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Fossil fuels will remain the backbone of the global energy economy for the foreseeable future. The contribution of nuclear energy to the global energy supply is also expected to increase. With the pressing need to mitigate climate change and reduce greenhouse gas emissions, the fossil energy industry is exploring the possibility of carbon dioxide disposal in geological media. Geological disposal has been studied for decades by the nuclear industry with a view to ensuring the safe containment of its wastes. Geological disposal of carbon dioxide and that of radioactive waste gives rise to many common concerns in domains ranging from geology to public acceptance. In this respect, comparative assessments reveal many similarities, ranging from the transformation of the geological environment and safety and monitoring concerns to regulatory, liability and public acceptance issues. However, there are profound differences on a broad range of issues as well, such as the quantities and hazardous features of the materials to be disposed of, the characteristics of the targeted geological media, the site engineering technologies involved and the timescales required for safe containment at the disposal location. There are ample opportunities to learn from comparisons and to derive insights that will assist policymakers responsible for national energy strategies and international climate policies.

Many traditional masonry buildings are exposed to high intensity earthquakes where the collapse of masonry

claims the majority of casualties. This workshop provided a forum for discussion, including survey and measurement, retrofitting criteria and approaches used in different European countries.

Building with precast concrete elements is one of the most innovative forms of construction. This book serves as an introduction to this topic, including examples, and thus supplies all the information necessary for conceptual and detailed design.

Summarizes probabilistic seismic hazard assessment as it is practiced in various countries throughout the world. 59 reports are included covering 88 countries, which comprise about 80% of the inhabited land mass of the Earth. Over 100 maps.

Summary: "Increasing frequency and severity of natural disasters during the last fifteen years in the Republic of Moldova, limited resources for prevention and mitigation of their impact, has increased the level of vulnerability of the population. Considered efforts are to be made to decrease vulnerability of population through a deeper study of human and societal dynamics, different methodologies of disaster forecast and prevention, transfer of technology and knowledge. In this publication theoretical knowledge and practical experiences in the area of natural and anthropogenic disasters are discussed. Practical recommendations are developed for the prevention of negative effects on the environment and society. It is demonstrated that international security policy is not limited just to regional security - it means ?Global Security? - and efficient international cooperation is needed to ensure it."--Publisher

description.

Understanding of failure of quasibrittle materials is of paramount importance in many engineering fields. This subject has become a broad and important field of considerable mathematical complexity, with many competing models and unsolved problems. Attention in this volume focuses on concrete, rock, masonry, toughened ceramics, ice and other quasibrittle materials characterized by the development of large zones of cracking or other microstructural damage, and its localization into major fractures.

A manual aimed at assisting in major hazards control. It is designed for countries who wish to develop a programme for major hazards control, as well as those with systems already in place.

The book analyses the risks of nuclear power stations. The security concept of reactors is explained. Measures against the spread of radioactivity after a severe accident, accidents of core melting and a possible crash of an air plane on reactor containment are discussed. The book covers three scientific subjects of the safety concepts of Light Water Reactors: – A first part describes the basic safety design concepts of operating German Pressurized Water Reactors and Boiling Water Reactors including accident management measures introduced after the reactor accidents of Three Mile Island and Chernobyl. These safety concepts are also compared with the experiences of the Fukushima accidents. In addition, the safety design

concepts of the future modern European Pressurized Water Reactor (EPR) and of the future modern Boiling Water Reactor SWR-1000 (KERENA) are presented. These are based on new safety research results of the past decades. – In a second, part the possible crash of military or heavy commercial air planes on reactor containment is analyzed. It is shown that reactor containments can be designed to resist to such an airplane crash. – In a third part, an online decision system is presented. It allows to analyze the distribution of radioactivity in the atmosphere and to the environment after a severe reactor accident. It provides data for decisions to be taken by authorities for the minimization of radiobiological effects to the population. This book appeals to readers who have an interest in save living conditions and some understanding for physics or engineering.

Despite all the efforts being put into expanding renewable energy sources, large-scale power stations will be essential as part of a reliable energy supply strategy for a longer period. Given that they are low on CO₂ emissions, many countries are moving into or expanding nuclear energy to cover their baseload supply. Building structures required for nuclear plants whose protective function means they are classified as safety-related, have to meet particular construction requirements more stringent than those involved in conventional construction.

