

# Cut materials down to size

**Una-Dyn**, a Piovan company, designs, manufactures and installs auxiliary products for the plastics-processing industry. Giorgio Santella, corporate vice-president of service and sales North America at Piovan, and Bob Harrison, product manager at Una-Dyn, discuss the purpose-built Size Reduction Group, improved cutting angles and how shredders can boost the power of granulators.

## Una-Dyn recently launched its Size Reduction Group (SRG). Can you tell us more about this?

**Giorgio Santella:** Size reduction in plastics is the first step in optimising any production model. Plastics processing can generate a high quantity of rejects that are not necessarily defective parts, but rather sprues, trims, purges or other parts that can be granulated and reused.

Knowledge of the various sectors in which the plastics industry operates determines the best size-reduction solution. Experience and competence are valuable when approaching size reduction; that's why Una-Dyn has developed the SRG, a team of application engineers who develop size reduction solutions, based on the part that will be granulated, the material used and the process supported. The SRG also determines how any product will be designed, configured, packaged and applied.

## What value does the tangential cutting system add to the new range of machines?

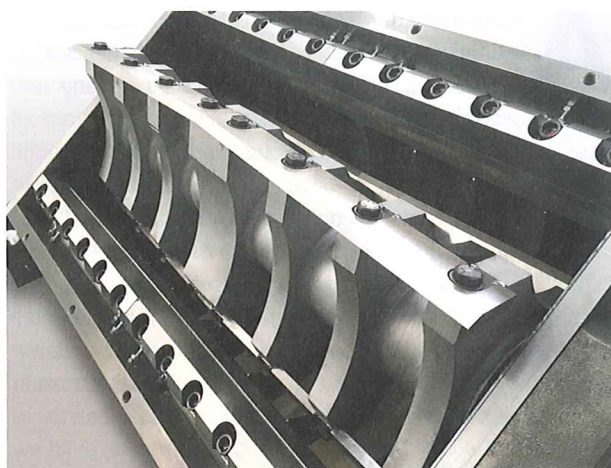
**Bob Harrison:** The tangential cutting system is designed with a high-angle approach between the rotating and stationary knives. This cuts more efficiently and uses less power than the low approach angle that is found on most conventional machinery. When the angle of approach – or tool-rake angle is higher – the cutting force is stronger, the frictional force weaker and the resultant force greater. When the angle of approach and shear angle are higher, the frictional angle is lower, in regard to the resultant force.

## How have the granulators improved efficiency?

**GS:** They have better cutting efficiency, thanks to higher cutting and lower frictional forces, which results in lower power consumption and an improved performance. In addition to the tangential cutting system, our granulators have a relief angle on the stationary knives for efficient cutting and top-quality regrind. Our granulators are equipped with a massive solid rotor pulley for greater inertia energy. All rotors are scooped for a positive ingestion of thin-wall parts to reduce 'bouncing' on top of the rotor. The average energy consumption of a conventional granulator is 40kWh a ton of regrind produced, while the energy use of a Piovan granulator is 25kWh a ton. This 40% in savings adds significant value to the client.

## In what ways can the machines be customised?

**BH:** The granulators have optional rotor styles to meet every application. The 17 and 25 series can come with a three-blade open rotor or a solid-staggered rotor. Larger models use



The tangential cutting system.

adjustable rotating knives (ARKs), which provide the tightest gap possible between the rotating and stationary knives. ARKs are gapped independently, so they do not need to be sharpened as a set. The smallest amount of material is removed from each knife when sharpening, in order to maintain longevity.

Knives are gapped outside of the machine in an included adjustment fixture for safe, easy and accurate settings. A spare set of knives can be gapped in advance, reducing the time it takes to change them. A third optional knife style is the U&G Disposable Knife System, which is available in four models. This product features knives that have had their mass reduced by 95%. They can be used with high-performance tool steel and have ten times the wear resistance of other conventional knives.

## How does the single-shaft shredder complement the granulators' work?

**BH:** For size reduction, it is more efficient to use a shredder for pre-sizing large feedstock before the granulating process. A 30hp shredder, in conjunction with a 20hp granulator, can achieve the same results as a 100hp granulator on its own. Shredders are also used in certain applications instead of granulators.

Take granulating purge blocks, where purging the injection unit is necessary for colour or material changes; our customers do tens, if not hundreds, of material/colour changes a week, and every alteration needs to purge the injection unit. ■

### Further information

Una-Dyn  
<http://unadyn.piovan.com/en/size-reduction-systems>

