

# Training Programs for Plastic Industries



## Co-Rotating Twin Screw Extrusion (TSE) for Plastics Compounding

3-4 November 2011, Century Park Hotel, Bangkok, Thailand  
7-8 November 2011, Impiana KLCC Hotel, Kuala Lumpur, Malaysia  
(Instructor: *Robert H Wildi, Wildi Compounding Tech., USA*)

## Blown Film Troubleshooting - Practical Strategies

3-4 November 2011, Century Park Hotel, Bangkok, Thailand  
7-8 November 2011, Impiana KLCC Hotel, Kuala Lumpur, Malaysia  
(Instructor: *Paul Waller, Plastics Touchpoint Group, Inc., Canada*)

## Co-Rotating Twin Screw Extrusion (TSE) for Plastics Compounding

3-4 November 2011, Century Park Hotel, Bangkok, Thailand  
7-8 November 2011, Impiana KLCC Hotel, Kuala Lumpur, Malaysia  
(Instructor: Robert H Wildi) (Program Agenda: 08.30 am to 04.30 pm)

This 2-day training program is focused on co-rotating twin screw extrusion process for plastic compounding. It is aimed for engineers, operators and product development executives. This program covers from basic principles to practical issues on compounding. It covers screw design, process development and troubleshooting of various operational problems.

### Program Outline

#### Co-Rotating Twin Screw Extrusion (TSE) Basics

1. What is Co-Rotating – Fully Intermeshing TSE
  - History and Applications
  - Advantages and Limitations
  - General Operating Principle
  - Comparison with other Compounding Equipment
  - Features
2. Components of TSE Installations
  - Feed Systems
  - Drive/Motor
  - Gear Box
  - Barrels
  - Shafts and Screw Elements
  - Die
3. Barrel Design / Terms
4. Screw Geometry/Nomenclature
5. Extruder Design and Key Terms
6. Scale-up
7. Process Control

#### Co-TSE Screw Design by Unit Operations

1. Solids Conveying
2. Melting
3. Mixing (Dispersive and Distributive)
4. Venting
5. Reactions
6. Pressure Generation
7. Generic Screw Design Example

#### Co-TSE Process Development

1. Overview
2. Design of Experiments (DOEs)
3. Screw Design Evaluation
4. Case Studies

#### Co-TSE Troubleshooting

1. Flood Feeding
2. Foamed Pellets
3. Poor Devolatilization
4. Poor Dispersion
5. Poor Distribution
6. Surging
7. Torque Fluctuating
8. Torque Low
9. Vent Flow

**Remarks:** Both Programs will be conducted in ENGLISH only



**Robert (Bob) H Wildi** is President of Wildi Compounding Tech, LLC and is a West Virginia University College of Chemical Engineering Adjunct Professor. He recently retired from GE Plastics where he was Principal Engineer - Compounding Technology. He has a total of 33 years industrial experience in Process Development related activities including Start-up and Manufacturing support. The last 22 years were focused on Compounding Processes. He has 4 US Patents regarding Reactive Extrusion. He and Dr. Christian Maier co-authored the Hanser book on "Understanding Compounding".

## Blown Film Troubleshooting - Practical Strategies

3-4 November 2011, Century Park Hotel, Bangkok, Thailand

7-8 November 2011, Impiana KLCC Hotel, Kuala Lumpur, Malaysia

(Instructor: Paul Waller) (Program Agenda: 09.00 am to 05.00 pm)

The most expensive component in film is the raw material. The seminar demonstrates proven techniques to reduce scrap rates and maximize production capacity. Attendees will: Find out the trade secrets that raw material and equipment suppliers share only with their best customers. And Learn why problems occur and what do to about them. Troubleshooting tips reviewed throughout the program are split into short term and long term solutions. **Each participant will receive a newly published 200 page book "A Practical Guide to Blown Film Troubleshooting" which will be a useful reference tool for many years.** This program is most suitable for people who have experience in blown film extrusion and want to improve productivity by improving their troubleshooting skills.

