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"Wind-Milling" or "The Screw Isn't Picking Up"

Modified on Monday, 02 February 2015 01:20 PM by [mpieler](#) Categorized as [Extrusion Hints](#)

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"Wind-Milling" or "The Screw Isn't Picking Up"

Many times in the injection molding process, customer comment that, "the screw is Wind-milling" or "the screw isn't picking up the material". This phenomena is due to poor solids conveying. The Solids Conveying is when the plastic material "sticks" to the barrel and "slips" on the screw. This is what is necessary for the material to be moved forward.

Normally, if an improved barrel temperature profile is used the existing screw design will operate properly. Most often this problem is exhibited when processing Engineering Resins, such as PPO, PPS, PA, LCP and other high temperature resins. If the customer will change the temperature profile from a commonly used "FLAT" profile to a reverse temperature profile, where the barrel temperatures are higher in the rear and lower at the discharge end of the barrel the problem will typically be solved.

An example would be as follows:

Present Profile, starting at the feed zone of the screw; 450F, 450F, 450F, and 450F and the new improved temperature profile would be; 500F, 480F, 460F, and 440F. Some customer will complain that the high rear zones will increase their melt temperature. This concept is totally false because higher temperatures in the rear will not effect the melt temperature because the plastic is still a pellet in the feed section of the screw, so it can't make the melt temperature higher, but it will improve the coefficient of friction at the barrel wall between the pellets and barrel and therefore improve the solids conveying and eliminate "wind-milling".

- Timothy Womer, Xaloy

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