C:GRAN

CUTTER-COMPACTOR-EXTRUDER COMBINATION

The recycling professional for post-consumer challenges

NGR
PLASTIC RECYCLING TECHNOLOGIES

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.

The recycling professional for **post-consumer challenges**

The **C:GRAN** has exceptional pre-drying characteristics. The advantage: It can process scrap material with high moisture and/or contamination, reliably converting it into top quality pellets that meet the highest standards in downstream processing.

THE WORKING PRINCIPLE

The plastic waste is chopped by rotating knives in the proven concept of a cutter compactor. Specially arranged internal deflectors provide additional compacting of this material. This frictional heat densifies the plastic and force feeds it to the extruder screw.

The customized extruder geometry guarantees efficient use of the preheated and compressed material from the cutter compactor. The result is maximum output and a high degree of homogenization while minimizing energy consumption.

Energy-saving, **efficient**

OPTIMIZED MATERIAL PROCESSING

The optimal cutting geometry and efficient material feeding obtains the highest processing ability in the shortest time. This guarantees complete filling of the screw and consistently high output rates with low energy consumption.

CUSTOMIZED EXTRUDER SCREWS

Correct melt preparation is essential to achieve the best results. Screw geometries that are customized for each material are an additional factor guaranteeing the best homogenization, the highest output and the lowest possible energy consumption.

Maximum production with optimal quality.

“In many cases, reprocessing high moisture materials can be a problem. The C:GRAN is a solution for using these resources as well: Film or flake with up to 25% moisture can be repelletized directly downstream of a wash line — without a separate drying process.”

Roland Tully / Quality Assurance

One-of-a-kind **stability**

TEMPERATURE REGULATION IN THE CUTTER BIN

To keep the material in an ideal temperature window, intelligent control is used for the energy input during the cutting process. With the one-of-a-kind **NGR temperature controller**, the feed of the cutter bin, the speed of the cutter compactor and the material feed into the extruder are controlled fully automatically.

Thanks to precision control circuits, this enables the system to respond to temperature changes. Stable production output is guaranteed even in case of fluctuations of the input material.

"The fact that the temperature regulation and the energy input are controlled intelligently is a one-of-a-kind feature for the most efficient material processing—and extremely high quality results."

Peter Pötzl
Strategic Procurement

Automatic, **correct**

PROCESS-CONTROLLED ACROSS ALL MACHINE COMPONENTS

From the feed to the pelletization, all processes are controlled using the easy-to-read touchscreen.

The recipe management of the operating element increases reproducibility and guarantees easy and correct setting of the machine parameters.

Constant performance with
automatic process control

Simple, **automated**

EASY-GOING

The **C:GRAN** features convenient and user-friendly operation. Simple startup and shutdown enable extremely fast material and process changes without long standstill times, giving a boost to production output.

EASY AUTOMATIZATION

The high degree of automation ensures stable processes and, at the same time, excludes possible user errors. The result is recycled pellets that meet the highest standards for recycling.

EASY INTEGRATION

Standardized software interfaces enable fast and safe integration of upstream or downstream processes, such as the material feed from a plastic washing system. This guarantees faster commissioning and the efficiency boost that goes with it.

Standardized software interfaces and a high level of automation ensure a reliable material feed, **stable processes and increased production output.**

High quality, **high standards**

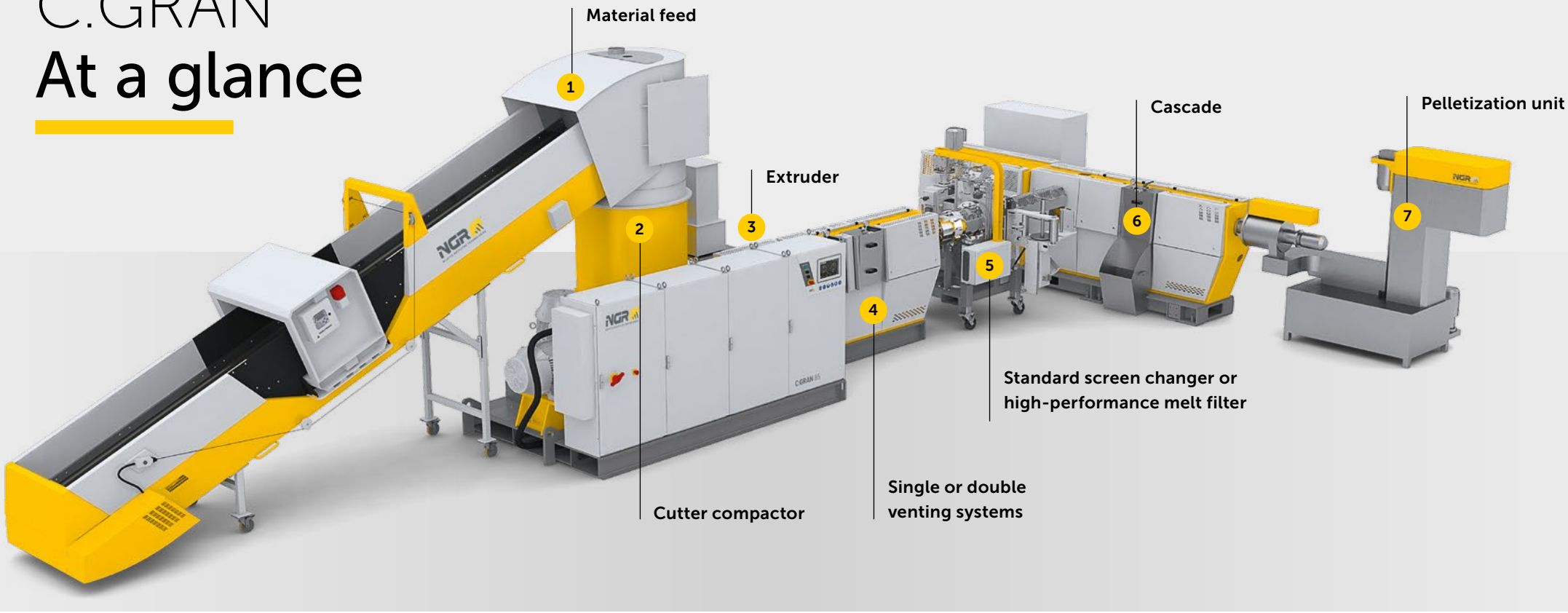
Quality recycling stands for meeting the highest standards with regard to the composition of the recycled pellets.

