Technology Bulletin
from the granulation experts at Conair

Get the Most from Your Granulator – Six Tips for Proper Maintenance & Operation

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Granulators sometimes seem like outcasts in the auxiliary equipment world. They are often the last piece of equipment to be considered for purchase in a plastics processing operation, and more times than not, the first to be ignored when it comes to proper care.

In spite of their second class citizen status, granulators can, indeed, help extruders and injection molders alike be more efficient and, thus, more profitable, in their business. A basic understanding of the key areas where granulators need the most attention can help you plan your own preventative maintenance schedule and ensure a long, productive life for your unit.

When you bought your granulator, your supplier probably provided comprehensive instructions on when and how critical maintenance should be performed. This article by no means is meant to replace the granulator manual. These are just some quick guidelines for you to follow so you can avoid major granulator problems.

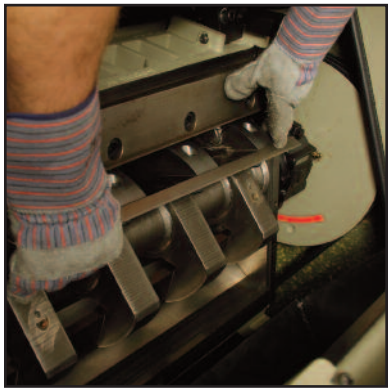
1. Are Your Rotor Blades Still Sharp?

Your blades will go dull if you use your granulator long enough—guaranteed. The question is how soon will they dull? Any glass-filled material will, of course, be harder on your blades than, say, acrylic. Worse still, a wrench or a bolt can fall into the feed hopper and ruin your blades in an instant.

If you're wondering why your regrind contains more dust and fines than normal, why throughputs are down and noise-levels are up, chances are your blades are dull. This is, far and away, the most common granulator problem. (Remember your granulator has not only rotor blades, but one or more bed knives as well. If one is dull, so is the other.)

Check your blades regularly. A quick visual inspection is all it takes to check your blades and verify that they are sharp. This practice should be built into your regular preventive maintenance schedule. If they are dull, you have two choices: replace or re-sharpen. Most suppliers provide either sharpening or replacement programs, or both, and this should be clearly outlined in your manual.

Also, if your blades are dull, especially if they've gone unattended for long periods of time, your screen and screen cradle may have suffered as well. So take a look at the screen holes—if they are beginning to appear pear-shaped, it's probably time for a replacement, again from your granulator supplier. Bottom line: pay a lot of attention to your blades!



Sharp knives are key to optimum granulator performance.

2. Mind the Gap

If your blades are sharp and all else appears to be in good repair, but you're still not getting the level of quality you expect in your regrind, chances are the all-important knife gap is out of tolerance. The gap refers to the space between the rotating knives and the fixed (bed) knives. Too far apart and the efficiency of your cutting is greatly reduced. Too close and you will hear a loud clacking sound as one or more of the spinning knives come into repeated contact with the stationary knives.

The gap is pre-set by your manufacturer before the granulator leaves the factory but a lot of things can happen on the road. That's why it's so important to check the gap as soon as your granulator arrives, after every blade repair or exchange, and on regularly scheduled intervals.

Clearance between rotating knives and fixed knives is normally between 0.20 and 0.30 mm. Using a wrench, feeler gauge, and a pair of gloves, adjusting the gap is a relatively simple process. Remembering to do it is not. Put gap adjustment in your maintenance schedule and increase the life and effectiveness of your granulator.

To ensure quality regrind, maintain the proper gap between the rotating knives and bed knives.

3. What's Your Evacuation Route?

Your granulator has a bin to collect the regrind after it is ground and falls through the screen. This bin is often– and inaccurately–referred to as a storage bin. You should never, ever store regrind in this bin. Regrind is just held there temporarily so it doesn't spill all over your floor. If the granulate stays too long in this bin, it backs up. And when it backs up, it increases wear in the blades, wear in the screens, and of course, throughput decreases dramatically.

The obvious answer to this problem is to either slide out the bin and empty it at regular intervals or use an evacuation tube fixed to a vacuum conveying source to automatically remove the granulate from the bin. This is certainly the best and most recommended method of material removal but it is by no means foolproof. Be sure that the loader that is evacuating your regrind bin has the capacity to remove as much material as the granulator is processing. If it doesn't, your granulator will continue to back up regularly.

