

|                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Record Nr.           | UNINA9910830260603321                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Autore                  | Singh Ramesh                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Titolo                  | Designing weldments / / Ramesh Singh                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Pubbl/distr/stampa      | Hoboken, New Jersey : , : Wiley, , [2022]<br>©2022                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| ISBN                    | 1-119-86584-0<br>1-119-86582-4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Descrizione fisica      | 1 online resource (236 pages)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Disciplina              | 671.52                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Soggetti                | Structural engineering                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Lingua di pubblicazione | Inglese                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Formato                 | Materiale a stampa                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Livello bibliografico   | Monografia                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Note generali           | Includes index.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Nota di contenuto       | Cover -- Half-Title Page -- Series Page -- Title Page -- Copyright Page -- Contents -- List of Figures -- List of Tables -- Foreword -- Preface -- 1 Properties and Strength of Material -- 1.1 Introduction -- 2 Properties of Metals -- 2.1 Material Properties -- 2.1.1 Structure Insensitive Properties -- 2.1.2 Structure Sensitive Properties -- 2.1.3 Mechanical Properties -- 2.1.3.1 Modulus of Elasticity -- 2.1.3.2 Tensile Strength -- 2.1.3.3 Yield Strength -- 2.1.3.4 Fatigue Strength -- 2.1.3.5 Ductility -- 2.1.3.6 Elastic Limit -- 2.1.3.7 Impact Strength -- 2.1.3.8 Energy Absorption in Impact Testing -- 2.1.3.9 Transition Temperature for Energy Absorption -- 2.1.3.10 Transition Temperature for Lateral Expansion -- 2.1.3.11 Drop-Weight Tear Test (DWTT) -- 2.1.3.12 Fracture Toughness -- 2.1.4 Low Temperature Properties -- 2.1.4.1 Metal Strength at Low Temperature -- 2.1.5 Elevated Temperature Properties -- 2.1.6 Physical Properties -- 2.1.6.1 Thermal Conductivity -- 2.1.6.2 Coefficient of Thermal Expansion -- 2.1.6.3 Melting Point -- 2.1.7 Electrical Conductivity -- 2.1.8 Corrosion Properties -- 3 Design: Load Conditions -- 3.1 Design of Welds -- 3.2 Design by Calculations -- 3.2.1 Different Types of Loading -- 3.2.2 Tension -- 3.2.3 Compression -- 3.2.4 Bending -- 3.2.5 Shear -- 3.2.6 Torsion -- 3.2.7 Flat Sections -- 3.2.8 Round Cross Sectionals -- 3.2.9 Transfer of Forces -- 4 Design of Welds and Weldments -- 4.1 Introduction -- 4.1.1 Structural Types that Affect Weld Design -- 4.2 |

Full Penetration Welds -- 4.3 Partial Penetration Welds -- 4.4 Groove Welds -- 4.4.1 Definitions of Terms Applicable to Groove Welds -- 4.4.1.1 Effective Length -- 4.4.1.2 Effective Size of CJP Groove Welds -- 4.4.1.3 Effective Weld Size (Flare Groove) -- 4.4.1.4 Effective Area of Groove Welds -- 4.5 Weld Grooves -- 4.5.1 Square Groove Welds. 4.5.2 Single Bevel Groove Welds -- 4.5.3 Double Bevel Groove Weld -- 4.5.4 Single-V-Groove Weld -- 4.5.5 Double-V-Groove Welds -- 4.5.6 Single or Double-J-Groove Weld -- 4.5.7 Single or Double-U-Groove Weld -- 4.6 Fillet Welds -- 4.6.1 Definitions Applicable to Fillet Welds -- 4.6.1.1 Effective Length (Straight) -- 4.6.1.2 Effective Length (Curved) -- 4.6.1.3 Minimum Length -- 4.6.1.4 Intermittent Fillet Welds (Minimum Length) -- 4.6.1.5 Maximum Effective Length -- 4.6.1.6 Calculation of Effective Throat -- 4.6.1.7 Reinforcing Fillet Welds -- 4.6.1.8 Maximum Weld Size in Lap Joints -- 4.6.1.9 Effective Area of Fillet Welds -- 4.7 About Fillet Weld -- 4.7.1 Fillet Weld Defined and Explained -- 4.7.1.1 Single Fillet Welds -- 4.7.1.2 Double Fillet Welds -- 4.7.1.3 Combined Groove and Fillet Welds -- 4.8 Weld Design and Loading -- 4.8.1 Common Conditions to Consider When Designing Welded Connections -- 4.8.2 Marking the Fabrication and Construction Drawings -- 4.8.3 Effective Areas -- 4.8.4 Effective Area of Groove Welds -- 4.9 Sizing Fillet Welds -- 4.9.1 Effective Length of Straight Fillet Welds -- 4.9.2 The Determination of Effective Throat of a Fillet Weld -- 4.9.2.1 Fillet Welds Joining Perpendicular Members -- 4.9.2.2 Fillet Weld in Acute Angle -- 4.9.2.3 Fillet Welds That Make Angle Between  $60^\circ$  and  $80^\circ$  -- 4.9.2.4 Fillet Welds That Make Acute Angle Between  $60^\circ$  and  $30^\circ$  -- 4.9.2.5 Reinforcing Fillet Welds -- 4.9.3 Fillet Welds - Minimum Size -- 4.9.4 Maximum Weld Size in Lap Joints -- 4.9.5 Skewed T-Joints -- 4.9.5.1 T-Joint Welds in Acute Angles Between  $80^\circ$  and  $60^\circ$  and in Obtuse Angles Greater Than  $100^\circ$  -- 4.9.5.2 T-Joint Welds in Angles Between  $60^\circ$  and  $30^\circ$  -- 4.9.5.3 T-Joint Welds in Angles Less than  $30^\circ$  -- 4.9.5.4 Effective Length of Skewed T-Joints -- 4.9.5.5 Effective Throat of Skewed T-Joints -- 4.9.5.6 Effective Area of Skewed T-Joints. 4.10 Fillet Welds in Holes and Slots -- 4.10.1 Slot Ends -- 4.10.2 Effective Length of Fillet Welds in Holes or Slots -- 4.10.3 Effective Area of Fillet Welds in Holes or Slots -- 4.10.4 Diameter and Width Limitations -- 4.10.5 Slot Length and Shape -- 4.10.6 Effective Area of Plug and Slot Welds -- 4.11 Designing Calculations for Skewed Fillet Weld -- 4.12 Treating Weld as a Line -- 4.12.1 Calculation Approach -- 4.12.2 Finding the Size of the Weld -- 4.12.3 Calculated Stresses -- 4.12.4 Stress in Fillet Welds -- 4.12.5 Joint Configuration and Details -- 4.12.6 Compression Member Connections and Splices -- 4.12.7 Where There is an Issue of Through-Thickness Loading on the Base Plate -- 4.12.8 Determining the Capacity of Combinations of Welds -- 4.12.9 Corner and T-Joint Surface Contouring -- 4.12.10 Weld Access Holes -- 4.12.11 Welds with Rivets or Bolts -- 4.12.12 Joint Configuration and Details -- 4.12.12.1 Groove Welds - Transitions in Thicknesses and -- 4.12.12.2 Partial Length CJP Groove Weld Prohibition -- 4.12.12.3 Flare Welds, Flare Groove and Intermittent PJP Groove Welds -- 4.12.12.4 Joint Configuration and Details -- 4.12.12.5 Termination of Fillet Welds -- 4.12.12.6 Fillet Welds in Holes and Slots -- 4.13 Design of Tubular Connections -- 4.13.1 Weld Joint Design -- 4.13.2 Uneven Distribution of Load -- 4.13.3 Collapse -- 4.13.4 Lamellar Tear and Lamination -- 4.13.5 Fatigue -- 4.14 Design for Cyclic Loading -- 4.14.1 Improving Fatigue Performance of Welds, and Evaluation of S-N Curves for Design -- 4.14.1.1 Typical Weld Flushing Plan -- 4.15 Aluminum -- 4.15.1 Aluminum Alloys and Their Characteristics -- 4.15.1.1 Aluminum Alloys Series 1xxx -- 4.15.1.2

