

Access Free Fatigue Analysis Of Welded Components Designers Guide To The Structural Hot Spot Stress Approach Woodhead Publishing Series In Welding And Other Joining Technologies 1st Edition By Niemi E Fricke W Maddox S J 2006 Paperback

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An English version of a successful German book. Both traditional and modern concepts are described.

Progress in the Analysis and Design of Marine Structures collects the contributions presented at MARSTRUCT 2017, the 6th International Conference on Marine Structures (Lisbon, Portugal, 8-10 May 2017). The MARSTRUCT series of Conferences started in Glasgow, UK in 2007, the second event of the series having taken place in Lisbon, Portugal in March 2009, the third in Hamburg, Germany in March 2011, the fourth in Espoo, Finland in March 2013, and the fifth in Southampton, UK in March 2015. This Conference series deals with Ship and Offshore Structures, addressing topics in the areas of: - Methods and Tools for Loads and Load Effects - Methods and Tools for Strength Assessment - Experimental Analysis of Structures - Materials and Fabrication of Structures - Methods and Tools for Structural Design and Optimisation, and - Structural Reliability, Safety and Environmental Protection Progress in the Analysis and Design of Marine Structures is essential reading for academics, engineers and all professionals involved in the design of marine and offshore structures.

This book presents up-to-date knowledge of dynamic analysis in engineering world. To facilitate the understanding of the topics by readers with various backgrounds, general principles are linked to their applications from different angles. Special interesting topics such as statistics of motions and loading, damping modeling and measurement, nonlinear dynamics, fatigue assessment, vibration and buckling under axial loading, structural health monitoring, human body vibrations, and vehicle-structure interactions etc., are also presented. The target readers include industry professionals in civil, marine and mechanical engineering, as well as researchers and students in this area.

A resource for individuals responsible for siting decisions, this guidelines book covers siting and layout of process plants, including both new and expanding facilities. This book provides comprehensive guidelines in selecting a site, recognizing and assessing long-term risks, and the optimal lay out of equipment facilities needed within a site. The information presented is applicable to US and international locations. Note: CD-ROM/DVD and other supplementary materials are not included as part of eBook file.

The failure of any welded joint is at best inconvenient and at worst can lead to catastrophic accidents. Fracture and fatigue of welded joints and structures analyses the processes and causes of fracture and fatigue, focusing on how the failure of welded joints and structures can be predicted and minimised in the design process. Part one concentrates on analysing fracture of welded joints and structures, with chapters on constraint-based fracture mechanics for predicting joint failure, fracture assessment methods and the use of fracture mechanics in the fatigue analysis of welded joints. In part two, the emphasis shifts to fatigue, and chapters focus on a variety of aspects of fatigue analysis including assessment of local stresses in welded joints, fatigue design rules for welded structures, k-nodes for offshore structures and modelling residual stresses in predicting the service life of structures. With its distinguished editor and international team of contributors, Fracture and fatigue of welded joints and structures is an essential reference for mechanical, structural and welding engineers, as well as those in the academic sector with a research interest in the field. Analyses the processes and causes of fracture and fatigue, focusing predicting and minimising the failure of welded joints in the

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design process Assesses the fracture of welded joints and structure featuring constraint-based fracture mechanics for predicting joint failure Explores specific considerations in fatigue analysis including the assessment of local stresses in welded joints and fatigue design rules for welded structures

This book provides background and guidance on the use of the structural hot-spot stress approach to fatigue analysis. The book also offers Design S-N curves for use with the structural hot-spot stress for a range of weld details, and presents parametric formulas for calculating stress increases due to misalignment and structural discontinuities. Highlighting the extension to structures fabricated from plates and non-tubular sections. The structural hot-spot stress approach focuses on cases of potential fatigue cracking from the weld toe and it has been in use for many years in tubular joints. Following an explanation of the structural hot-spot stress, its definition and its relevance to fatigue, the book describes methods for its determination. It considers stress determination from both finite element analysis and strain gauge measurements, and emphasizes the use of finite element stress analysis, providing guidance on the choice of element type and size for use with either solid or shell elements. Lastly, it illustrates the use of the recommendations in four case studies involving the fatigue assessment of welded structures using the structural hot-spot stress

This volume contains a selection of papers presented at Fatigue Design 95 held in Helsinki, Finland from 5-8 September 1995. The papers have been peer reviewed and present practical aspects for the design of components and structures to avoid fatigue failure. Topics covered include: fatigue design experiences, ground vehicle components, component reliability, multiaxial fatigue, notch analysis, service loading, welded structures, probabilistics aspects in fatigue, fatigue design optimization.

