

EN Applications & Solutions

Working for a better **future**

Plastic Recycling Technologies

> Post Industrial Recycling
> PET Improvement
> Post Consumer Recycling

NGR®
PLASTIC RECYCLING TECHNOLOGIES


All
the f
us
fo
NGR
PLASTIC RECYCLING TECHNOLOGIES


action alters
uture. It's on
to change it
r the better.
– Gerhard Ohler – CEO –



WORK
LIFE
MISSION



A significant portion of our lives is spent at work. This makes it all the more important to find a job where you can find fulfillment, bring new ideas to life again and again – and where you feel good.

Is it just a job, or is it a calling?
At NGR, our goal is the latter!

Our motto is to engage in work that not only brings you pleasure, but is also in the pursuit of a higher purpose. Because when you like doing something, you will do it well! Our team is like a family, where everyone feels that they are in good hands. But we are also working for a better future. This is incentive for all of us to give our best every day and make strides in our development. And we gladly invest in this development. After all, a company is only as good as its employees, and people excel when a company supports and challenges them. Growing together, finding better and better solutions for a livable future and having fun while doing so— this working environment definitely exists at NGR.



PET Improvement (PET)

P:REACT is the next dimension of PET recycling. 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 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.

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.

Post Industrial Recycling

E:GRAN 8
A:GRAN 10
S:GRAN 12
NXT:GRAN 14
X:GRAN 16

PET Improvement

P:REACT 18

Post Consumer Recycling

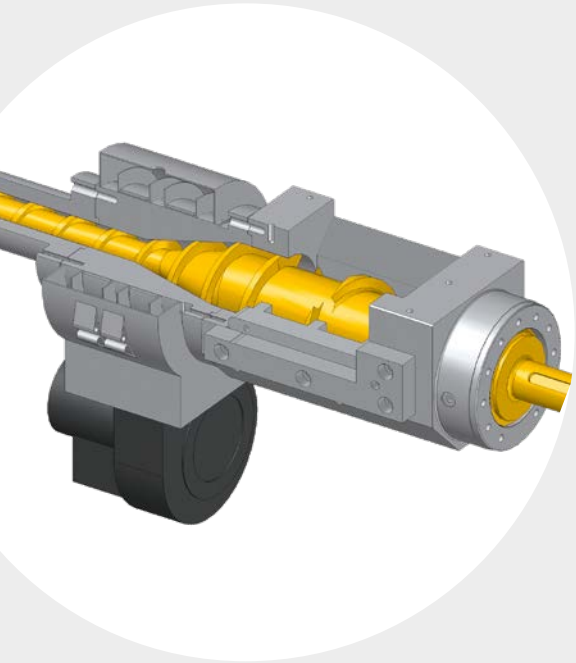
F:GRAN 24
C:GRAN 26

Customized peripherals 28
Add-Ons 30
Demonstration Center &
Polymer Analytics Center 34
Services 35

Post
Industrial
Recycling

E:GRAN

CHOPPER-FEEDER-EXTRUDER COMBINATION





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

More information online!

A space-saving design, an energy-efficient drive and simple, intuitive operation. These are all features of **E:GRAN**, the re-processing technology for thermoplastic film edge trims and roll scraps. Whether it's being used as a stand-alone solution or integrated with a film production process, E:GRAN stands out for its ideal in-feed thanks to the innovative chopper/feeder design.

	max* [kg/h]	max* [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

- **Effective film preparation**
- **Automatic adjustment of the extruder speed to fluctuating edge trim amounts**
- **Startup and shutdown by a single push button**
- **Clean, dust-free operation: The machine can even be installed in production halls**
- **One-step technology – without additional intermediate steps**

PROCESSING EXAMPLES MATERIALS



Post Industrial Recycling



PROCESSING EXAMPLES MATERIALS

PP bands



PMMA injection molding sprues



PP/TPE tooth brushes





ABS bottle caps



HDPE nets

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

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

A:GRAN

SHREDDER-FEEDER-EXTRUDER COMBINATION





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.

	max* [kg/h]	max* [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



PROCESSING EXAMPLES MATERIALS

PP pressure pipe fitting injection molding



Bio-degradable film



PP nonwovens post industrial scrap



PEEK pipes pipe extrusion



PP/EVOH/PP skeletons thermoforming



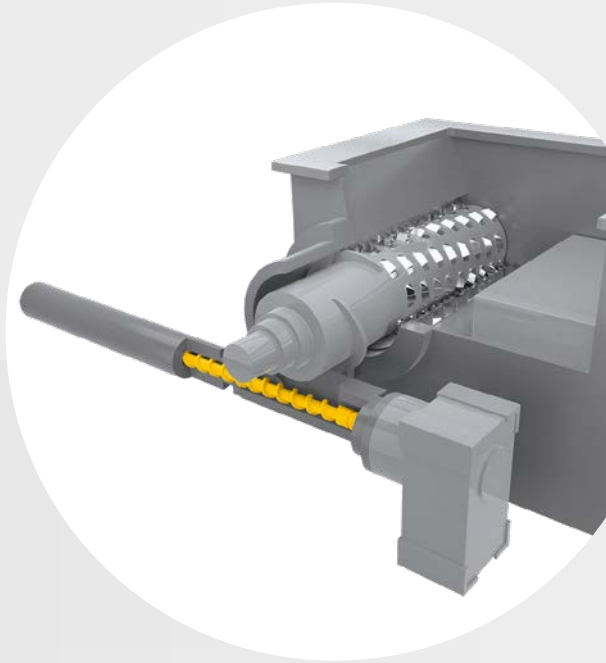
01 PET 02 HDPE 04 LDPE 05 PP 06 PS/EPS 07 OTHERS

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

S:GRAN

SHREDDER-FEEDER-EXTRUDER COMBINATION





The universal solution
for industrial plastic waste

More information online!

