start-up. The strands are conveyed automatically by a water slide to the pelletizer, and the pellets are dried in a centrifuge.

**Hot die-air pelletizer**
Specially designed for inline applications where water is not used. The melt exits through the wear-resistant die plate, and is cut by the pelletizer blades. The pellets are carried away in the air stream and cooled.

**Underwater pelletizer (UWP)**
For difficult-to-process (e.g. sticky) polymers or thermoplastics with a very high melt flow index. The melt emerges from the die plate and is cut by the pelletizer blades. The whole process takes place under water. In the centrifuge, the pellets are separated from the process water and dried.

# Demonstration Center
## Tech center for the strictest requirements

Every source material fed into the plastics recycling process requires intelligent, high-performance recycling technology and highly complex production processes in order to be returned to the market as a high-value, recycled material. Would you like to get to know our technologies as an interested party and future investor? Or work with our experts on your formulations and production processes as an existing customer? Then the NGR Demonstration Center, with an area of 3,480 m², is the right place for you to improve your performance!

### POST INDUSTRIAL RECYCLING (PIR)
You can test your valuable production scrap material for future ZERO-WASTE production on five different recycling machines.

### POST CONSUMER RECYCLING (PCR)
Put the C:GRAN to the test with your own post-consumer waste and get an idea of its enormous decontamination performance in our technical center!

### PET IMPROVEMENT (PET)
Two P:REACT systems for all applications (e.g. Bottle2Bottle, fiber, film, ...) are operated in our own Demonstration Center. Convince yourself of the outstanding properties of LSP technology with your own material.

**PUT US TO THE TEST!**



# Polymer Analytics Center
## Analysis tools and methods

**Our goal is your maximum output! That's why our in-house Analytics Center focuses on methods to increase efficiency in the areas of PCR, material identification and quality assessment.**

- Thermoanalytical (DSC, TGA) and spectroscopic (IR) methods for material identification to check processability
- Viscosimetry (MFI), rheometer (IV) and other methods for assessing the quality of the input and output of the machine
- Further development of existing methods and development of new analysis techniques to solve even more complex problems, e.g. in the area of post-consumer recycling


# 360° SERVICE

**Our service solutions – comprehensive support for you and your machines.**

## RETROFIT & REFURBISHMENT

**Performance Enhancement through Modernization**
Bring your machines up to date Upgrade and refurbish your machines with targeted improvements to sustainably increase productivity, throughput, and efficiency.

## MACHINE & PROCESS ASSESSMENT

**Optimization for Greater Efficiency**
We analyze machine conditions and processes, eliminate bottlenecks, and enhance efficiency and output quality – ideal for systems of any age.

## MAINTENANCE

**Preventive and Ongoing Maintenance for Maximum Efficiency**
Regular maintenance and analysis by our specialists minimize downtime, optimize operations, and maximize the lifespan of your system.


## SPARE PARTS

**Reliable Spare Parts Supply**
Benefit from seamless access to original equipment parts throughout the lifetime of your machine – ensuring top performance and reliability.

## TRAINING ACADEMY

**Knowledge That Secures Your Success**
On-site or NGR Factory based training provides practical expertise for maximum machine availability and production quality – including certification and a 5% discount on spare parts.

## ADVISORY SERVICE

**Your Questions, Our Solutions**
Optimize your processes with our expert consulting. We provide answers before, during, and after installation regarding processing, functionality, and efficiency to enhance your business success.

## INSTALLATION & START-UP

**A Perfect Start for Maximum Performance**
From installation to the first production run – we take care of connections, commissioning, and training your team to ensure seamless system operation.

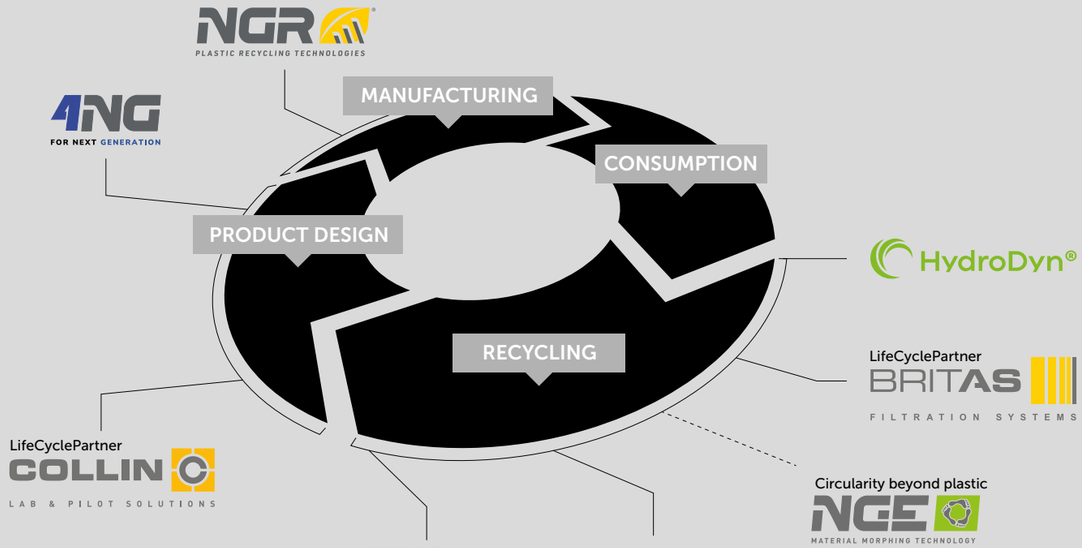
## WARRANTY

**Security for Your Investment**
Protect yourself from unexpected costs with our extended warranty. Our maintenance experts maximize the lifespan of your machines.

## SUPPORT

**Immediate Assistance When You Need It**
Receive expert support in real-time via remote assistance or directly on-site – fast, reliable, and tailored to your needs.

# NEXT GENERATION GROUP –
# Together for a better **future**




**Together for a better future**
In the NEXT GENERATION GROUP, we are convinced that we can achieve great things together. Our mission is simple: by joining forces, we want to fundamentally change the plastics recycling industry and create a better, sustainable future for ourselves and future generations.

As a strong collective, consisting of **Next Generation Recycling Machines, 4Next Generation and HydroDyn Recycling**, we use our combined expertise and decades of experience to develop fully integrated recycling solutions for our customers.

**Rethinking plastics**
In collaboration with our LifeCyclePartners Next Generation Analytics and SynCycle we are rethinking the entire life cycle of plastics – from product design to the recycling process.

With a clear focus on innovative and highly efficient technologies, we are committed to closing the loop, keeping plastics in the loop and reducing the global carbon footprint.

**Circular economy beyond plastic**
Next Generation Elements (NGE) is our expert in developing advanced recycling solutions for biogenic residues. By applying innovative pyrolysis technologies, NGE transforms organic waste materials into valuable secondary resources, contributing to a circular economy beyond plastics. With a strong commitment to sustainability, NGE expands the Next Generation Group's impact, offering solutions that help industries reduce waste and maximize resource efficiency.

Get to know our technologies and become part of our **#zerowaste** goal.

Together we create change.

**next-generation-group.com**

# SUCCESS NEEDS **A VISION**

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