These recommendations present general methods for the assessment of fatigue damage in welded components, which may affect the limit states of a structure, such as ultimate limit state and serviceability limited state. Fatigue resistance data is given for welded components made of wrought or extruded products of ferritic/pearlitic or bainitic structural steels up to $f_y = 700$ Mpa and of aluminium alloys commonly used for welded structures.

Avoiding or controlling fatigue damage is a major issue in the design and inspection of welded structures subjected to dynamic loading. Life predictions are usually used for safe life analysis, i.e. for verifying that it is very unlikely that fatigue damage will occur during the target service life of a structure. Damage tolerance analysis is used for predicting the behavior of a fatigue crack and for planning of in-service scheduled inspections. It should be a high probability that any cracks appearing are detected and repaired before they become critical. In both safe life analysis and the damage tolerance analysis there may be large uncertainties involved that have to be treated in a logical and consistent manner by stochastic modeling. This book focuses on fatigue life predictions and damage tolerance analysis of welded joints and is divided into three parts. The first part outlines the common practice used for safe life and damage tolerance analysis with reference to rules and regulations. The second part emphasises stochastic modeling and decision-making under uncertainty, while the final part is devoted to recent advances within fatigue research on welded joints. Industrial examples that are included are mainly dealing with offshore steel structures. Spreadsheets which accompany the book give the reader the possibility for hands-on experience of fatigue life predictions, crack growth analysis and inspection planning. As such, these different areas will be of use to engineers and researchers.

The main objective of this research is to develop a fundamentally new fatigue design and assessment procedure which can be used to predict the variation in crack size, strength and inspection periods as well as endurance. Basic fracture mechanics and fatigue procedures are used to illustrate this new technique.

"This book emphasizes the physical and practical aspects of fatigue and fracture. It covers

mechanical properties of materials, differences between ductile and brittle fractures, fracture mechanics, the basics of fatigue, structural joints, high temperature failures, wear, environmentally-induced failures, and steps in the failure analysis process."--publishers website.

The Welding Engineer's Guide to Fracture and Fatigue provides an essential introduction to fracture and fatigue and the assessment of these failure modes, through to the level of knowledge that would be expected of a qualified welding engineer. Part one covers the basic principles of weld fracture and fatigue. It begins with a review of the design of engineered structures, provides descriptions of typical welding defects and how these defects behave in structures undergoing static and cyclical loading, and explains the range of failure modes. Part two then explains how to detect and assess defects using fitness for service assessment procedures. Throughout, the book assumes no prior knowledge and explains concepts from first principles. Covers the basic principles of weld fracture and fatigue. Reviews the design of engineered structures, provides descriptions of typical welding defects and how these defects behave in structures undergoing static and cyclical loading, and explains the range of failure modes. Explains how to detect and assess defects using fitness for service assessment procedures.

The ultimate resource for designers, engineers, and analyst working with calculations of loads and stress.

Understand why fatigue happens and how to model, simulate, design and test for it with this practical, industry-focused reference Written to bridge the technology gap between academia and industry, the Metal Fatigue Analysis Handbook presents state-of-the-art fatigue theories and technologies alongside more commonly used practices, with working examples included to provide an informative, practical, complete toolkit of fatigue analysis. Prepared by an expert team with extensive industrial, research and professorial experience, the book will help you to understand: Critical factors that cause and affect fatigue in the materials and structures relating to your work Load and stress analysis in addition to fatigue damage-the latter being the sole focus of many books on the topic How to design with fatigue in mind to meet durability requirements How to model, simulate and test with different materials in different fatigue scenarios The importance and limitations of different models for cost effective and efficient testing Whilst the book focuses on theories commonly used in the automotive industry, it is also an ideal resource for engineers and analysts in other disciplines such as aerospace engineering, civil engineering, offshore engineering, and industrial engineering. The only book on the market to address state-of-the-art technologies in load, stress and fatigue damage analyses and their application to engineering design for durability Intended to bridge the technology gap between academia and industry-written by an expert team with extensive industrial, research and professorial experience in fatigue analysis and testing An advanced mechanical engineering design handbook focused on the needs of professional engineers within automotive, aerospace and related industrial disciplines

This book contains eight chapters with original and innovative research studies in the field of grain boundaries. The results presented in the chapters of this book are very interesting and inspiring. This book will be very valuable to all researchers who are interested in the influence of grain boundaries on the structure and different kinds of properties of engineering materials. This book is also addressed to students and professional engineers working in the industry as well as to specialists who pay attention to all aspects related to grain boundaries and their impact on the various properties of innovative materials. The chapters of this book were developed by respected and well-known researchers from

different countries.