S:GRAN is the perfect solution for processing scrap plastic materials of a variety of types, materials and shapes created by industrial processes. Even thick-walled scrap plastic materials as well as fibers and textiles can be processed without additional pre-shredding.

AT A GLANCE

- **Simple, material-conserving processing of industrial plastic waste of any type**
- **Patented single-shaft shredder/extruder combination from the inventor**
- **Auto start and stop by a single push button**
- **Quick and easy start-up and shut-down at any time**
- **Small footprint saves space**

	max* [kg/h]	max* [lbs/h]
S:GRAN 65-50	200	440
S:GRAN 65-70	220	480
S:GRAN 75-50	250	550
S:GRAN 75-70	300	660
S:GRAN 85-70	400	880
S:GRAN 95-70	500	1100
S:GRAN 105-100	600	1320
S:GRAN 125-100	800	1760

* 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



PROCESSING EXAMPLES MATERIALS

PP carpets, post industrial scrap



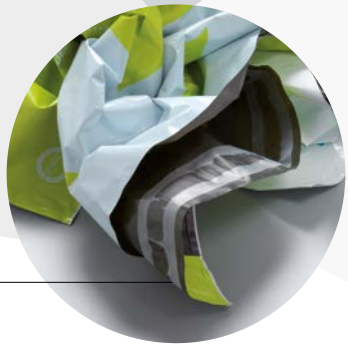
HDPE packing net post industrial waste, scrap



PP biaxial oriented film, film extrusion



LDPE film, with strong print



HDPE automotive blow molding parts



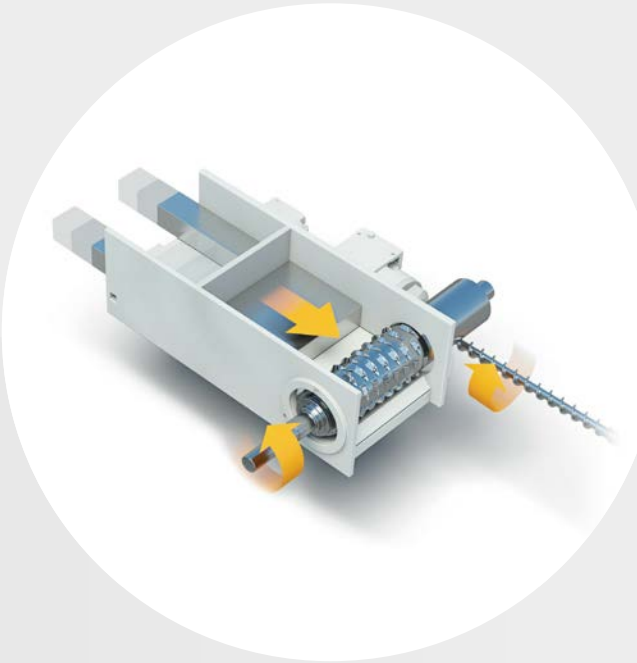
01 PET 02 HDPE 04 LDPE 05 PP 06 PS/EPS 07 OTHERS

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

NXT:GRAN

SHREDDER-FEEDER-EXTRUDER COMBINATION





Tried-and-tested system **sets new standards**

More information online!

The **NXT:GRAN** continues to combine size reduction, feeding and extruding into one extremely efficient work step (ONE-STEP technology). In doing so, it draws upon the experience gained from having over 1000 patented shredder-feeder-extruder combination installations worldwide.

AT A GLANCE

- **Simple, material-conserving processing of industrial plastic waste of any type**
- **Patented single-shaft shredder/extruder combination**
- **Auto start and stop by a single button**
- **Quick and easy start-up and shut-down at any time**
- **Performance increase thanks to Duo-Direct feeder**
- **Simple maintenance thanks to large maintenance openings**

	max* [kg/h]	max* [lbs/h]
NXT:GRAN 65-50	250	550
NXT:GRAN 75-50	280	620
NXT:GRAN 75-70	300	660
NXT:GRAN 85-70	500	1100
NXT:GRAN 95-70	600	1320
NXT:GRAN 105-100	700	1540
NXT:GRAN 115-100	800	1760