Aluminum Alloy Series 2xxx -- 4.15.1.3 Aluminum Alloy Series 3xxx -- 4.15.1.4 Aluminum Alloy Series 4xxx -- 4.15.1.5 Aluminum Alloy Series 5xxx -- 4.15.1.6 Aluminum Alloy Series 6xxx. 4.15.1.7 Aluminum Alloy Series 7xxx -- 4.15.2 The Aluminum Alloy Temper and Designation System -- 4.15.3 Wrought Alloy Designation System -- 4.15.4 Cast Alloy Designation -- 4.15.5 The Aluminum Temper Designation System -- 4.16 Welding Aluminum -- 4.16.1 Aluminum Welding Electrodes -- 4.16.2 Electrical Parameters -- 4.17 Design for Welding Aluminum -- 4.17.1 Effect of Welding on the Strength of Aluminum and its Alloys -- 4.17.2 Effect of Service Temperature -- 4.17.3 Type of Weld Joints for Aluminum Welding -- 4.17.3.1 Butt Joints -- 4.17.4 Lap Joint for Aluminum Welding -- 4.17.5 Use of T-Joints in Aluminum Welding -- 4.18 Distribution of Stress in Aluminum Weld Design -- 4.18.1 Shear Strength of Aluminum Fillet Welds -- 4.18.2 Fatigue Strength in Aluminum Welds -- 4.19 Heat and Distortion Control -- 4.19.1 Angular Distortion -- 4.19.2 Longitudinal Distortions -- 5 Introduction to Welding Processes -- 5.1 Introduction -- 5.2 Shielded Metal Arc Welding (SMAW) -- 5.3 Gas Tungsten Arc Welding -- 5.4 Gas Metal Arc Welding -- 5.5 Flux Cored Arc Welding (FCAW) -- 5.6 Submerged Arc Welding (SAW) -- 5.7 Electroslag Welding (ESW) -- 5.8 Plasma Arc Welding -- 5.9 Stud Welding -- 5.10 Oxyfuel Gas Welding -- 5.11 Hyperbaric Welding -- 5.12 Application of Welding Processes -- 6 Welding Symbols -- 6.1 Introduction -- 6.2 Common Weld Symbols and Their Meanings -- 6.2.1 The Basic Structure of Welding Symbol -- 6.2.2 Types of Welds and Their Symbols -- 6.3 Fillet Welds -- 6.3.1 The Length of the Fillet Weld -- 6.4 Groove Welds -- 6.4.1 Square Groove Welds -- 6.4.2 V-Groove Welds -- 6.5 Bevel Groove Welds -- 6.5.1 U-Groove Welds -- 6.5.2 J-Groove Welds -- 6.5.3 Flare-V Groove Welds -- 6.5.4 Flare Bevel Groove Weld -- 6.6 Plug and Slot Welds -- 7 Structural Design and Welding Specifications, and Other Useful Information -- 7.1 Introduction. 7.2 Structural Welding Codes -- 7.3 Useful Engineering Information -- Index -- Also of Interest -- EULA.

---