

| | |
|-------------------------|---|
| 1. Record Nr. | UNINA9911006689503321 |
| Autore | Naidu D. S (Desineni S.), <1940-> |
| Titolo | Modeling, sensing and control of gas metal arc welding / / Desineni Subbaram Naidu, Selahattin Ozcelik, Kevin L. Moore |
| Pubbl/distr/stampa | Oxford, : Elsevier, 2003 |
| ISBN | 1-281-03680-3 9786611036805 0-08-053662-X |
| Descrizione fisica | 1 online resource (373 p.) |
| Altri autori (Persone) | OzcelikSelahattin <1965-> MooreKevin L. <1960-> |
| Disciplina | 671.5/212 22 671.5212 |
| Soggetti | Gas metal arc welding Electric welding |
| 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 | Front Cover; Modeling, Sensing and Control of Gas Metal Arc Welding; Copyright Page; Contents; Dedication; Preface; Acknowledgments; List of Figures; Chapter 1. Introduction; 1.1 Introduction; 1.2 The Survey; References List for Chapter 1; Chapter 2. Gas Metal Arc Welding: Modeling; 2.1 Gas Metal Arc Welding; 2.2 Physics of Welding; 2.3 Melting Rate; 2.4 Metal Transfer Characteristics; 2.5 Weld Pool; 2.6 Process Voltages; 2.7 Heat and Mass Transfer; 2.8 Process Variables; 2.9 INEEL/ISU Model; 2.10 Empirical and Statistical Models; 2.11 Modeling by System Identification and Estimation 2.12 Intelligent Modeling2.13 Other Issues on Modeling; 2.14 Power Supplies; 2.15 Other Issues on Power Supplies; 2.16 Classification of References by Section; References List for Chapter 2; Chapter 3. Gas Metal Arc Welding: Sensing; 3.1 Classification of Sensors; 3.2 Conventional Method; 3.3 Computer-Based Measurements; 3.4 Welding Parameters Monitoring; 3.5 Sensors for Line Following/Seam Tracking; 3.6 Arc Length Sensors; 3.7 Sensors for Weld Penetration Control; 3.8 Sensors for Weld Pool Geometry; 3.9 Optical Sensors; 3.10 Sensors for Quality Control; 3.11 Intelligent Sensing |

3.12 Other Issues on Sensing3.13 Classification of References by Section; References List for Chapter 3; Chapter 4. GMAW: Automatic Control; 4.1 Automatic Welding; 4.2 Control of Process Variables; 4.3 Classical Control: PI, PID and Others; 4.4 Multivariable Control; 4.5 Optimization and Optimal Control; 4.6 Adaptive Control; 4.7 Intelligent Control; 4.8 Statistical Process Control and Quality Control; 4.9 Other Control Methodologies and Issues; 4.10 Safety and Environmental Issues; 4.11 Classification of References by Section; References List for Chapter 4

Chapter 5. Control of GMAW: A Case Study5.1 Introduction; 5.2 Empirical Modeling of a GMAW Process; 5.3 SISO Current Control Using PI Controller; 5.4 Multi-Loop Control of the GMAW Process; 5.5 Adaptive Control of GMAW Process; 5.6 Control Strategy; 5.7 Summary; 5.8 Classification of References by Section; References List for Chapter 5; Chapter 6. Conclusions; 6.1 Control Technology and Automation in Welding; 6.2 Main Issues and Outlook; 6.3 Classification of References by Section; References List for Chapter 6; Bibliography; Index

Sommario/riassunto

Arc welding is one of the key processes in industrial manufacturing, with welders using two types of processes - gas metal arc welding (GMAW) and gas tungsten arc welding (GTAW). This new book provides a survey-oriented account of the modeling, sensing, and automatic control of the GMAW process. Researchers are presented with the most recent information in the areas of modeling, sensing and automatic control of the GMAW process, collecting a number of original research results on the topic from the authors and colleagues. Providing an overview of a variety of topics, this boo