* 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



PROCESSING EXAMPLES MATERIALS

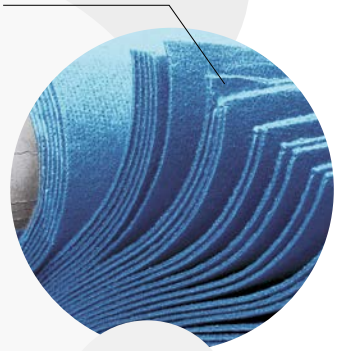
LDPE film rolls decored



PET lumps extrusion start-up



PA carpet rolls post industrial scrap



PP/PA ropes single rope or as a roll





PP woven sack post industrial scrap

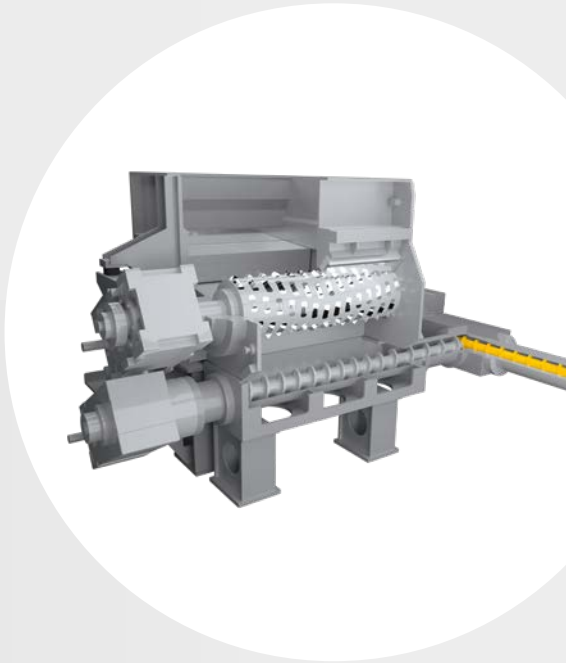
01 PET · 02 HDPE · 04 LDPE · 05 PP · 06 PS/EPS · 07 OTHERS

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

X:GRAN

SHREDDER-FEEDER-EXTRUDER COMBINATION





The power package for plastic waste **of all shapes and sizes**

More information online!

Robust and extremely capable – the power of the **X:GRAN** is clear to see. The X:GRAN solution does more than just process all types of plastics waste. It even handles bulky materials such as large bales and carpet pads – without any additional preliminary size reduction.

AT A GLANCE

- **Easy, material-conserving processing, even for difficult industrial plastic waste**
- **Auto start and stop by a single button**
- **Quick and easy start-up and shut-down at any time**
- **Small footprint saves space**
- **Maximum energy efficiency in the top performance segment**

	max* [kg/h]	max* [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	3750
X:GRAN 205-180	2100	4410
X:GRAN 225-180	2500	5070

* 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.

PET
Improvement

P:REACT

LSP: LIQUID STATE POLYCONDENSATION



The future of **PET recycling**

More information online!

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.

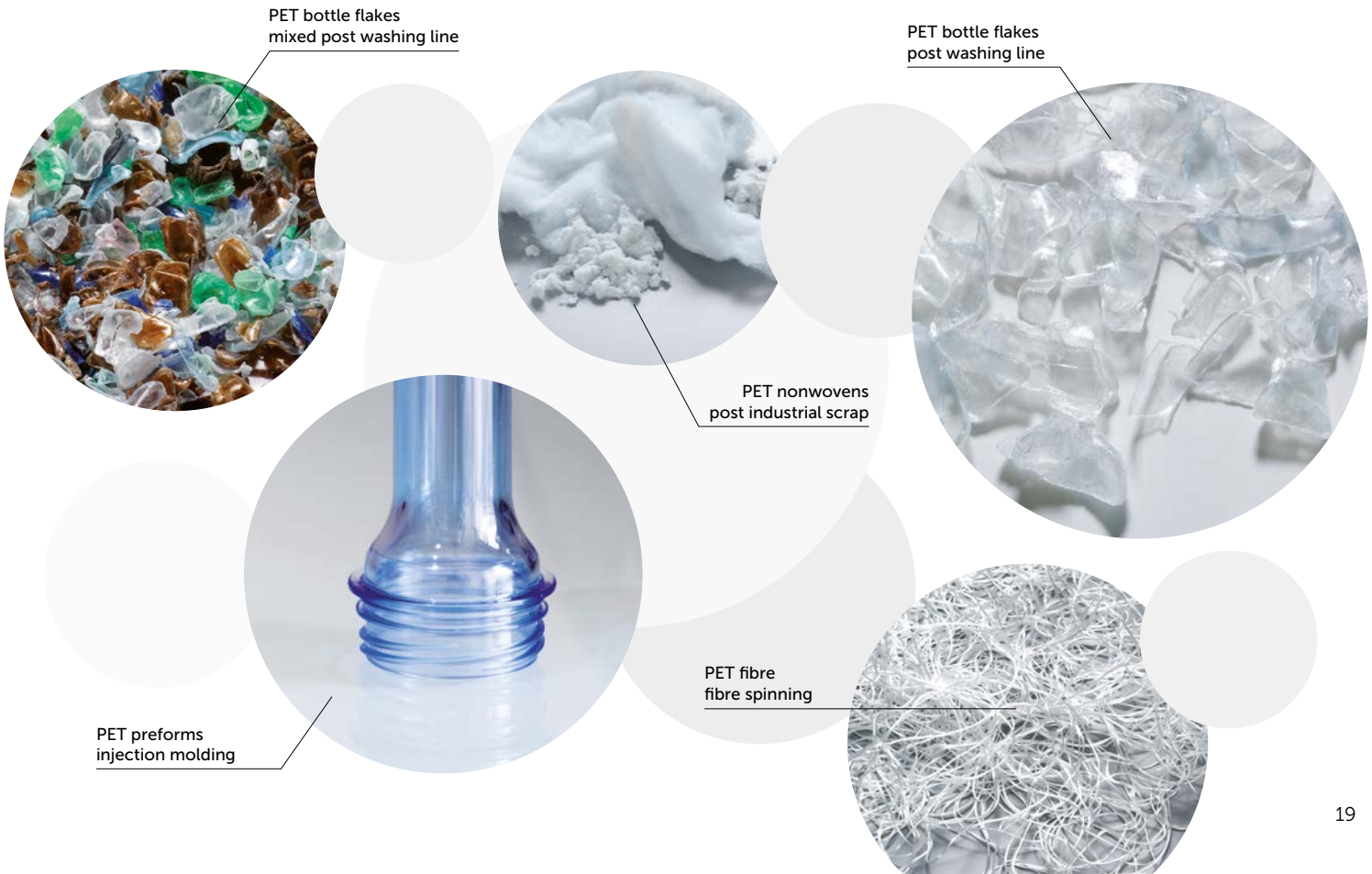
	max* [kg/h]	max* [lbs/h]
P:REACT 600	700	1540
P:REACT 1200	1400	3080
P:REACT 2000	2200	4850
P:REACT 3000	3000	6600