### Program Outline

- Important characteristics for film grade resins
- Effect of process conditions on film properties
- Barrier principles and case studies
- How components of single screw extruders affect productivity
- Blending systems and causes for common defects
- Recycling system selection and optimization
- Comparison of technologies for motors, drives and energy efficiency
- Grooved feed throat versus smooth bore barrel designs
- Screw design fundamentals
- Barrel heating and cooling and how to optimize temperature settings
- How instrumentation and control systems affect film properties
- Screen changer setup and controls
- Single layer and co-extrusion die designs and comparisons
- Comparison of air ring systems
- How to optimize air ring setup for low and high stalk bubbles
- Comparison of internal bubble cooling systems
- Automatic gauge control systems and investment strategies
- Bubble stabiliser systems
- Affect of collapsing systems on gauge variation and roll geometry
- Surface treatment mechanisms and limitations
- Web tension control and optimization
- Winding mechanics and how it affects roll geometry
- Heat sealing and bag manufacturing principles
- Operating principles, including proper start-up, purging and shut down procedures
- Troubleshooting techniques, including diagnostic tools and use of the comprehensive troubleshooting guide

Workshops will focus on the following topics:

- Optimize temperature profiles
- Compensate for screw and barrel wear
- Diagnose and eliminate surging
- Eliminate melt fracture
- Eliminate interfacial instability
- Diagnose and eliminate gels
- Control bubble instability while maximizing output
- Diagnose surface adhesion problems
- Diagnose and eliminate wrinkles
- Optimize heat seal strength
- Diagnose and minimize gauge variation

### Program Instructor: **Paul Waller, Plastics Touchpoint Group, Inc., Canada**



Paul Waller has been a renowned author and expert in film extrusion for more than 30 years. His clients include raw material suppliers, processors, end users, educational institutions and industry associations on 5 continents. Paul Waller obtained his B.Eng in Chemical Engineering at McGill University in Montreal and his MBA at York University Schulich School of Business in Toronto. Mr Waller started his career at Dow Chemical Canada's polyethylene technical services group before moving to Esso Chemical Canada's Vinyl division. Mr Waller designed and delivered the Blown Film Technology program for the Canadian Plastics Training Centre in Toronto and SENAI in Brazil. He is co-chair of the Canadian Plastics Sector Council, which established occupational standards for blown film operators and is chair-elect of the Flexible Packaging division of the Society of Plastics Engineers. He has provided intensive in-house training to more than 1,000 operators, technicians and engineers on five continents in the last 12 years.

[www.plasticindustry-academy.com](http://www.plasticindustry-academy.com)

# Registration Form

We would like to register for following programs

**Co-Rotating Twin Screw Extrusion (TSE) for Plastics Compounding**

- 3-4 November 2011, Bangkok    
  7-8 November 2011, Kuala Lumpur

**Blown Film Troubleshooting – Practical Strategies**

- 3-4 November 2011, Bangkok    
  7-8 November 2011, Kuala Lumpur

Program Name	Registration Fee/Participant (US\$)		
	Before 15 Sept'11	Before 10 Oct'11	After 10 Oct'11
<b>Co-Rotating Twin-Screw Extrusion</b>	650 US\$	750 US\$	850 US\$
<b>Blown Film Troubleshooting</b>	650 US\$	750 US\$	850 US\$

Remarks: Registration fee includes training documentation, lunch and refreshments during the program.

Payment is required with registration. The registration fee applies as per date of payment.

**Group Registration:** 3 or more than 3 delegates from the same company register for the same program, 10% discount will be offered on the registration fee.

If 5 delegates registers for the same program from the same company, 6<sup>th</sup> delegate participation is FREE for the same program.

FREE Book: Delegates who register for Blown Film Program will receive a book on **"Practical Guide to Blown Film Troubleshooting"**.

Please register before 20 October 2011 to receive the book.

Company Name .....

Address .....

.....

Tel..... Fax..... Email.....

Contact Person ..... Mobile..... Email .....

**Participant Names:**

Participant 1 ..... Position ..... Email.....

Participant 2 ..... Position ..... Email.....

Participant 3 ..... Position ..... Email.....

Participant 4 ..... Position ..... Email.....

Participant 5 ..... Position ..... Email.....

**Payment Method**

Bank Transfer to *Bank Name: Bangkok Bank, A/C No: 177-0-70727-9 A/C Name: **TechnoBiz Communications Co., Ltd.**,  
Branch: Ratchada-Latprao Road branch, Bangkok (Swift Code: BKKBTHBK) (Kindly make payment for all bank charges)*

Credit Card      Visa      Master     (5% bank fee applies for credit card processing)

Card Number ..... Cardholder Name .....

Card Expiry Date ..... Last 3 digits on Signature Panel.....

Signature of Cardholder ..... Date.....

**Please send completely filled registration form to**



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 Contact Person: Khun Sirinthip, Program Coordinator W