This topical book contains the latest scientific and engineering developments in the field of tubular steel structures, as presented at the "11th International Symposium and IIW International Conference on Tubular Structures". The International Symposium on Tubular Structures (ISTS) has a long-standing reputation for being the principal showcase for manufactured tubing and the prime international forum for discussion of research, developments and applications in this field. Various key and emerging subjects in the field of hollow structural sections are covered, such as: novel applications and case studies, static and fatigue behaviour of connections/joints, concrete-filled and composite tubular members, earthquake resistance, specification and code developments, material properties and structural reliability, impact resistance and brittle fracture, fire resistance, casting and fabrication innovations. Research and development issues presented in this book are applicable to buildings, bridges, offshore structures, entertainment rides, cranes, towers and various mechanical and agricultural equipment. This book is thus a pertinent reference source for architects, civil and mechanical engineers, designers, steel fabricators and contractors, manufacturers of hollow sections or related construction products, trade associations involved with tubing, owners or developers of tubular structures, steel specification committees, academics and research students. The conference presentations herein include two keynote lectures (the International Institute of Welding Houdremont Lecture and the ISTS Kurobane Lecture), plus finalists in the CIDECT Student Papers Competition. The 11th International Symposium and IIW International Conference on Tubular Structures – ISTS11 – took place in Québec City, Canada from August 31 to September 2, 2006. Fatigue design and analysis of steel and composite bridges is generally based on the notion of the nominal stress using the classified S-N curves with corresponding fatigue classes for typical details. Such an approach can yield an unrealistic estimation of the load effects for structure components because of an ever increasing number of structural details and loading situations resulting in a limited number of possible treatable design cases. The advanced failure methods have been developed to enable an accurate estimation of the load effects for the fatigue strength of welded steel structures, in cases where the nominal stress is hard to estimate because of geometric and loading complexities or in cases where there is no classified detail that is suitable to be compared with. The overall objective of this study is to evaluate the applicability and reliability of the common fatigue life assessment methods using the finite element method. The failure methods considered are the nominal stress, hot spot stress and effective notch stress method. A number of frequently used bridge details have been evaluated for the purpose of comparing the equivalency between these methods. In this, book the effect of Friction Stir Welding and the Tungsten Inert Gas Welding on the fatigue behavior of AA6061 Aluminium alloy has been studied. To reveal the influence of the welding parameters, different travel speeds of the

welding tool have been used to provide weld seams with varying microstructural features. Crack initiation, as well as crack propagation behavior under fatigue loading, has been investigated with respect to the local microstructure at the crack initiation sites and along the crack path. Fatigue cracks were mostly initiated around the stir zone and the adjacent thermal- mechanical affected zone independent from hardness distributions in the weld seams. In some specimens, a defect-like feature was observed at the crack origins, which shortened the fatigue lives. It has been found that while the effect of the tool travel speed on the fatigue lifetime seems to be little, the varying and complex local microstructure in the weld seam basically affects both the crack initiation sites and the crack propagation paths.

This report introduces definitions of the terminology relevant to stress determination for fatigue analysis of welded components. The various stress concentrations, stress categories and fatigue analysis methods are defined. Fatigue analysis methods considered are nominal stress, hot spot stress, notch stress, notch strain and fracture mechanics approaches. The report also contains comprehensive recommendations concerning the application of finite element methods and experimental methods for stress determination. It is intended for fatigue design of common welded structures, such as cranes, excavators, vehicle frames, bridges, ship hulls, offshore structures etc. fabricated from materials at least 3mm thick. In general, attention is focused on weld details which give rise to fatigue cracking from the surface, notably from the weld toe.

