

Troubleshooting Blown Film Extrusion Operations

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Day 1, Chris Rauwendaal

1. Introduction and extruder hardware

- Basic extruder components
- Review of terminology
- Screw and barrel
- Feed system
- Screw drive
- Heating and cooling
- Instrumentation and control

2. Plastic properties

- What are plastics?
- Plastics used in extrusion
- Melt flow properties
- Thermal properties
- Viscous heat generation
- Plastic quality control

3. What happens inside the extruder?

- Feeding
- Solids conveying
- Plasticating
- Melt conveying and mixing

4. Extruder screws

- Standard extruder screw
- Variations on standard screw
- Mixing screws
- Barrier type extruder screws

5. Blown film dies

- Side fed dies
- Bottom fed dies
- Spiral mandrel dies
- Coextrusion dies
- Oscillating dies

6. Operational principles

- Startup procedures
- Purging and changeover
- Shut down procedures

Day 2, Paul Waller

7. Downstream equipment

- Comparison air ring systems
- Optimizing air ring setup
- Internal bubble cooling systems
- Automatic gauge control
- Bubble stabilizer systems
- Effect collapsing systems on gauge variation and roll geometry
- Surface treatment and limitations
- Web tension control and optimization
- Heat sealing and bag manufacturing

8. Troubleshooting

- Requirements for efficient troubleshooting
- Tools for troubleshooting
- Systematic troubleshooting
- Polymer degradation
- Extrusion instabilities
- Bubble instabilities
- Air entrapment and gel problems
- Die lines
- Poor optical properties
- Extrusion instabilities
- Wear problems
- Interfacial instabilities

9. Workshops

- Eliminate melt fracture
- Eliminate interfacial instability
- Eliminate gels
- Control bubble instability
- Diagnose surface adhesion problems
- Diagnose and eliminate wrinkles
- Optimize heat seal strength
- Diagnose and minimize gauge variation
- Extruder temperature profiles
- Diagnose and eliminate extruder surging
- How to adjust for screw and barrel wear

Books are offered at a discount only if ordered with a seminar and will be delivered at the seminar.

The course fees are:	Prior to April 20	April 20-May 4	After May 4
Blown Film Troubleshooting:	\$795.00	\$850.00	\$950.00
Sheet Extrusion:	\$795.00	\$850.00	\$950.00
Foam Extrusion:	\$1095.00	\$1145.00	\$1245.00
If taking 2 courses:	-\$100.00	-\$100.00	-\$100.00
3 rd attendee discount (5%):			
Understanding Book \$60.00			
Troubleshooting Book \$105.00			
Polymer Extrusion \$105.00			
Polymer Mixing \$70.00			
SPC in Injection Molding and Extrusion \$105.00			
Thermoplastic Foam Extrusion \$70.00			
A Practical Guide to Blown Film Troubleshooting \$125.00			
Total:			

A 5% discount will be given for the 3rd and up attendees from the same company. The course fees include lunch for each day and the handout material.

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