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

AT A GLANCE

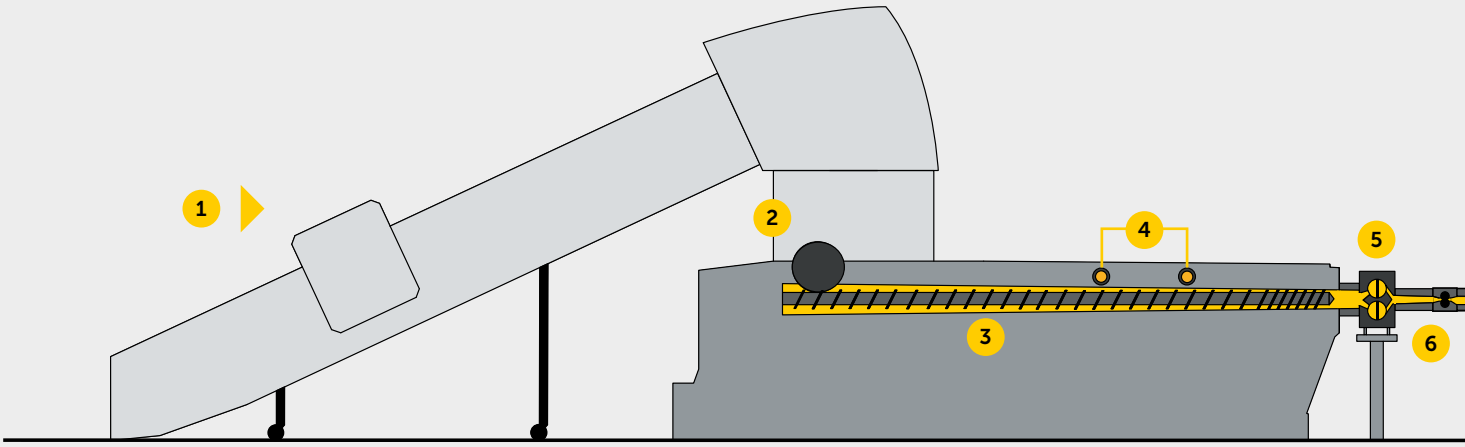
- **PET recycling at the highest level**
- **Continuous process with enormous process stability**
- **Significantly lower energy consumption than conventional SSP applications**
- **100% food grade quality with FDA and EFSA approval and brand owner confirmation**

PROCESSING EXAMPLES MATERIALS



P:REACT

LSP: LIQUID STATE POLYCONDENSATION



Benefit by benefit
by benefit

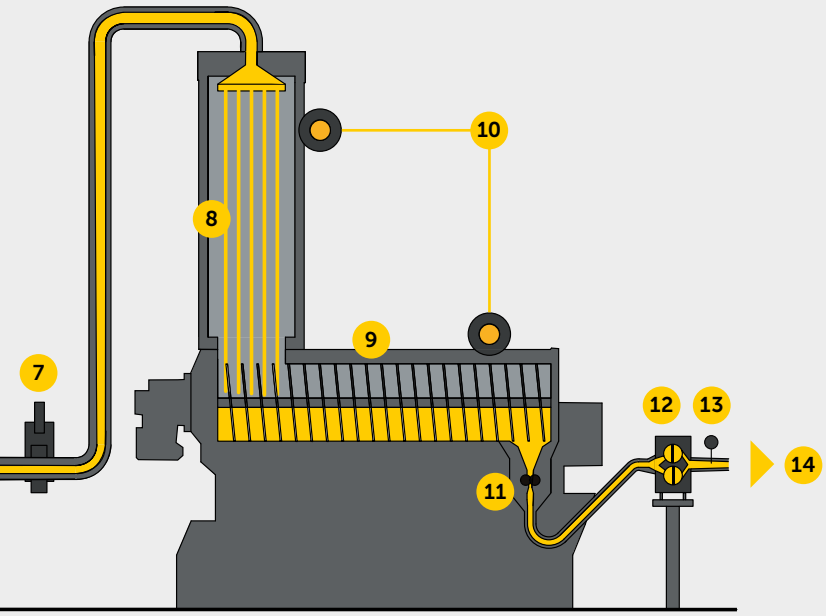
PURE FLEXIBILITY
Restrictions in material feed or composition? No limits with P:REACT. At the first process stage, post-consumer PET can be added either to film rests, reject rolls, edge trims, punch scrap etc. or to fabric such as fibers, textiles and fleece.