Project Report from the year 2017 in the subject Engineering - Mechanical Engineering, grade: 8.9, SRM University, language: English, abstract: This paper deals with the mechanical, microstructural and fatigue analysis of welded joints. In the study, 6061-T6 aluminium alloy plates in 4mm thickness, that are particularly used for aerospace and in automotive industries, were welded using Tungsten Inert Gas (TIG) welding and Friction Stir Welding (FSW) methods as similar joints with one side pass and parameters of varying tool rotation, weld speed and 2.3 degree tool tilt angle. The weld zones cross sections were analysed with light optical microscopy (LOM). During recent years several investigations have been made of fatigue properties of friction stir welded joints. The great majority of available data from the fatigue analysis of friction stir welded joints are concerned with uniaxial loading conditions for a simple geometry. In uniaxial loading nominal stress is normally used as reference stress and it is easy to determine. However, fatigue failure is a highly localized phenomenon in engineering components and determining the nominal stress is not always possible due to the complexity of structures and presence of stress concentrators such as notches and cracks in which many approaches based on local parameters.

The notch stress approach for fatigue assessment of welded joints is based on the highest elastic stress at the weld toe or root. In order to avoid arbitrary or infinite stress results, a rounded shape with a reference radius instead of the

actual sharp toe or root is usually assumed. IIW recommendations for the fatigue assessment of welded structures by notch stress analysis reviews different proposals for reference radii together with associated S-N curves. Detailed recommendations are given for the numerical analysis of notch stress by the finite or boundary element method. Several aspects are discussed, such as the structural weakening by keyhole-shaped notches and the consideration of multiaxial stress states. Appropriate S-N curves are presented for the assessment of the fatigue strength of different materials. Finally, four examples illustrate the application of the approach as well as the variety of structures which can be analysed and the range of results that can be obtained from different models. Provides detailed recommendations for the numerical analysis of notch stress by the finite or boundary element method Discusses structural weakening by keyhole-shaped notches and the consideration of multiaxial stress states Provides four comprehensive examples, illustrating the variety of structures which can be analysed and the range of results that can be obtained from different models

The weld toe is a primary source of fatigue cracking because of the severity of the stress concentration it produces. Weld toe improvement can increase the fatigue strength of new structures significantly. It can also be used to repair or upgrade existing structures. However, in practice there have been wide variations in the actual improvements in fatigue strength achieved. Based on an extensive testing programme organised by the IIW, this report reviews the main methods for weld toe improvement to increase fatigue strength: burr grinding, TIG dressing and hammer and needle peening. The report provides specifications for the practical use of each method, including equipment, weld preparation and operation. It also offers guidance on inspection, quality control and training as well as assessments of fatigue strength and thickness effects possible with each technique. IIW recommendations on methods for improving the fatigue strength of welded joints will allow a more consistent use of these methods and more predictable increases in fatigue strength. Provides specifications for the practical use of each weld toe method, including equipment, weld preparation and operation Offers guidance on inspection, quality control and training, as well as assessments of fatigue strength and thickness effects possible with each technique This report will allow a more consistent use of these methods and more predictable increases in fatigue strength

Maintenance, Safety, Risk, Management and Life-Cycle Performance of Bridges contains lectures and papers presented at the Ninth International Conference on Bridge Maintenance, Safety and Management (IABMAS 2018), held in Melbourne, Australia, 9-13 July 2018. This volume consists of a book of extended abstracts and a USB card containing the full papers of 393 contributions presented at IABMAS 2018, including the T.Y. Lin Lecture, 10 Keynote Lectures, and 382 technical papers from 40 countries. The contributions presented at IABMAS 2018 deal with the state of the art as well as emerging concepts and

innovative applications related to the main aspects of bridge maintenance, safety, risk, management and life-cycle performance. Major topics include: new design methods, bridge codes, heavy vehicle and load models, bridge management systems, prediction of future traffic models, service life prediction, residual service life, sustainability and life-cycle assessments, maintenance strategies, bridge diagnostics, health monitoring, non-destructive testing, field testing, safety and serviceability, assessment and evaluation, damage identification, deterioration modelling, repair and retrofitting strategies, bridge reliability, fatigue and corrosion, extreme loads, advanced experimental simulations, and advanced computer simulations, among others. This volume provides both an up-to-date overview of the field of bridge engineering and significant contributions to the process of more rational decision-making on bridge maintenance, safety, risk, management and life-cycle performance of bridges for the purpose of enhancing the welfare of society. The Editors hope that these Proceedings will serve as a valuable reference to all concerned with bridge structure and infrastructure systems, including students, researchers and engineers from all areas of bridge engineering.