Using test equipment that measures quality enables the resulting material characteristics to be ensured consistently.

Inline test equipment constantly monitors viscosity, pellet density, color values, contamination and tensile strength. In addition to long term evaluations, this also enables ongoing process optimization—guaranteeing desired pellet quality in real time. Flow scales with metering systems, odor management, and other external systems can also be integrated to help optimize monitoring.

Inline test equipment ensures high material quality and **increases the usable material quantity.**

C:GRAN
At a glance



1) **Material feed** (conveyor belt, roll feeder, air separator)
2) The **cutter compactor** ensures size reduction, compaction and pre-drying of the material
3) The heated material is melted and homogenized in the **extruder**
4) **Single or double degassing systems** remove volatile components in the melt flow
5) The melt is cleaned, depending on the application and customer request, with a **standard screen changer or high-performance melt filter**
6) For organic impurities, **cascades** can be used for the best possible venting performance.
7) A **pelletization unit** at the end of the recycling process produces uniform recycling pellets

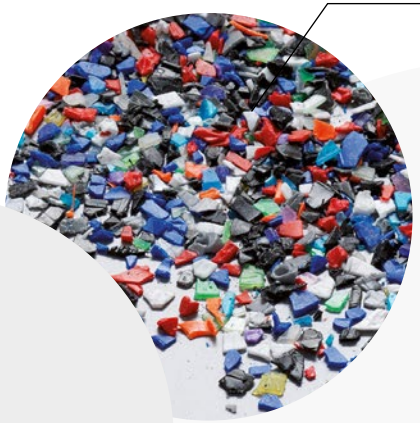
Processing examples
Materials

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

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

PP/PE mixed fraction downstream of plastic washing system

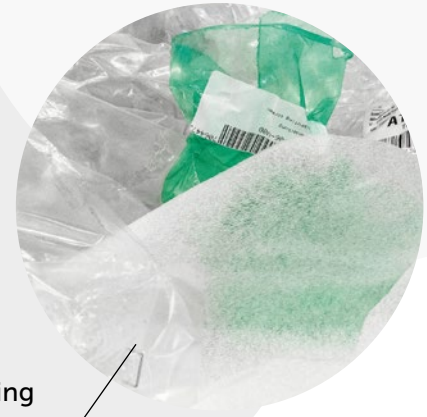
PP flakes for injection molded parts



PE flakes downstream of plastic washing system

Mixed fraction, pressed, downstream of plastic washing system

Mixed packaging films



Pellets - **the end result**

PELLET SIZE

In addition to the material quality, uniform pellet size ensures optimal recycling and homogeneous mixing. By doing so, NGR indirectly helps ensure consistent quality of your end products.

One major factor here is the wide range of pelletizing options, each perfectly tailored to the specific material characteristics and customer needs. Options include water ring / hot die-face, strand or underwater pelletizers.

"Our company is small enough to enable us to act dynamically on an international level. This enables us to guarantee the availability of spare parts around the world."

Ammal De Paul Bulhosen / Area Sales Manager

Perfect satisfaction **included**

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.

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.

IMMEDIATE REPAIR SERVICE

In case of a sudden malfunction, a on-call service 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.

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.

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.

Specifi-
cations

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

	Extruder screw Ø [mm]	Cutter bin Ø [mm]	max* [kg/h]	max* [lbs/h]
C:GRAN 85-110	85	1100	500	1100
C:GRAN 105-120	105	1200	700	1540
C:GRAN 125-150	125	1500	1050	2310
C:GRAN 145-160	145	1600	1300	2900
C:GRAN 165-170	165	1700	1800	4000
C:GRAN 185-200	185	2000	2100	4600
C:GRAN 205-200	205	2000	2500	5500

* Output values for LDPE in accordance with NGR company standard, depending on material and composition.
In addition, NGR provides all equipment for pellet transport, such as fan, pipes, cyclones, etc.

Contact us with **your challenge**

WE DON'T PRINT. DO YOU?

YOUR PLASTIC WASTE IS THE RAW MATERIAL OF TOMORROW.

In our recycling test centers, we can prove the NGR reprocessing performance on your own scrap materials. We look forward to the opportunity to prove it to you in person.

Working for a better **future**

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