

Tubing & Profile Extrusion Seminar

At Harrel, Inc. E. Norwalk, CT
Course Leader: Chris J. Rauwendaal
February 6-8, 2007

Main Extruder Components

- Screw & barrel
- Motor & reducer
- Heating & cooling
- The die

Important Material Properties

- Bulk properties
- Thermal properties
- Melt flow properties
- Other properties

Operational Principles of Extruders

- Solids conveying
- Plasticating
- Melt conveying
- Venting
- Other functions

Instrumentation of the Extruder

- Temperature
 - Sensors
 - On-off, proportional, and 3-mode controllers
 - Proper Adjustment
 - Deep and shallow sensing
- RPM
 - Analog vs. digital
 - RPM synchronization

Screw design

- Standard extruder screw
- Variations on standard screw
- Mixing screws
- Barrier type screws
- Multi-stage screws for venting
- How to improve performance by optimizing screw geometry

Die Design

- In-line dies
- Crosshead dies
- Multi-lumen dies

Melt Pumps

- Theory
- Control

Troubleshooting the Extrusion Process

- Machine or material problems
- Wear problems
- Melting problems
- Melt conveying problems
- Solids conveying problems

Laboratory Day 1

During this demonstration you will have the opportunity to actually string up and operate a tubing line. For tutorial purposes, operation will be manual, so that you can see how each of the adjustments on the line affects the final properties of the tubing.

After the regular laboratory session there will be a demonstration of "direct extrusion". Using patented mixing techniques, recently developed by Dr. Rauwendaal, the functions of mixing additives and of precision extrusion, which formerly required a twin screw extruder plus a single screw extruder can now be accomplished totally within a single screw extruder (or MIXTRUDER)

Laboratory Day 2

Similar to Day 1. Except that this time you will be using free air extrusion to make bump tubing on a state-of-the-art line. Both outer diameter and wall thickness of both large and small tubing sections will be under automatic control. You will also be using the latest in Statistical Quality Control (SQC) techniques to monitor the quality level of the tubing.

After this laboratory session there will be a demonstration of the new ALTERNATE POLYMER extrusion system, whereby the polymer varies seamlessly from 100% polymer A to 100% polymer B along the length of the tube.

Statistical Quality Control

- Concepts and purpose
- Individual line
- Plant wide

Start-up and Service of Extruders

- Initial check-out
- Quick electrical checks
- Service tips

Afternoon Day 3

The seminar officially ends at 1 p.m. However, participants are invited to remain as long as desired to get additional hands-on experience and to discuss special problems and applications.

Registration of this seminar is limited to Plastics Processors!

Fax registration to Rauwendaal Extrusion Engineering Inc. Fax: 530-269-1084 or mail it to Rauwendaal Extrusion Engineering Inc., 10556 Combie Road #6677, Auburn CA 95602-8908
For any questions please contact us: Tel.: 530-269-1082 or email: sietske@rauwendaal.com. A 5% discount will be given to the 3rd and up attendees from the same company at the same seminar.

Tube & Profile Extrusion to Jan 5 \$895.00 Jan 8-19 \$945.00
Jan 22 & on \$995.00

Name:	Title:	
Company:	Address:	
City:	State:	Zip:
E-mail:	Country:	
Phone:	Fax:	
Check or Money Order enclosed US\$		
PO#	Amount: US\$	
Visa	MasterCard	
American Express		
Acct #	Exp Date:	Ver.
Value:		
Acct name:	Signature:	

Contact us for an extensive list of nearby hotels.

Hours for Tubing & Profile Extrusion:

Check in/Registration: 8.00-8.30am first day, seminar hours 8:00-4:00pm, 1:00pm last day.

Cancellations:

A refund, less a \$100.00 cancellation fee, will be made if the registration is cancelled in writing one month prior to the seminar. Rauwendaal Extrusion Engineering, Inc. reserves the right to cancel one or more seminars. Should this occur the attendees will be notified. We also reserve the right to substitute instructors. We do not take any responsibility for penalty fees or any other cost that may be incurred due to cancellation. We recommend that you book travel with refundable fares. Registrants who fail to attend are liable for the fees of the course registered for.