'Analysis and Design of Marine Structures' explores recent developments in methods and modelling procedures for structural assessment of marine structures: - Methods and tools for establishing loads and load effects; - Methods and tools for strength assessment; - Materials and fabrication of structures; - Methods and tools for structural design and optimisation; - Structural reliability, safety and environment protection. The book is a valuable reference source for academics, engineers and professionals involved in marine structures and design of ship and offshore structures.

The key to avoidance of fatigue, which is the main cause of service failures, is good design. In the case of welded joints, which are particularly susceptible to fatigue, design rules are available. However, their effective use requires a good understanding of fatigue and an appreciation of problems concerned with their practical application. Fatigue strength of welded structures has incorporates up-to-date design rules with high academic standards whilst still achieving a practical approach to the subject. The book presents design recommendations which are based largely on those contained in recent British standards and explains how they are applied in practice. Attention is also focused on the relevant aspects of fatigue in welded joints which are not yet incorporated in codes thus providing a comprehensive aid for engineers concerned with the design or assessment of welded components or structures. Background information is given on the fatigue lives of welded joints which will enable the engineer or student to appreciate why there is such a contrast between welded and unwelded parts, why some welded joints perform better than others and how joints can be selected to optimise fatigue performance.

Advanced Joining Processes: Welding, Plastic Deformation, and Adhesion brings together a range of advanced thermal, mechanical, and chemical methods of

joining, offering an up-to-date resource for those looking to understand and utilize the very latest techniques. Efficient joining techniques are critical to a range of innovative applications, with technology in constant development. The first section of the book provides in-depth information on advanced welding techniques, including friction stir, explosive, ultrasonic, laser, electron beam, and computational weld analysis and fatigue of structures. The second section highlights key developments in joining by plastic deformation, adhesive bonding, and hybrid joining. The coverage of each technique is supported by practical guidance, detailed analysis, and finite element simulations. This is an essential reference for researchers and advanced students in joining, welding, adhesion, materials processing, mechanical engineering, plastics engineering, manufacturing, civil engineering, and automotive/aerospace engineering, as well as engineers, scientists, and R&D professionals, using joining, welding, and adhesion methods, across a range of industries. Presents the latest research findings and developments across welding, joining by plastic deformation, and adhesion Includes state-of-the-art methods, such as laser, ultrasonic and electron beam welding, hybrid joining, and the use of electromagnetic pulses Offers practical guidance, detailed analysis, and finite element simulations, for all techniques covered

In the paper the author attempts to assess the fatigue life of chosen welded joints. It focuses especially on chosen problems that accompany determination of the fatigue life of welded joints, taking into consideration the strain energy density parameter. Chapter 2 describes the welded joint as a stress concentrator. The state of stress and strain in the notch are described and theoretical and fatigue coefficients are indicated. The fatigue coefficient of the notch effect is estimated on the basis of fictitious radius in the notch root. Chapter 3 presents a model of fatigue life assessment under uniaxial stress state with statistical handling of data presented. The new energy model of fatigue life assessment, which rests upon the analysis of stress and strain in the critical plane, is described in detail in chapter 4. The principle of such a description is presented in the uniaxial as well as in - axial state of loading. Chapter 5 contains the analysis of tests of four materials subjected to different loadings: cyclic, variable-amplitude with Gaussian distribution, and variable amplitude with Gaussian distribution and overloading for symmetric and pulsating loading. The analysis is based on the determined fatigue characteristics for all the considered materials. Chapter 6 shows the application of the model in the fatigue life assessment in the complex state of loading (bending with torsion of flange-tube and tube-tube joints) based on fatigue research of steel and aluminum welded joints carried out in well-known German centres.

