

## **Extruder Maintenance (Dr. Kirk Cantor)**

### **About the Seminar**

This one-day program focuses on proper maintenance of polymer extruders, both single screw and twin screw. Upon completion of this seminar, attendees will be able to:

- describe how to safely maintain and operate an extruder
- identify the primary extruder components requiring maintenance and explain how best to maintain them
- discuss how screw and barrel construction influences wear rate and extruder performance
- describe troubleshooting methods for extruder mechanical problems

### **What the attendees will learn:**

- safety considerations when operating and maintaining extrusion systems
- components comprising the extruder drive system and how to maintain them
- screw and barrel characteristics, including materials of construction, clearance issues, alignment, and maintenance
- extruder instrumentation calibration, installation, and diagnostics
- proper extruder operating procedures
- common methods and materials for purging
- troubleshooting extruder mechanical problems

### **Who should attend:**

- Operators
- Set-up technicians
- Process engineers
- Maintenance mechanics
- Floor supervisors
- Plant managers

<ol style="list-style-type: none"> <li>1. Introduction to Extruders       <ul style="list-style-type: none"> <li>o Single Screw Extruders</li> <li>o Twin Screw Extruders</li> </ul> </li> <li>2. Safety       <ul style="list-style-type: none"> <li>o Moving Parts &amp; Nip Points</li> <li>o Electricity/Grounding</li> <li>o High Temperatures</li> <li>o High Pressures</li> </ul> </li> <li>3. Drive System       <ul style="list-style-type: none"> <li>o Motor</li> <li>o Gearbox</li> <li>o Thrust Bearing</li> </ul> </li> <li>4. Screw and Barrel       <ul style="list-style-type: none"> <li>o Materials of Construction           <ul style="list-style-type: none"> <li>• Standard Materials</li> <li>• Corrosive Resistance</li> <li>• Wear Resistance</li> <li>• Specialty Materials</li> <li>• Screw/Barrel Material Compatibility</li> </ul> </li> <li>o Flight Treatment</li> <li>o Screw/Barrel Clearances           <ul style="list-style-type: none"> <li>• Heated Barrel</li> <li>• Cooled Feed Throat</li> </ul> </li> <li>o Screw/Barrel Wear           <ul style="list-style-type: none"> <li>• Mechanisms</li> <li>• Indicators</li> </ul> </li> <li>o Barrel Alignment           <ul style="list-style-type: none"> <li>• Consequences of Misalignment</li> <li>• Alignment Techniques</li> </ul> </li> <li>o Feed Housing           <ul style="list-style-type: none"> <li>• Temperature Control</li> <li>• Cooling Channel Blockage</li> </ul> </li> <li>o Screw/Barrel Cleaning           <ul style="list-style-type: none"> <li>• Pulling Screw</li> <li>• Cleaning Screw/Barrel</li> <li>• Measurements</li> <li>• Breaker Plate/Screen Pack Installation</li> <li>• Replacing Screw</li> </ul> </li> </ul> </li> </ol>	<ol style="list-style-type: none"> <li>5. Instrumentation       <ul style="list-style-type: none"> <li>o Sensor Calibration</li> <li>o Heater Installation and Diagnostics</li> <li>o Thermocouple Installation and Diagnostics</li> <li>o Pressure Transducers</li> </ul> </li> <li>6. Proper Operation Methods       <ul style="list-style-type: none"> <li>o Start-up</li> <li>o Normal Operation</li> <li>o Shutdown</li> </ul> </li> <li>7. Purging       <ul style="list-style-type: none"> <li>o Material Types</li> <li>o Purging Methods</li> </ul> </li> <li>8. Troubleshooting Mechanical Problems       <ul style="list-style-type: none"> <li>o Vibrations/Unusual Sounds</li> <li>o High/Low Temperature</li> <li>o Low/No Output</li> <li>o Output Instabilities</li> <li>o Excessive Pressure</li> <li>o Vent Flow</li> <li>o Plastic Leakage</li> </ul> </li> </ol>
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