PURE FOOD SAFETY
The European Food Safety Authority (EFSA) and the U.S. Food and Drug Administration (FSA) both confirm that the Liquid State Polycondensation (LSP) process is fully food-safe. The Liquid State Polycondensation (LSP) process is fully food compatible and brand owner-tested.

PURE PROCESS STABILITY
The vacuum container disconnects the mass flow from the upstream process stage. This disconnection, combined with the constant-throughput melt discharge pump, results in enormous process stability. In this way, the process quality in any subsequent production immediately downstream is significantly increased.

PURE DECONTAMINATION
Why is the decontamination of the material in the P:REACT so effective? It takes place right in the melt phase of the PET, until the PET leaves this process stage. The degree of purity of the finished rPET is significantly higher than the standards for food specified by EFSA and FDA.

PURE SAVINGS
If the P:REACT is operated with formulations from varying input materials, less of the higher cost virgin PET material can be added or it can be replaced entirely.



1) Manual and/or automatic material feed
2) Efficient size reduction
3) Plasticizing unit
4) Venting unit
5) Filtration
6) Melt pump
7) Bypass
8) Vacuum container (melt reactor)
9) Horizontal drum
10) Discharge of decontaminated substances
11) Melt discharge pump
12) Filtration
13) Viscosity measurement
14) Transfer to a downstream production system

PURE SUSTAINABILITY

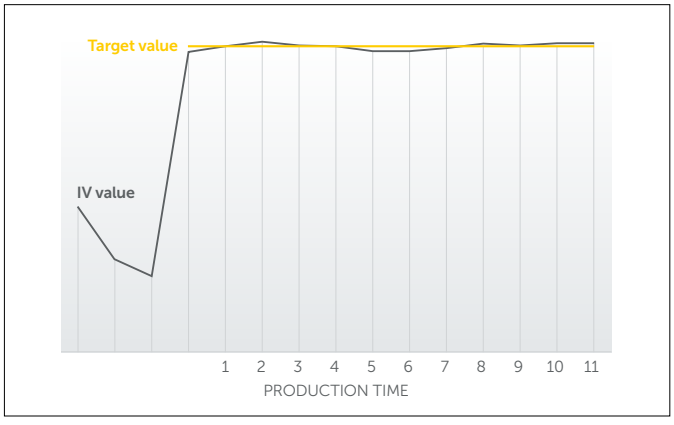
If no new PET material is added, the CO_2 balance improves enormously – with undiminished quality and retention of food safety.

PURE COST REDUCTION

Thanks to the P:REACT, new supply of thermal energy in separate production processes is no longer necessary. This entails high savings in energy and a much lower CO_2 footprint.

CONTROLLABLE IV-STRUCTURE

Due to the conditions prevalent in the melt reactor, ethylene glycol is removed. The equilibrium of the melt shifts in favor of higher degrees of polymerization. This process results in a chain-link generation of PET and subsequently in an increase of the intrinsic viscosity (IV) depending on the residence time of the melt in the vacuum container and the intensity of the vacuum. Thus, the IV value can be controlled actively using these two parameters. Deviations from the desired value are always kept within a minimum tolerance.



