1. Record Nr. UNINA9910822496503321

Titolo	Handbook of troubleshooting plastics processes : a practical guide / / edited by John Wagner
Pubbl/distr/stampa	Hoboken, NJ, : Wiley, 2012
ISBN	9781118511206 1118511204 9781283645317 1283645319 9781118511183 1118511182 9781118511169 1118511166
Edizione	[1st ed.]
Descrizione fisica	1 online resource (506 p.)
Classificazione	TEC009010
Altri autori (Persone)	WagnerJohn R
Disciplina	668.4/1
Soggetti	Plastics - Molding Injection molding of plastics
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Handbook of Troubleshooting Plastics Processes: A Practical Guide; Contents; Preface; List of Contributors; Part 1: Troubleshooting Basics; 1 The Economics of Troubleshooting Polymer Processing Systems; 1.1 Introduction; 1.2 Economic Incentives and Necessities; 1.3 Troubleshooting Resources and Their Cost; 1.4 Managing Resources and Costs; 1.5 Troubleshooting Techniques and Their Relative Costs; 1.6 Case Histories; 1.6.1 Single Screw Extrusion Instability; 1.6.2 Compounding Extruder Catastrophic Failure; 1.6.3 Polymer Degradation During Melt Processing; 1.7 Conclusions; References 2 Troubleshooting Philosophy2.1 Introduction; 2.2 Troubleshooting Methodology; Bibliography; 3 Statistical Tools for Trouble Shooting a Process; 3.1 Introduction; 3.2 Basic Statistical Concepts; 3.2.1 Histogram; 3.2.2 Scatter Diagram; 3.3 Sample Mean and Standard Deviation; 3.4 Design of Experiments (DOE); 3.4.1 Factorial Design; 3.4.2 Fractional Factorial Design; 3.5 Process Capability; 3.6 Control

Charts; 3.7.1 Central Limit Theorem; 3.7.2 Variable Data Control Charts; 3.7.3 Control Charts for Attribute Data; References; Bibliography; Statistics; Design of Experiments
Statistical Process ControlPart 2: Extrusion Processes; 4 Single Screw Extrusion; 4.1 Introduction; 4.2 Process Description; References; 5 Troubleshooting the Co-rotating Fully Intermeshing Twin-screw Compounding System; 5.1 Introduction; 5.2 Equipment Description; 5.3 Troubleshooting; 5.3.1 What is Troubleshooting?; 5.4 Tools of the Successful Troubleshooter; 5.4.1 Experience; 5.4.2 Vent Flow Problem; 5.5 Product, Process and Equipment Knowledge; 5.5.1 High Discharge Pressure Problem; 5.5.2 Barrel Temperatures Higher than Set Points Problem; 5.5.3 Climbing Discharge Temperature Problem
5.5.4 Gels and Un-melts in the Extrudate Problem5.5.5 Holes or Bubbles in the Extrudate Problem; 5.5.6 Process Surging Problem; 5.6 Conclusion; References; 6 Troubleshooting for Injection Molding; 6.1 Introduction; 6.1.1 The Basic Approach; 6.2 Understanding Temperature Control; 6.3 Product Shift to a Different Machine; 6.3.1 Calculate the New Pressure Settings; 6.3.2 Procedure; 6.4 Part Weight as an Analytical Tool; 6.4.1 Example - Part Weight for Process Variability Analysis; 6.4.2 Long Term Variability Analysis; 6.4.3 Short Term Variability Analysis; 6.4.4 Variability Evaluation
6.4.5 Process Benchmarking for Quality6.4.6 Benchmark Evaluation; 6.4.7 Summary; 6.5 Part Weight as Dimensional Aimpoint Control; 6.5.1 Unconstrained Process; 6.5.2 Partially Constrained Process; 6.5.3 Constrained Process; 6.5.4 Warpage; 6.5.5 Relationship of Shot Weight and Hydraulic Pressure; 6.6 Determining the Gate Freeze-Off Time; 6.6.1 Procedure to Determine the Freeze-Off Point; 6.6.2 Time Analysis; 6.6.3 Pressure Procedure; References; 7 Blown Film; 7.1 Introduction; 7.2 Process Description; 7.2.1 Extruders; 7.2.2 Dies; 7.2.3 Process Cooling
7.2.4 The Bubble Collapsing Process and Systems

Sommario/riassunto

This handbook provides a framework for understanding how to characterize plastic manufacturing processes for use in troubleshooting problems. The 21 chapters are authored by well-known and experienced engineers who have specialized knowledge about the processes covered in this practical guide. From the Preface: "In every chapter, the process is described and the most common problems are discussed along with the root causes and potential technical solutions. Numerous case studies are provided that illustrate the troubleshooting process. Mark A. Spalding, The Dow Chemical Compa