

TECHNICAL EXCELLENCE PROGRAMME

BASICS, INNOVATIONS & LATEST TRENDS IN PLASTICS COMPOUNDING

MACHINES, MANUFACTURING, MATERIALS

**THE PROGRAMME IS ON COMPOUNDING OF THERMOPLASTICS, EXCEPT PVC,
WITH SPECIAL EMPHASIS ON ENGINEERING PLASTICS**



Prepared & Conducted by
DR. PRADEEP BAKSHI

About POLYMERUPDATE ACADEMY

At Polymerupdate Academy, we offer a broad range of courses in the Petrochemical and allied industries, in collaboration with renowned professors from the field of education. The courses address the critical, technical and managerial needs in both the Public and Private sectors and are unique to each individual client.

Learn about the many benefits of cutting-edge, online educational courses for a life-long career in the fields of Polymer Science and Composites. We have ensured that the courses are affordable yet valuable and play a keyrole in upskilling those who sign up for the training. These courses are carefully designed to help professionals manage everyday challenges with greater confidence and expertise.

The Polymerupdate Academy also provides customised corporate training courses to assist businesses with their specific requirements. We believe that capitalizing on effective training to equip employees with expanded market knowledge, is a key to greater efficiency and achievement, not just for the business alone, but for the industry as a whole. The various courses provided at the academy, address the critical, technical and managerial needs in both the public and private sectors.

The Customised course programmes are created through sessions based on detailed requirements with a balance of theoretical ideas and creative inputs. Mix and match your expertise and build a course that suits you best!

Technical Excellence Programme Content

SESSION 1

Extruder Design Concepts

- Overview of Extruder Design principles
- Concepts of Free Volume and Specific Torque
- Importance of intermeshing and clearances
- Role of metallurgy in modern Extruder design

Process Design

- Unit Processes in an Extruder
- Discussion on each Unit Process and how Extruder Design affects the performance of each stage
- Fundamentals of Screw Design and discussion on some practical designs and their applications

SESSION 2

Process Optimization, Tips & Tricks

- Controlling important Process Parameters with detailed discussion on how to optimize the Process to ensure highest possible output while ensuring high quality product. Study of effect of various process parameters on Torque, Specific Energy, Melt Flow Index, etc.
- Various tips on how to control key process parameters and avoiding pit falls. Guidelines to assure a high-quality product at optimum efficiency

Applications

- Discussion on various applications of Extruders for compounding Masterbatches, Reinforcing with Fibers, Devolatilization, etc. and methods of optimizing the process and quality.

SESSION 3

New Developments

- Showcasing the latest in Twin Screw Extruders. New designs, new Research and new methods to obtain reliable high output and product quality. Two case studies to highlight the role of new research done to compound new materials

Compounding Engineering Plastics

- Compounding Engineering Plastics has it's own set of challenges. This section discusses compounding of PC, PBT, Blends & Alloys, PA6 & PA66 and the unique process characteristics of each type of compound. Some special screw design requirements are highlighted with illustrations of practical screw designs currently used by the Industry

What will you learn?

- Fundamentals of the Compounding Process which are important to understand and control the process efficiently.
- Dispersive and Distributive Mixing within the Extruder
- Concepts of Shear Rate, Torque and Specific Energy
- Basic Design Concepts of Twin Screw Extruders and how they affect the actual Process. Concepts of Free Volume Ratio and Specific Torque
- Detailed discussion of various Processes happening inside the Extruder. Methods of ensuring proper functioning and suggestions to improve them. Illustrations and importance of different types of Screw Elements and their role in process and product quality
- Basics of Screw Design and how it impacts the Process and Quality. Practical illustrations and discussion on how to optimize the design
- Process Optimization examples and discussion on underlying principles. Tips & Tricks to run a stable, predictable process and to ensure Quality of the product.
- Various applications of Twin Screw Extruders for compounding of different types of materials. Focus is on Compounding of Engineering Plastics.
- Examples of Latest Developments in Twin Screw Extruders design and a couple of actual examples of new processes developed to process difficult materials.

Who should attend?

Professionals working in the various functions of the Plastics Compounding Industry.

- **Researchers & Development Professionals in the Polymer Industry:**

Those working in research and development departments of companies in the polymer industry can benefit greatly from this course. They will gain a deeper understanding of the fundamentals of Plastics Compounding, Twin Screw Extruder Design and various New Developments.

- **Quality Control Professionals:** Quality control professionals responsible for ensuring that the final products meet the required quality standards will benefit from the focus on Quality Assurance of the Product at the Compounding stage itself.

- **Production Managers & Engineers:** Production managers and engineers involved in the manufacturing process of polymer products will benefit from the Processing session of the course. They will learn about the different techniques of Process Control, effect of Extruder Design on the Process, various Cause-and-Effect scenarios discussion and the importance of parameters like Torque in proper control of Process and Quality.

- **Materials Engineers:** Materials engineers will learn about Engineering Plastics and the challenges faced during Compounding.