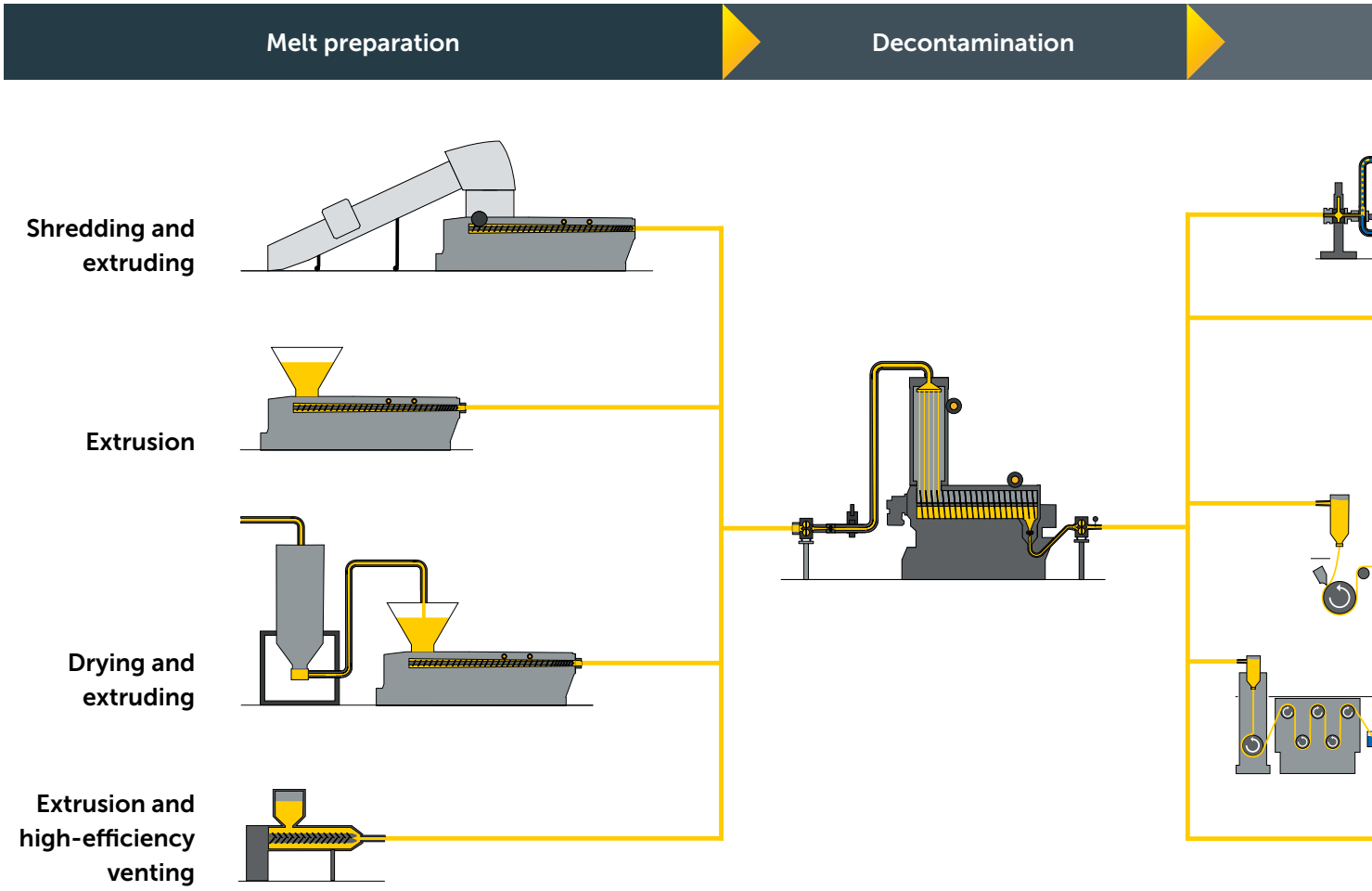
Typical IV curve: IV-decrease during plasticizing and subsequent increase up to the target value. The IV value is kept within a narrow tolerance band during decontamination.

Two P:REACT systems for all applications (e.g. Bottle2Bottle, fiber, film, etc.) are operated in our Demonstration Center. Learn about the excellent capabilities of LSP technology for yourself with your own material.

P:REACT

LSP: LIQUID STATE POLYCONDENSATION

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





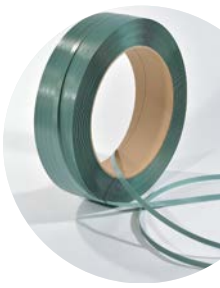
Pelletization unit



Spinning system

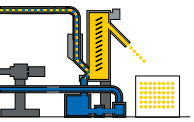


Film manufacturing

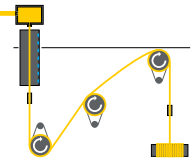


Manufacturing strappin

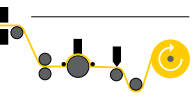
Follow-up process



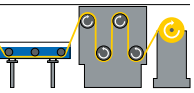
Pelletization unit



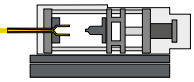
Spinning system



Film manufacturing



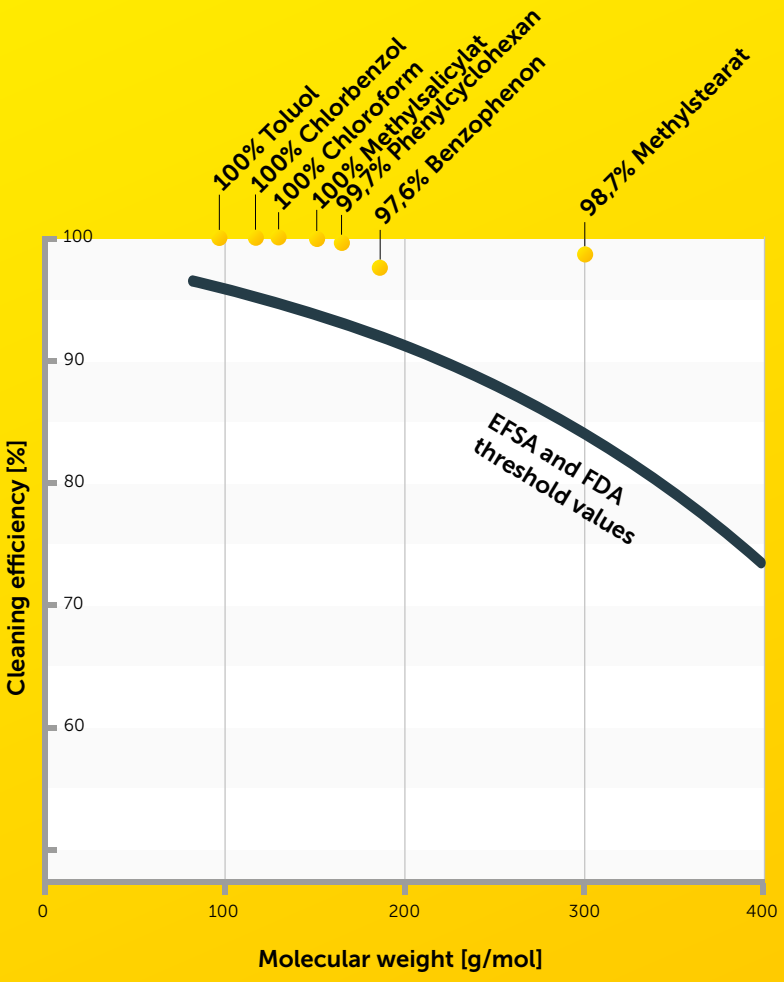
Manufacturing strapping



Preform



Preform



No compromises, **clean**

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.

