1. Record Nr. UNINA9910876557603321 Autore Kindmann Rolf Titolo Steel structures: design using FEM / / Rolf Kindmann, Matthias Kraus Pubbl/distr/stampa Berlin,: Wilhelm Ernst & Sohn, c2011 **ISBN** 3-433-60126-7 1-280-66281-6 9786613639745 3-433-60125-9 3-433-60077-5 Descrizione fisica 1 online resource (554 p.) Altri autori (Persone) KrausMatthias Disciplina 624.1/821 Soggetti Building, Iron and steel Structural design Finite element method Lingua di pubblicazione Inglese **Formato** Materiale a stampa Livello bibliografico Monografia Description based upon print version of record. Note generali Nota di bibliografia Includes bibliographical references (p. [528]-533) and index. Nota di contenuto Title Page: Table of Content; 1 Introduction; 1.1 Verification Methods: 1.2 Methods to Determine the Internal Forces and Moments; 1.3 Element Types and Fields of Application: 1.4 Linear and Nonlinear Calculations; 1.5 Designations and Assumptions; 1.6 Fundamental Relationships: 1.7 Limit States and Load Combinations: 1.8 Introductory Example; 1.9 Content and Outline; 1.10 Computer Programs; 2 Cross Section Properties; 2.1 Overview; 2.2 Utilisation of Symmetry Properties; 2.3 Standardisation Part I: Centre of Gravity, Principal Axes and Moments of Inertia 2.4 Calculation of Standardised Cross Section Properties Part I2.4.1 Separation of the Cross Section into Partial Areas; 2.4.2 Partial Areas of Thin-Walled Rectangles; 2.4.3 Basic Cross Sections and Elementary Compound Cross Section Shapes; 2.4.4 Tabular Calculation of Cross Section Properties: 2.4.5 Numeric Integration / Fibre and Stripe Model: 2.5 Standardisation Part II: Shear Centre, Warping Ordinate and Warping

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Sommario/riassunto

This book presents the design of steel structures using finite element methods (FEM)according to the current state of the art in Germany and the rest of Europe. After a short introduction on the basics of the design, this book illustrates the FEM with a focus on internal forces, displacements, critical loads and modal shapes. Next to finite element procedures for linear calculations considering the stress states of normal force, biaxial bending and warping torsion, non-linear calculations and the stability cases of flexural buckling, lateral torsional buckling and plate buckling are concentrat