This report provides background and guidance on the use of the structural hot spot stress approach to the fatigue design of welded components and structures. It complements the IIW recommendations for 'Fatigue Design of Welded Joints and Components' and extends the information provided in the IIW

recommendations on 'Stress Determination for Fatigue Analysis of Welded Components'. This approach is applicable to cases of potential fatigue cracking from the weld toe. It has been in use for many years in the context of tubular joints. The present report concentrates on its extension to structures fabricated from plates and non-tubular sections. Following an explanation of the structural hot spot stress, its definition and its relevance to fatigue, the authors describe methods for its determination. Stress determination from both finite element analysis and strain gauge measurements is considered. Parametric formulae for calculating stress increases due to misalignment and structural discontinuities are also presented. Special attention is paid to the use of finite element stress analysis and guidance is given on the choice of element type and size for use with either solid or shell elements. Design S-N curves for use with the structural hot spot stress are presented for a range of weld details. Finally, practical application of the recommendations is illustrated in two case studies involving the fatigue assessment of welded structures using the structural hot spot stress approach. Provides practical guidance on the application of the structural hot-spot stress approach Discusses stress determination from both finite element analysis and strain gauge measurements Practical application of the recommendations is illustrated in two case studies

This book provides a basis for the design and analysis of welded components that are subjected to fluctuating forces, to avoid failure by fatigue. It is also a valuable resource for those on boards or commissions who are establishing fatigue design codes. For maximum benefit, readers should already have a working knowledge of the basics of fatigue and fracture mechanics. The purpose of designing a structure taking into consideration the limit state for fatigue damage is to ensure that the performance is satisfactory during the design life and that the survival probability is acceptable. The latter is achieved by the use of appropriate partial safety factors. This document has been prepared as the result of an initiative by Commissions XIII and XV of the International Institute of Welding (IIW).

Local approaches to fatigue assessment are used to predict the structural durability of welded joints, to optimise their design and to evaluate unforeseen joint failures. This standard work provides a systematic survey of the principles and practical applications of the various methods. It covers the hot spot structural stress approach to fatigue in general, the notch stress and notch strain approach to crack initiation and the fracture mechanics approach to crack propagation. Seam-welded and spot-welded joints in structural steels and aluminium alloys are also considered. This completely reworked second edition takes into account the tremendous progress in understanding and applying local approaches which has been achieved in the last decade. It is a standard reference for designers, structural analysts and testing engineers who are responsible for the fatigue-resistant in-service behaviour of welded structures. Completely reworked second edition of a standard work providing a systematic survey of the principles and practical applications of the various methods Covers the hot spot structural stress approach to fatigue in general, the notch stress and notch strain approach to crack initiation and the fracture mechanics approach to crack propagation. Written by a distinguished team of authors

Bridge Maintenance, Safety, Management, Life-Cycle Sustainability and Innovations contains lectures and papers presented at the Tenth International Conference on Bridge Maintenance, Safety and Management (IABMAS 2020), held in Sapporo, Hokkaido, Japan, April 11–15, 2021. This volume consists of a book of extended abstracts and a USB card containing the full

papers of 571 contributions presented at IABMAS 2020, including the T.Y. Lin Lecture, 9 Keynote Lectures, and 567 technical papers from 40 countries. The contributions presented at IABMAS 2020 deal with the state of the art as well as emerging concepts and innovative applications related to the main aspects of maintenance, safety, management, life-cycle sustainability and technological innovations of bridges. Major topics include: advanced bridge design, construction and maintenance approaches, safety, reliability and risk evaluation, life-cycle management, life-cycle sustainability, standardization, analytical models, bridge management systems, service life prediction, maintenance and management strategies, structural health monitoring, non-destructive testing and field testing, safety, resilience, robustness and redundancy, durability enhancement, repair and rehabilitation, fatigue and corrosion, extreme loads, and application of information and computer technology and artificial intelligence for bridges, among others. This volume provides both an up-to-date overview of the field of bridge engineering and significant contributions to the process of making more rational decisions on maintenance, safety, management, life-cycle sustainability and technological innovations of bridges for the purpose of enhancing the welfare of society. The Editors hope that these Proceedings will serve as a valuable reference to all concerned with bridge structure and infrastructure systems, including engineers, researchers, academics and students from all areas of bridge engineering.

The ability to quantify residual stresses induced by welding processes through experimentation or numerical simulation has become, today more than ever, of strategic importance in the context of their application to advanced design. This is an ongoing challenge that commenced many years ago. Recent design criteria endeavour to quantify the effect of residual stresses on fatigue strength of welded joints to allow a more efficient use of materials and a greater reliability of welded structures. The aim of the present book is contributing to these aspects of design through a collection of case-studies that illustrate both standard and advanced experimental and numerical methodologies used to assess the residual stress field in welded joints. The work is intended to be of assistance to designers, industrial engineers and academics who want to deepen their knowledge of this challenging topic.

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