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Nota di contenuto	Thermal Spraying for Power Generation Components; Preface; Acknowledgement; The Authors of this Book; Contents; 1 Introduction; 1.1 Requirements for Materials and Coatings in Powerplants; 1.2 Examples of Coatings in Gas Turbines; 1.3 Definition of Thermal Spraying (THSP); 1.4 Thermal-Spraying Systems; 1.5 Coatings for Power-Generation Components; 1.6 The Complete Manufacturing and Coating Process; 1.7 Coating-Process Development; 1.8 Tasks for "Target" Readers; 2 Practical Experience Today; 2.1 Coating Processes; 2.2 Basics of Thermal Spraying; 2.3 Feedstock; 2.3.1 Wire; 2.3.2 Powder 2.3.2.1 Powder Types2.3.2.2 Powder-Production Processes and Morphologies; 2.3.2.3 Powder Characterization; 2.3.2.4 Powders for Power-Generation Applications; 2.4 Thermal-Spraying Equipment; 2.4.1 Example of a Low-Pressure Plasma-Coating System; 2.4.2 Flame and Arc Spray Torches; 2.4.3 HVOF Process; 2.4.3.1 Comparison of HVOF Fuels; 2.4.3.2 A Brief Overview of the Major Existing HVOF Systems; 2.4.3.3 Possible Improvements of HVOF Systems; 2.4.4 Plasma Process; 2.4.4.1 A Brief Overview of Plasma Torches; 2.4.4.2 Possible Improvements of Plasma Systems 2.5 Work Flow and Important Coating Hardware2.5.1 Powder

Preparation and Powder-Delivery System; 2.5.1.1 Powder Preparation; 2.5.1.2 Powder Delivery and Injection System; 2.5.1.3 Powder Injection and Plasma/Hot Gas Jet; 2.5.1.4 Injector Plugging and "Spitting"; 2.5.1.5 Powder Buildup at the Front Nozzle Wall; 2.5.2 Cooling System; 2.5.3 Power-Supply System; 2.5.4 Gas Supply and Distribution System; 2.5.5 Manipulation Systems; 2.5.6 Fixtures and Masking; 2.6 Examples of Coated Power-Generation Components; 2.7 Production Experience; 2.7.1 Surface Preparation 2.7.1.1 Internal Plasma and Transferred Arc 2.7.2 Process and Systems; 2.7.2.1 The Programming of the Coating Process; 2.7.3 Finishing; 2.7.4 Repair of Turbine Parts; 2.7.4.1 Coating Removal, Stripping; 2.7.4.2 Restoration of the Base Materials; 2.7.4.3 Refurbishing, Recoating; 2.8 Commercial; 2.8.1 General; 2.8.2 Surface Preparation; 2.8.3 Coating Equipment; 2.8.4 Finishing; 3 Quality and Process Capability; 3.1 Quality Assurance; 3.2 Sources of Process Variations; 3.2.1 Special Causes of Coating-Process Variation; 3.2.2 Stochastic Nature of a Spray Process; 3.2.2.1 Arc and Jet Pulsations 3.2.2.2 Powder-Size Distribution 3.2.2.3 Powder Injection; 3.2.2.4 Powder Shape; 3.2.2.5 Particle Bonding; 3.2.2.6 Gun and Component Motion and Positioning; 3.2.3 Drifting; 3.2.4 Stability of the Quality Control; 3.3 Process Capability and Stable Process; 3.3.1 Definition of Process Capability; 3.3.2 Definition of a Stable Coating Process; 3.3.3 Operational Window; 3.3.4 What Process Capability is Required?; 3.3.5 Additional Factors that Affect the Process Capability; 3.3.6 Case Study: Achievable Process Capability; 3.3.6.1 Part Complexity 3.3.6.2 Mutual Position of the Gun and Component Fixtures

Sommario/riassunto

Thousands of patents address new coating types, new developments, new chemical compositions. However, sometimes coatings is still considered as an "art". This book now deals with questions that are essential for a good performance of this "art": Is there a given process stability? Is there an inherent process capability for a given specification which cannot be improved? What is the right preventive maintenance strategy? Is there a chance to end up with coating process capabilities in the order of other manufacturing processes? This book is not a pure scientific book. It is of most val
