

## **Energy Saving Tip of the Month**

### **10. Extrusion 1**

Extrusion uses less energy per kilogram of material processed than injection molding but extruders should not be complacent, there is still much that can be done.

Extruders run most efficiently (not only in energy terms) when operating at the design conditions and the extruder should be set to run at the maximum design speed. Operating extruders below the design speed, e.g. large extruders and small profiles, makes the process less efficient.

Extruder motors run at high speeds and are geared down. When the gear ratios are not correct, the motor will be operating below the optimum speed and the torque generated will be below the permissible levels. Changing the drive ratio can be a simple project to optimize motor usage.

#### **Action:**

- Investigate the option to retro-fit existing DC motors with VFD controlled AC motors. The energy savings are not large but replacement motors cost a lot less and maintenance is often less.
- If purchasing new extruders then the option for VFD controlled AC motors is highly recommended.
- Check that the extruder is right for the job and is operating close to the design speed.
- Check the loading on extruder motors and modify the gear ratios to optimize motor performance. If pulleys are used this can be as simple as using pulleys of different diameter.
- If belt drives are used then optimize the belts. Belt types vary greatly in efficiency and toothed belts are the most efficient.

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