The system has been approved for **100% food contact!**

Reliable decontamination performance, certified for 100% food contact.

efsa European Food Safety Authority

FDA

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.

	max* [kg/h]	max* [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	3750
F:GRAN 205-25	2100	4410
F:GRAN 225-25	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.

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



PROCESSING EXAMPLES MATERIALS

PP/PE mixed fraction post washing line



PET bottle flakes



PE film flakes post washing line



PO mixed fraction pressed post washing line





Mixed packaging films

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

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

C:GRAN

CUTTER-COMPACTOR-EXTRUDER COMBINATION



The cutting specialist **for wet materials**

More information online!

If the material has a high moisture content, **C:GRAN** is the ideal solution. Flakes or films with a residual moisture up to 12 % are processed in this recycling machine without problems thanks to its excellent pre-drying properties.

AT A GLANCE

- **Preparation of flakes and films with residual moisture up to 12 %**
- **Temperature regulation in the cutter bin**
- **Ideal as a component of a cascade or compounding system**
- **Makes a perfect combination with ABMF melt filter**

	max* [kg/h]	max* [lbs/h]
C:GRAN 85-110	500	1100
C:GRAN 105-120	700	1540
C:GRAN 125-150	1050	2310
C:GRAN 145-160	1300	2900
C:GRAN 165-170	1800	4000
C:GRAN 185-200	2100	4600
C:GRAN 205-200	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.

PLASTICS RECYCLING **REIMAGINED**

CUSTOMIZED PERIPHERALS

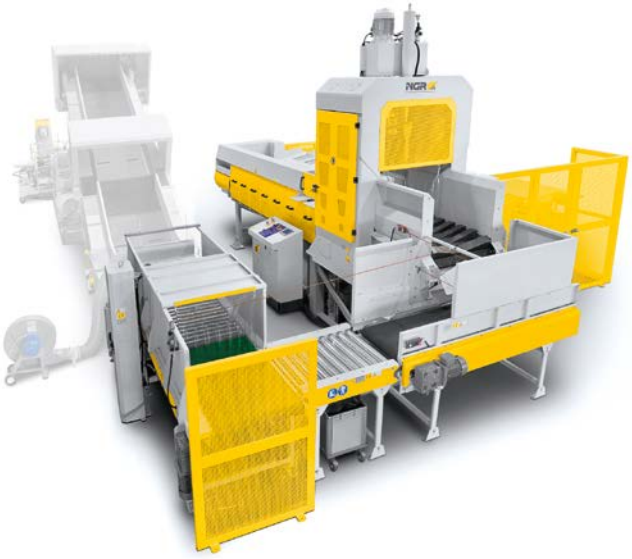
As varied as the properties of the starting materials are, the requirements of our customers are consequently no less varied regarding production sequences, process and quality of the output downstream of the recycling procedure. Because of this, our philosophy at NGR is to understand your needs across 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

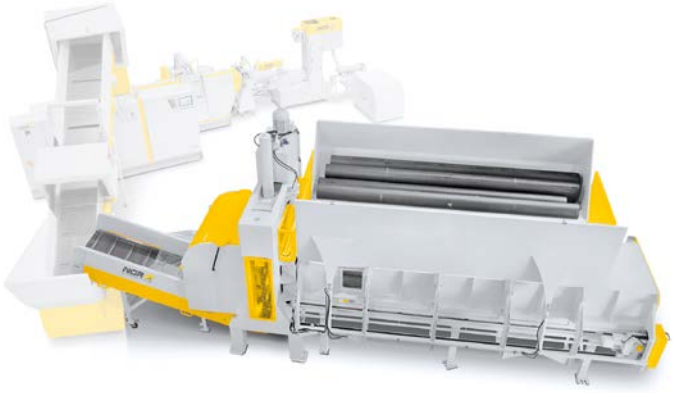


Starting material
HDPE boxes in sizes up to 1,200 × 1,000 × 600 mm

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/LDPE 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
BOPET film rolls with a length of 600 mm and a diameter of 400 mm

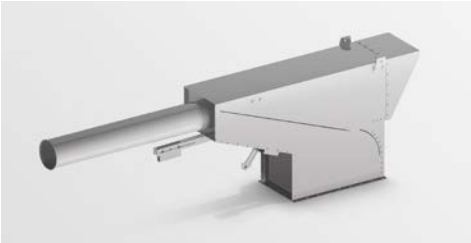
Requirements
> Automated material handling
> Low space requirement
> Recycling (zero waste production without loss of material)

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.

Feed in & 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 feed material through a metal detector into the feed hopper. The belt is stopped automatically, if metallic matter is detected to allow removal.