- **Graduate Students & Researchers:** Graduate students and researchers in the field of polymer science and engineering can also benefit from this course. It provides a comprehensive overview of Extruder Design, Fundamental Concepts, understanding of Process Variables and the latest Research in this field.



Dr. Pradeep Bakshi
Ph.D., IEngAMIM, FIPI
Consultant – Plastics Technology

EDUCATION:

1. Ph.D. from Plastics Divn. of Institute of Chemical Technology (formerly Uni. Dept. of Chemical Technology), Mumbai. 1982.
2. IEngAMIM (Plastics Technology) from Institute of Materials, UK (formerly Plastics and Rubber Institute). 1st Rank, 1979.

WORK EXPERIENCE:

1. TIPCO Ltd., Research Scientist to Plant Manager to Vice President – Technical (1982-1991).
2. Director, Performance Plastics P. Ltd., manufacturing twin screw extruders and other compounding equipment (1984-1991), concurrently with TIPCO.
3. GE Plastics India, Plant Manager to Vice President – Technology (1992-2000).
4. Independent Consultant since April 2000, specializing in Engineering Plastics & Plastics Compounding. Client List includes DuPont, Frost&Sullivan, Ravago, DCMShriram, SRF, Ester Industries, Gharda (now Solvay), Hydro S&S (now Kingfa), KLJ, Tipco, Supreme Petrochem, Rajiv Plastics, Colourtex, Kandui Industries, Loxim, Bhavin Industries, Calco, Wolkem, PI Industries, Secure Meters, Plasticchemix (now Clariant), Polylink, Intercontinental Polymers, Steer IT, Steer Engineering, and more....

HONOURS:

- Fellow, Indian Plastics Institute.
- First Prize from Institute of Materials (UK) for securing the highest score at IEngAMIM (Plastics Technology).
- Special Invitee to present Technical Seminar on “Latest in High-Speed Compounding”, at GE’s Global Compounding Technology Meet at Mt. Vernon, USA.
- GE Plastics, Award for outstanding performance of the GELON[®] Team.
- GE Plastics, “Silver Shark” Award
- GE Appliances, USA, “One Team” Award.
- Member, Managing Committee, SPE, Inc., USA, India Chapter.
- National Governing Council, Indian Plastics Institute.
- Managing Committee, Baroda Management Association.
- Visiting Professor, UDCT, Mumbai.
- Viva Examiner for final year MBA at the Management Faculty of MS University, Vadodara.
- Member, Board of Studies, Nirma University, Ahmedabad.
- Hon. Guest lectures at IIT Delhi, Technology Dept. of MS University, Sardar Patel Uni., Amrita University, LD Engineering College, Nirma Institute of Technology, etc.
- Invited to deliver presentations at several National & International events, like PlastIndia, Plastivision, ICMBA, Masterbatch Asia, PMMAI, etc.

PERSONAL:

- Hobbies: Amateur (“Ham”) Radio since 1973, Adventure Travel (5 visits to Ladakh upto 18380ft, 2 visits in winter with Frozen River Trek), Photography, Music, Sports, driving my Mahindra Thar 4X4 (done several thousand kilometers to Rain Forests of Western Ghats, Rann of Kutch, Gir Forest, etc. with off-roading).
- Wife, Artee, is an accomplished Indian Classical dancer and writes poetry.
- Son Palash and his wife have their own firm doing online business in Marketing, Advertising and Content Management.

DISCLAIMER

Introduction:

In our continuous effort to create a conducive learning environment and to protect the privacy and intellectual property rights of our participants and facilitators, we kindly ask all attendees to observe the following policy. This disclaimer governs your participation in the program. By participating, you accept this disclaimer in full; accordingly, if you disagree with this disclaimer or any part of this disclaimer, you must not engage in the program.

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Amendments:

The organization reserves the right to modify this disclaimer at any time by publishing a new version on our website. Your continued participation in the program after such changes will constitute your consent to such changes.

No Photography or Recording:

Attendees are not permitted to take photographs, videos, or audio recordings of any part of the training materials, the training environment, or the participants without prior written consent from the organizers. This includes, but is not limited to, presentations, workshops, discussions, and any training-related materials.

Special Circumstances:

If there is a specific need or requirement for photography or recording for educational or promotional purposes, participants must obtain explicit permission from the training organizers. Such requests should be made in advance of the training session, and permission will be granted at the discretion of the organizers.

Compliance: Failure to comply with this policy may result in removal from the training session and possible exclusion from future events.

Contact Information:

If you have any questions about this disclaimer, please contact us at Polymerupdate Academy on +91 93219 75884

Refund Policy: Course fees will not be refunded in case a registered participant is unable to attend the session.

Replacement Policy: However, participants have the option to send a replacement attendee by informing the organizers in advance email. Individual photographs or testimonial videos are not automatically provided; requests for such materials must be emailed to the organizing committee and are subject to approval.

Acknowledgment:

By participating in the On-Site Training Program, you acknowledge that you have read this disclaimer, understand it, and agree to be bound by its terms and conditions.

We thank you for your understanding and cooperation in ensuring that our training program remains a productive and respectful

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