

Extreme Coatings™

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Case History # 2001-2

Abrasive Wear

Injection Molding

This processor operates around the clock making automotive pulleys for serpentine drive belts. Parts are made from nylon 6/6 with a 35% long glass fiber reinforcement. The molding machine has a 2-1/2" general purpose nylon-type feed screw. The previous feed screw made of CPM-9V tool steel provided a maximum of 24 months service at which point there was significant wear. This CPM feed screw was worn to the point that "flights were gone".

A new screw with .010" (0,25 mm) thickness overall of XC1000 was installed in May of 2001. In July of 2002 after 15 months the screw OD measured .006" (0,15 mm) total wear. They continued processing 24/7 making consistent, quality parts and finally after 29 months the feed screw was inspected. The screw had worn through the coating on the OD.

The graph compares OD wear for the CPM screw with a carbide coated screw.

This screw should have been coated with .020" (0,5 mm) overall thickness of coating and been hard faced on the flight lands. With a thicker coating and hard facing, this 2-1/2" screw could have produced for another 10 to 14 months to the same wear point as the previous CPM screw.

Extreme Coatings recommends that screws larger than 45-50 mm be hard faced with a wear resistant cobalt or nickel based alloy material. High viscosity resins such as glass filled nylon increase the amount of wear a screw can have and still process acceptably.