Dosing unit
Additives such as color pigments, $CaCo_3$, compatibilizers can be added to the material flow in a process-controlled manner. Dosing systems for pellet and/or powdered additives are available.



Conveyor screw
The conveyor screw transports pre-shredded feed material into the feed area of the system (e.g. into the cutter bin, silo or hopper).

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.



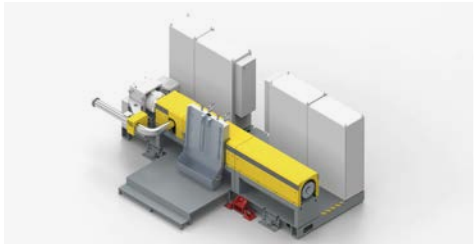
Single venting
Designed for light printing and low humidity. The vacuum degassing system includes a vacuum pump and is connected to two venting ports on the extruder.



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



High-performance vacuum
In addition to the modular venting unit, a combination of water ring pump and high-performance vacuum pump runs in order to increase the vacuum performance (e.g. PET processing).



Cascade extruder
After filtration, the cascade extruder is fed in with melt, which then passes through a venting zone. The following metering area ensures efficient pressure buildup. The conveying capacity can be adjusted with the variable screw speed.



Vacuum pump with closed water circuit
Each venting combination can be equipped with a closed water circuit. The fresh water consumption at the vacuum pump is thereby reduced significantly.

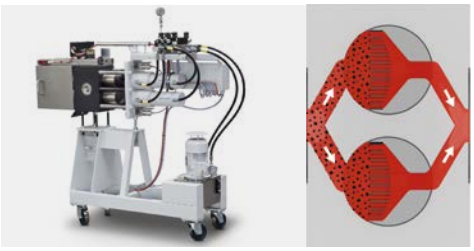
Filter & pelletizing
Accessories for all needs

FILTER

Depending on the application, a variety of filter systems is used. The melt is cleaned efficiently with low melt loss. Basically, the appropriate filter is selected to meet the customer requirements. Depending on the degree of contamination, the following variants are available as standard.



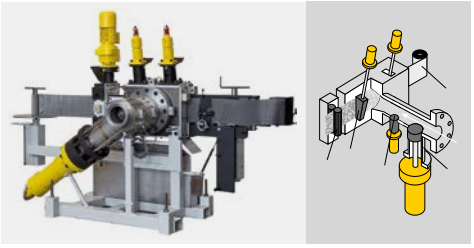
Manual screen changer
For clean, in-house production waste. Using the manual lever, two screens can be exchanged alternately to allow for cleaning of the melt stream. The process is discontinuous, because the machine must be shut down to change the screen.



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
For high contamination at high throughput rates. With the lowest melt losses and low filter costs, fully automatic operation ensures excellent filtration results. It is used particularly for post-consumer plastics.



High-performance melt filter
The continuous melt filters in the ERF series are suitable for a wide range of moderate and highly contaminated polymers and provides a pressure constant operation, long screen lifes, very low melt losses and a compact design. By the permanently rotating filter drum foreign particles are being constantly and effectively removed, depending on the application ERF melt filters enables throughputs from 150 to 10,000 kg/h.

PELLETIZING

Due to the modular construction of the recycling systems, different pelletizer systems can be used in a process-controlled manner, depending on the plastic processed.



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 starting material fed into the plastic recycling process requires intelligent, powerful recycling technology and highly complex production processes so that it can ultimately reenter the market as a high-quality recycled material.
Are you a potential buyer or future investor who wants to learn more about our technologies? Or are you an existing customer who wants to work with our experts on your formulations and production processes? Then the NGR Demonstration Center is the right place for your to improve your performance!

Polymer Analytics Center
Analysis tools and methods

Here, we focus on a scientific level with 3 specific areas of activity:

> 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



NGR customer service – **perfect satisfaction included**

Excellent technology requires excellent customer service. Ensuring the highest efficiency and minimized downtime of the recycling machines by providing excellent worldwide support is NGR's foremost goal. The offerings of the NGR Service Sextet are not only based on our 100 % commitment to perfect service but also on our highly trained employees and specialists who know the technology like the back of their hand.

CONTINUOUSLY AVAILABLE SPARE PARTS PACKAGES

For the shortest standstill times and smooth start-up without delay, NGR offers its customers spare part and commissioning packages. These are adapted to the individual requirement and guarantee 100% reliability.

HIGHEST LEVEL OF PROFESSIONAL MAINTENANCE & TRAINING

The most professionally trained technicians are standing by around the world, ready to maintain and repair the systems. In addition, each maintenance appointment also includes follow-up training for the operators—to ensure maximum performance.

FASTEST SPARE PARTS SUPPLY

Spare components can be requested conveniently by phone, email or the NGR spare parts web shop. Stocked spare parts are delivered within 24 hours in Europe.

IMMEDIATE REPAIR SERVICE

In case of a sudden malfunction, an on-call service technician is available six days a week (Mon–Sat) for rapid-response repairs. These are either carried out by remote access or by local service partners with short turnaround times.

RETROFIT & USED MACHINES

NGR works pro-actively towards improving cost-effectiveness and extending service life: For example, after certain time frames, we recommend that individual components be replaced or software updated for better performance.





SUCCESS NEEDS **A VISION**

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