This book gives a comprehensive overview from approval aspects given by nuclear and construction law, with special attention to the interface between plant and construction engineering, to a building structure classification. All life cycle phases are considered, with the primary focus on execution. Accidental actions on structures, the safety concept and design and fastening systems are exposed to a particular treatment. Selected chapters from the German concrete yearbook are now being published in the new English "Beton-Kalender Series" for the benefit of an international audience. Since it was founded in 1906, the Ernst & Sohn "Beton-Kalender" has been supporting developments in reinforced and prestressed concrete. The aim was to publish a yearbook to reflect progress in "ferro-concrete" structures until - as the book's first editor, Fritz von Emperger (1862-1942), expressed it - the "tempestuous development" in this form of construction came to an end. However, the "Beton-Kalender" quickly became the chosen work of reference for civil and structural engineers, and apart from the years 1945-1950 has been published annually ever since.

Forty scientists working in 13 different countries detail in this work the most recent advances in seismic design and performance assessment of reinforced concrete buildings. It is a valuable contribution in the mitigation of natural disasters.

In seinem 46. Jahrgang begleitet der Mauerwerk-Kalender die erfolgreiche Bauart als verlässliches Nachschlagewerk mit den Eigenschaftswerten von Mauersteinen, Mauermörtel, Mauerwerk und Putzen, mit der aktuellen Übersicht über die allgemeinen bauaufsichtlichen Zulassungen bzw. allgemeinen Bauartgenehmigungen dieses Fachgebietes und mit der Zusammenstellung der geltenden technischen Regeln für den Mauerwerksbau. In diesem Zusammenhang wird in einem gesonderten Kapitel auf die Besonderheiten bei bauhabenbezogenen Bauartgenehmigungen (Zustimmungen im Einzelfall) eingegangen. Zwei weitere Beiträge widmen sich der Bemessung von Mauerwerkskonstruktionen. Hierin werden Tragfähigkeitstabellen zur vereinfachten Bemessung unbewehrten Mauerwerks und der Beitrag zur Erdbebenbemessung von Mauerwerksbauten aus dem Jahre 2010 wurde vollständig überarbeitet und aktualisiert. In einem Praxisbeitrag werden die Aspekte bei Planung und Ausführung von umfangreichen Eingriffen in die Tragstrukturen von historischen Mauerwerksgewölben in einer denkmalgeschützten Festungsanlage vorgestellt. Für die richtige Bemessung von Befestigungen wird das notwendige Hintergrundwissen über die Ermittlung der Tragfähigkeit von Kunststoff- und Injektionsdübeln durch Versuche am Bauwerk dargestellt sowie auf die DIBt Richtlinien zur praxisbezogenen

Anwendung eingegangen. Weitere Beiträge widmen sich dem Bau mit Fertigteilen sowie der Digitalisierung und den daraus resultierenden Herausforderungen aus der Sicht eines Baustoffherstellers sowie innovativen Entwicklungen wie dem 3D-Druck und der Robotik im Mauerwerksbau. Über den Einsatz eines neu entwickelten reversiblen Wandsystems aus mörtellos verlegten Betonhohlblocksteinen für sog. informelle Siedlungen berichtet ein Autorenteam.

Contains research papers presented at The Third Euro-Conference on Parallel and Distributed Computing for Computational Mechanics, held in Weimar, Germany from 20-25 March 1999.

Base isolation, passive energy dissipation and active control represent three innovative technologies for protection of structures under environmental loads. Increasingly, they are being applied to the design of new structures or to the retrofit of existing structures against wind, earthquakes and other external loads. This book, with contributions from leading researchers from Japan, Europe, and the United States, presents a balanced view of current research and world-wide development in this exciting and fast expanding field. Basic principles as well as practical design and implementational issues associated with the application of base isolation systems and passive and active control devices to civil engineering structures are carefully addressed.

Examples of structural applications are presented and extensively discussed.

