



## Optex Tips

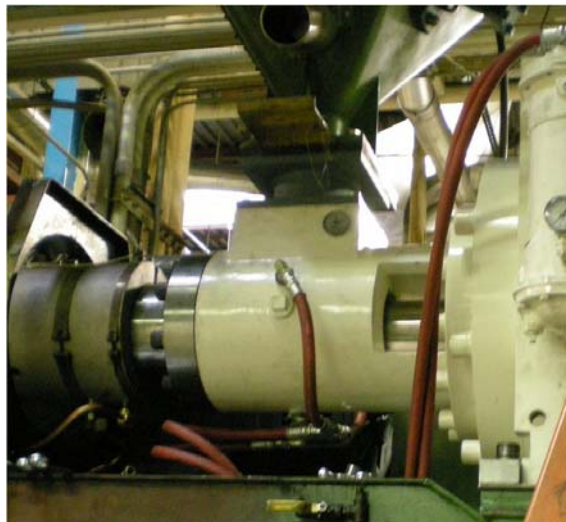
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Optex Process Solutions, LLC  
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Welcome to our third Optex Tips Newsletter. This is a quarterly publication dedicated to extrusion process improvement. We hope you find the tips useful and we welcome questions and suggestions for future issues.

Sincerely,  
Andy and Beth  
Optex Process Solutions, LLC

## Understanding and Troubleshooting Your Cast Feed Throat



As feed screw designers, we often find that everyone wants to know what the metering depth or mixer design is for a particular screw. We rarely get asked, what is the depth or pitch for the feed section? The feed section is a very important part of screw design. If a material does not feed well into the screw, you could get poor output, surging and quality problems. The feed rate of the screw is examined as closely as the metering and mixing when designing a screw.

The temperature of the cast feed throat can also influence the feed rate of a polymer.

The principle of the flighted screw is to force the polymer along the screw by getting it to stick to the wall and slide on the screw root and letting the flight push the material forward.

Adding temperature readout to the cast feed throat can provide an early warning of processing problems or a troubleshooting aid. Cast feed throats often have problems in that minerals and deposits fill the small water channels in the cylinder casting over time (especially if using hard water). Once this occurs, water flow is restricted. As the contamination builds over time, the cast feed throat does not cool as it should. A hot inner surface can lead to resin feeding problems and if it becomes too hot, a bridge or melt block.

Most cast feed throats have a flow meter on the water line. Many times, these flow meters either do not function correctly or become difficult to see with dirt and dust build up. Even if the flow is turning in the meter, it may not be carrying heat away due to contamination in the channels.

The temperature measurement can be a simple thermometer that is mounted in to the throat (as shown in the photo) or it can be as complicated as thermocouple readout to a panel that alarms the operator when the temperature is too high.

Suppose you have a feed section that is not cooling properly? How can you correct the problem? If the section is not completely blocked, you can have the section acid flushed. If the blockage is at an entrance or exit, the holes can be drilled out if you are very careful. It is best to just use a small drill to see if you can break a hole into the channel and then use an acid flush. If the acid flush does not work, the feed cylinder may be so fouled that you will need to replace it.

As previously mentioned, a hot feed cylinder can cause a bridge or melt block. If you get one of these melt blocks, you can use HDPE sticks to break it up. These sticks can be round or square, about 1" in width, height or diameter. They are usually 2-4" long. Feed these one at a time into the extruder throat. The sticks will push the melt block further into the screw where it can break up and melt. Use of these sticks can help eliminate the need to pull the screw.

When running low melting point adhesive polymers, it is good to also cool the root of the screw.

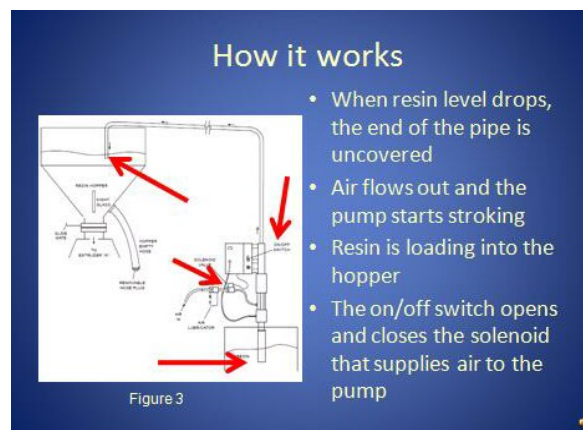
Take a look at the following feed throat photo. The barrel is part of the throat and contains the opening. The cooled section of the throat clamps onto the barrel and is constructed in two halves. You will notice that the bottom half is not cooled at all and the top half has minimal cooling. The design is not good for low melting point or COF polymers due to the poor cooling ability. Replacement of the barrel and clamp on throat with a separate barrel and cast feed throat is recommended.



Taking care and monitoring the temperature of the feed cylinder will prevent unnecessary processing problems in the future.

## Operator Training for the Future

Re-usable, Automated Program



Many companies spend money training operators and process people when a new line or piece of equipment is installed in their plant. Everyone is trained the same way with the same methods. Years later, how many of the original people are still working at your plant or still in the exact same position? If your answer is most of them, count yourself as lucky. If you are like most plants, people have moved around or left. How are new people trained? Is it left to the people that are still there and do they get the same message as the original group did? There is a better way to achieve training consistency.

Optex has done a number of training programs that are designed to be reused. Each program is tailored specifically for your equipment. The training is broken up into individual modules that contain photos, videos and diagrams of your line. The training is animated with narration and only requires the trainee to start the module and watch. Review questions and testing are available. Each module is 20-30 minutes long and a typical line consists of 25-40 modules, depending of the complexity of the line.

Automated training is available for operators, process engineers or maintenance. Safety and safe operation procedures are stressed. Each program is unique to your application. If you are interested in seeing a demonstration of one of these modules, send an e-mail to: [beth@optexprocesssolutions.com](mailto:beth@optexprocesssolutions.com)