Don't overfeed your granulator. Consistent feeding of scrap decreases downtime.

4. Proper Feeding for a Healthy Granulator

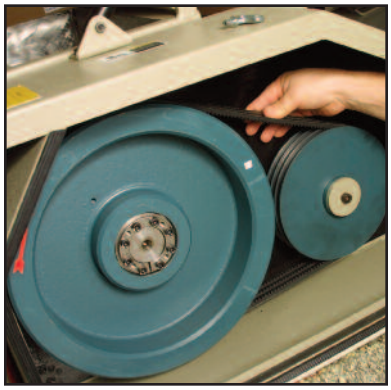
Perhaps the opposite of under-evacuating is over-feeding. Your granulator is sized to a particular application and, hopefully, is still doing that same application. But often when an existing granulator is wheeled across your shop floor to perform its duties for a new job, the materials are different, the throughput is different – in fact, everything is different than what the granulator was originally purchased for. Over-feeding your granulator will, obviously, back it up, reducing productivity and, in some cases, the granulator can simply cease working.

Just as it's better to automatically remove regrind from your granulator, it's also better to automatically feed your granulator–either with a robot or a conveyor. That way, there is no chance of over-feeding your unit, causing inefficiency and downtime.

It is also important to avoid underfeeding. If your granulator sits idle and the rotor spins without parts, the energy efficiency ratio is greatly decreased. You can and should expect a certain throughput rate from your granulator but if your scrap is sitting next to your machine in a drum, box or storage area, you are definitely not getting the most from your unit. What inevitably happens is that an over-eager operator dumps the whole box into the granulator. The result: downtime. Regular, steady feeding of your granulator is best.

5. Don't Forget Belt Tension

Particularly with a new unit, it is exceedingly important to check and readjust the belt tension. Why? After a few hours of operation the belt will give way, almost to the point of its maximum dimension. So, after about five hours of operation, shut down your granulator, remove the belt guard, and tighten the belt per the instructions in your manual.



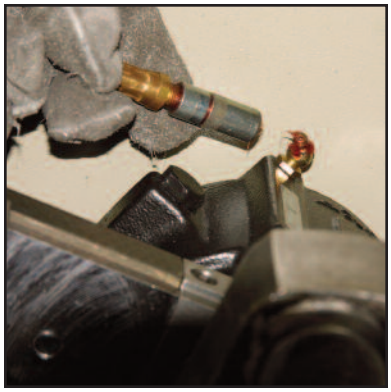
Check and replace belts on a regular schedule to keep your granulator running efficiently.

However, what about an older granulator? Perhaps you've owned it for years and have regularly checked knives, screens, gaps, feeding and discharge, but your granulator has started to jam, stall, or even seems to vibrate excessively. Check the belt tension. Over time, a belt may need to be replaced as well. Bottom line: don't forget to include this important area in your regularly scheduled maintenance check.

As with any piece of equipment, some parts will wear and need to be replaced. Therefore, most manufacturers provide a list of recommended spare parts you should keep on hand. By keeping a $700 to $1,000 inventory of frequently needed spares, you can often avoid losing valuable production time.

6. Don't Lose Your Bearings

This probably goes without saying, but don't forget to grease your bearings. Bearings that are properly lubricated will extend the life of your granulator. If you hear them rattling, grinding and otherwise making noise, it's too late and the damage has been done. Some models have sealed bearings with blow-out ports to help evacuate dust. Others have out-board, pillow-block type bearings with "zerk" fittings. These can be greased on a regular basis, and this will add years to the life of your granulator. Follow the granulator manufacturer's recommendation for care and lubrication of the bearings in your unit.



Grease bearings to prevent excessive wear and tear, and unscheduled downtime.

For the most part, if all safety and operation procedures are followed carefully, your granulator will function properly for a long, long time. The most important points in a good preventative maintenance programs are addressed here. For a more complete list, consult the manuals that came with your granulator or call the Conair granulation experts. They are always ready to help you with any questions you may have about implementing and maintaining a successful scrap-reclaim program.