

Optimization of cast aluminum barrel coolers

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Barrel Coolers are an integral part of the entire extrusion process. There are two types of barrel coolers:

- Air cooled - which remove heat from the coolers by circulating ambient air over cooling fins.
- Water cooled - units which utilize a closed loop system to store, cool and circulate the cooling water.

For optimum performance of both types of barrel coolers, processors should observe the following points:

- Ensure the cooler bore and barrel O.D. surfaces are clean and undamaged.
- Make sure the control thermocouple is installed in the correct zone so that the control signal for cooling will activate the air blower or water circulating solenoid valve for that zone.
- Install coolers with equal gaps between cooler halves on top and bottom to maintain bolt hole alignment.
- Check cooler fasteners for any indications of damage and replace, if necessary, with fasteners of equal specification and quality.
- If the cooler was supplied with springs, reinstall springs with the same orientation (small end under head of screw or nut). If the spring is installed backwards, it will not provide the correct tension in the screw.
- Lubricate the screws and torque to the correct level at ambient temperature only.

Depending on the type of barrel cooler, the following additional guidelines should also be apart of any extrusion maintenance program:

Air cooled systems -

- Keep air blower inlets unobstructed.

Don't run piping or conduit near the inlet to restrict the air flow. Clean inlet screens when necessary.

- Make sure air shrouds are in place and properly located.
- Keep cooler fins clean. Remove deposits of airborne powders or drooling polymer since this will act as an insulating material.

Water cooled systems

- Use only clean, distilled water in a closed-loop system to prevent mineral deposits from forming in the cooling tubes.
- Maintain the proper water level in the storage tank.
- If the heat exchanger efficiency decreases over a period of time, causing the closed loop water temperature to rise, inspect the tube side water passages to determine if mineral deposits are restricting water flow and reducing efficiency.

By following these simple guidelines, processors can obtain superior results from their cooling systems.

- John Radovich, Davis-Standard

See also:

- On/off barrel cooling control
- Thermocouple depth
- Two stage extrusion
- Water cooling extruders

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