

Extruder Maintenance

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Most extruders are designed and built to provide maximum service with a minimum of production downtime. An aggressive maintenance program which includes scheduling periodic downtime for preventive maintenance inspections will ensure maximum productivity.

Most experts agree that even the best maintained machine can suffer unforeseen downtime. Preventive maintenance programs can minimize this problem by anticipating problems before they occur and acting upon them. The additional benefit of this is that your extruder down time is most likely to occur when you schedule it.

Over the long term, your profits will increase and your product quality will improve as your machines productivity and efficiency increases. The extruders productive life is also lengthened.

The keys to a successful preventive maintenance program are surveillance and documentation. Surveillance should be constant and your technicians must learn to listen and look for trouble signs. Each extruder should have its own maintenance log book that is accurately filled out and kept current.

Most extruder manuals outline some type of maintenance program and procedures. This should be your starting point and reference. The following is a generalized preventive maintenance program. This program can be adapted for any type of extruder (single or twin) and it should be customized to meet your specific extruder design.

Weekly Checks Performed During Stable Extruder Run:

Gearcase - Record bearing cap temperatures, track oil flow, check oil pressure.

Drive Area - Check motor housing for foreign materials. Guards are in place.

Feed Section - Check temperature.

Clamp Area - Ensure that pressure indication is functioning properly.

Plug Plate - Check condition of cords & plugs. Make sure guards are in place.

Monthly Checks Performed During Stable Extruder Run:

Gearcase - Record oil temperature, housing temperature, look for leaks, listen for unusual noises.

Clamp Area - Check for leakage at seals. Monthly Checks Performed During Scheduled Downtime:

Drive Area - Clean filter on armature cooling blower intake. Clean brush holder, commutator and winding.

Quarterly Checks Performed During Stable Extruder Run:

Gearcase - Record noise level of bearings. Check that screw cooling rotary unions are sealed tight.

Drive Area - Check air flow through DC motor. Look for sparking at brushes. record temperature of motor housing. Check for excessive vibration.

Feed Section - Check water flow. Check for powder leaks.

Barrel - Check barrel heaters amps. Look for solenoid difficulties. Feel blower motor temperatures.

Panel - Check balance of amp draw on all 3 phase of AC drive input.

Quarterly Checks Performed During Scheduled Downtime:

Gearcase - Visually check condition of gears. Replace oil. Clean oil sump and check for metal particles.

Drive Area - Check drive belts for play and replace as a set if necessary. Examine motor brushes for wear. Observe color and surface imperfections on commutator.

Feed Section - Check emergency stop and hopper barrier guards. Check condition of seal and bushing.

Screw(s) - Clean screw looking for cracks, defects. Remove any burrs or leading edges. Thoroughly clean screw and lubricate shank and keyways or spline.

Barrel - If air cooled: clean air blower filter screens, lube blower motors, check resistance of heaters. If water cooled: check distilled water for chloride ion concentration, check breaker plate recess seal surface.

Panel - Visually inspect all power connections for heat or arcing. Calibrate pressure & temperature indication. Check door interlocks. Vacuum out panel. Clean air filters. Check function of safety devices.

Plug Plate - Inspect the condition of thermocouples and cords. Check continuity of die ground blades.

Annual Checks Performed During Stable Extruder Run:

Gearcase - Detect oil leaks at windows, joints, etc.

Barrel - If water cooling is used, identify leaks. Check pressure and temperature regulators. Inspect pump seals for leaks.

Annual Checks Performed During Scheduled Downtime:

Gearcase - Remove sludge from heat exchanger. Change oil filter.

Drive Area - Lube motor bearings. Check tightness of terminals and condition of insulating tape in conduit box.

Check that guards are in place.

Feed Section - Look for excess wear. Screw(s) - Record outside diameter of screw(s) at intervals and calculate wear.

Look for abuse (cracks, chips, etc.).

Barrel - Record inside diameter at intervals and calculate wear. If air cooled, lube blower motors. If water cooled:

clean out sump tank, flush lines with scale removing compound. Check resistance of heaters. Check seating of

thermocouples and heater connections. Check tightness of heater clamping bolts. Check barrel guards.

Clamp Area - Check that over pressure devices (rupture disc & pressure controller) are functional. Verify calibration of pressure indicator.

Panel - Check tightness of heat and drive power connections. Verify continuity of all ground connections. Check

calibration of all temperature controllers. Check ventilation fan. Verify drive pots have uninterrupted increase in

resistance. Check drive acceleration.

Plug Plate - Check that all receptacles are grounded.

- Dave Murdock Davis-Standard

See also:

- DC motor maintenance
- Extrusion evaluation through pressure and melt temperature analysis
- Gearcase maintenance
- Pyrometers
- Screw cleaning
- Screw maintenance
- The importance of periodic audits of extruder performance

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