# ProMolder Troubleshooting Seminar Outline

**This is a 4-day virtual, live-streaming class, complete with hands-on SimTech™ Injection Molding Simulation Lab Lessons**

Paulson's virtual seminar is designed to train production personnel to recognize and analyze injection molded part problems and defects from a scientific molding point of view. Paulson's instructors will teach injection molders, mold designers, and part designers how to identify and correct 11 of the most common and costly molded part problems: Voids, Sink Marks, Short Shots, Flash, Weld (Knit) Lines, Splay (Silver Streaks), Jetting, Burn Marks, Warp, Cracks and Part Breakage, and Controlling Molded Part Dimensions.

Part defects are described and analyzed to show how each develops, including an explanation for the cause and affect method of problem analysis – a very valuable technique for analyzing and solving all types of production and management problems.

## Interactive Lab Lessons Included

In addition, each participant will be engaged to solve specific part problems in a hands-on, interactive lab lesson using Paulson's powerful injection molding machine simulation tool SimTech. This virtual, four-day seminar will give you the critical skills necessary to solve and troubleshoot any plastic part problem.

1. Welcome and Introductions
    1.1. Paulson Training Programs – Introduction
    1.2. Student Introductions
    1.3. Instructor Introductions
2. ProMolder IPS Benchmarking Quiz – 25 Questions

3. Seminar Goals
4. Course Content
5. Module 1: The 4 M's of Injection Molding
    5.1. Material
    5.2. Molding Machines
    5.3. Injection Molds
    5.4. Injection Molding Process - Overview
6. Module 2: SimTech Molding Simulation
    6.1. Answer: What is SimTech?
    6.2. Review Key Features of SimTech
    6.3. Benefits of SimTech
    6.4. Live Demonstration of SimTech
        6.4.1.Student Login
        6.4.2.Intro to Class Challenge
7. Module 3: Burn Marks
    7.1. Examples of Burn Marks
    7.2. Cause of Burn Marks
    7.3. Cause and Solution for Burn Marks
    7.4. Problem Analysis for Burn Marks
    7.5. Machine and Mold Based Solutions for Burn Marks
    7.6. Design Solutions for Burn Marks
    7.7. Summary
    7.8. SimTech Live: Burn Marks
    7.9. Review Questions: Burn Marks
8. Module 4: Cracks and Part Breakage
    8.1. Examples of Cracks and Part Breakage
    8.2. Cause of Cracks and Part Breakage
    8.3. Cause and Solution for Cracks and Part Breakage
    8.4. Problem Analysis for Cracks and Part Breakage
    8.5. Machine and Mold Based Solutions for Cracks and Part Breakage

8.6. Design Solutions for Cracks and Part Breakage

8.7. Summary

8.8. Review Questions: Cracks and Part Breakage

9. Module 5: Dimensional Variations
    9.1. Examples of Dimensional Variations
    9.2. Cause of Dimensional Variations
    9.3. Cause and Solution for Dimensional Variations
    9.4. Problem Analysis for Dimensional Variations
    9.5. Machine and Mold Based Solutions for Dimensional Variations
    9.6. Design Solutions for Dimensional Variations
    9.7. Summary
    9.8. SimTech Live: Dimensional Variations
    9.9. Review Questions: Dimensional Variations
10. Module 6: Flash
    10.1. Examples of Flash
    10.2. Cause of Flash
    10.3. Cause and Solution for Flash
    10.4. Problem Analysis for Flash
    10.5. Machine and Mold Based Solutions for Flash
    10.6. Design Solutions for Flash
    10.7. Summary
    10.8. SimTech Live: Flash
    10.9. Review Questions: Flash
11. Module 7: Jetting
    11.1. Examples of Jetting
    11.2. Cause of Jetting
    11.3. Cause and Solution for Jetting
    11.4. Problem Analysis for Jetting
    11.5. Machine and Mold Based Solutions for Jetting
    11.6. Design Solutions for Jetting
    11.7. Summary
    11.8. Video: Jetting
    11.9. Review Questions: Jetting

12. Module 8: Short Shots
    12.1. Examples of Short Shots
    12.2. Cause of Short Shots
    12.3. Cause and Solution for Short Shots
    12.4. Problem Analysis for Short Shots
    12.5. Machine and Mold Based Solutions for Short Shots
    12.6. Design Solutions for Short Shots
    12.7. Summary
    12.8. SimTech Live: Short Shots
    12.9. Review Questions: Short Shots

13. Module 9: Sink Marks
    13.1. Examples of Sink Marks
    13.2. Cause of Sink Marks
    13.3. Cause and Solution for Sink Marks
    13.4. Problem Analysis for Sink Marks
    13.5. Machine and Mold Based Solutions for Sink Marks
    13.6. Design Solutions for Sink Marks
    13.7. Summary
    13.8. SimTech Live: Sink Marks
    13.9. Review Questions: Sink Marks
14. Module 10: Splay
    14.1. Examples of Splay
    14.2. Cause of Splay
    14.3. Cause and Solution for Splay
    14.4. Problem Analysis for Splay
    14.5. Machine and Mold Based Solutions for Splay
    14.6. Design Solutions for Splay
    14.7. Summary
    14.8. Video: Splay Forming
    14.9. Review Questions: Splay
15. Module 11: Voids
    15.1. Examples of Voids
    15.2. Cause of Voids
    15.3. Cause and Solution for Voids
    15.4. Problem Analysis for Voids
    15.5. Machine and Mold Based Solutions for Voids
    15.6. Design Solutions for Voids
    15.7. Summary
    15.8. SimTech Live: Voids
    15.9. Review Questions: Voids

16. Module 12: Warp
    16.1. Examples of Warp
    16.2. Cause of Warp
    16.3. Cause and Solution for Warp
    16.4. Problem Analysis for Warp
    16.5. Machine and Mold Based Solutions for Warp
    16.6. Design Solutions for Warp
    16.7. Summary
    16.8. SimTech Live: Warp
    16.9. Review Questions: Warp

17. Module 13: Weldlines
    17.1. Examples of Weldlines
    17.2. Cause of Weldlines
    17.3. Cause and Solution for Weldlines
    17.4. Problem Analysis for Weldlines
    17.5. Machine and Mold Based Solutions for Weldlines
    17.6. Design Solutions for Weldlines
    17.7. Summary
    17.8. SimTech Live: Weldlines
    17.9. Video: Weldlines Forming
    17.10. Review Questions: Weldlines
18. What's Next
19. Final Certification Exam – 100 Questions
20. Closing Remarks and Seminar Wrap-Up