This book describes repository solutions for all types of radioactive waste and residues in different geotechnical repository structures. The focus is initially on existing or planned final disposal sites in Germany and the process of finding sites. However, international comparisons are drawn, especially to locations in the US. This affects both the repository structures and the legal requirements. The radioactive substances considered include residues from uranium ore processing, as well as low and intermediate level radioactive waste up to heat generating, high level radioactive wastes, such as spent fuel and vitrified waste from reprocessing. In order to evaluate the repository structures and their inventories, a dimensionless radiotoxicity index A_i / F_i [activity of radionuclide quantity (A_i) related to the exemption limit of radionuclide (F_i)] has been introduced. This gives the reader a well-founded overview of the degree of inconsistency in the handling of safety requirements for the respective geotechnical environmental structures. This creates the necessary transparency on this issue, which has not been previously available and is required by stakeholders today. The long-term security, the duration of the observation period and the certainty of the safety prognosis are also discussed in the book as well as the participation of subsequent

generations in current and possible future repositories. This is vital as nuclear energy will continue to be used worldwide in the long term. The international repository projects presented have all been subjected to the same evaluation criteria. This applies both to existing operational project as well as those about to be commissioned and the processes for seeking locations. Special attention has been paid to monitoring, both operational and long-term monitoring. This broad range of topics makes this book a very valuable read for both the interested public and the professional world.

Presenting a comprehensive overview of recent developments in the field of seismic resistant steel structures, this volume reports upon the latest progress in theoretical and experimental research into the area, and groups findings in the following key sections: · performance-based design of structures · structural integrity under exceptional loading · material and member behaviour · connections · global behaviour · moment resisting frames · passive and active control · strengthening and repairing · codification · design and application

Erdbebensicheres Bauen - Hilfestellung für die Anwendung der neuen DIN 4149 Tagungsband der RWTH-LBB/Regierungspräsidium Freiburg/DIN-Gemeinschaftstagung, Freiburg 2006 Beuth Verlag

DIN 4149 Part 1 Buildings in German Earthquake Zones : Design Loads, Dimensioning,

Design and Construction of Conventional Buildings
Seismic Design of Industrial Facilities
Proceedings of the International Conference on Seismic Design of Industrial Facilities (SeDIF-Conference)
Springer Science & Business Media

Companies face a variety of risks resulting from cost reduction strategies, rationalization measures, global sourcing, and outsourcing activities. Due to the large number of actors involved, extremely close ties emerge, which significantly increase supply chains' vulnerability to disruptions – this has been shown again and again in the past few years. Against this background, the aspect of supply continuity is of increasing importance for all activities that relate to procurement, logistics, and supply chain management. Its objective is to ensure the continuous operation of supply chains, i.e., the uninterrupted flow of material, information, and coordination from the initial supplier to the end customer. Therefore, it is necessary to adopt adequate measures that take into consideration not only potential losses but also potential gains (so-called speculative risks). With this book, the concept of Supply Chain Safety Management is introduced. The concept itself is embedded in a comprehensive and dynamic management process. Depending on a supply chain's individual objectives, a set of courses of action is offered for any risk factors – whether they are identifiable and quantifiable or not. The

practicability of Supply Chain Safety Management is highlighted by various case studies. The book "Supply Chain Safety Management: Achieving Security and Robustness in Logistics" targets both the areas of science and of practice. First, the state of the art in research is reflected and valuable impulses for new and respectively for further research fields are provided by taking into consideration the points of view of scientists and practitioners in the business environment. Next, theoretically well-substantiated, modern approaches and tools applicable to the business world are offered, an impetus for new ideas and fields of positioning is given and best practice examples are presented allowing a fruitful exchange of experiences between practitioners.

Accidents in industrial installations are random events. Hence they cannot be totally avoided. Only the probability of their occurrence may be reduced and their consequences be mitigated. The book proceeds from hazards caused by materials and process conditions to indicating engineered and organizational measures for achieving the objectives of reduction and mitigation. Qualitative methods for identifying weaknesses of design and increasing safety as well as models for assessing accident consequences are presented. The quantitative assessment of the effectiveness of safety measures is explained. The treatment of uncertainties plays a

role there. They stem from the random character of the accident and from lacks of knowledge of some of the phenomena to be addressed. The reader is acquainted with the simulation of accidents, with safety and risk analyses and learns how to judge the potential and limitations of mathematical modelling. Risk analysis is applied amongst others to “functional safety” and the determination of “appropriate distances” between industry and residential areas (land-use planning). This shows how it can be used as a basis for safety-relevant decisions. Numerous worked-out examples and case studies addressing real plants and situations deepen the understanding of the subjects treated and support self-study.

Strong ground motion measuring and recording instruments play a major role in mitigation of seismic risk. The strong ground motion near the source of an earthquake describes the effects that endanger our built environment, and is also the most detailed clue concerning the source mechanism of the earthquake. The range of complexity that engulfs our understanding of the source parameters of a major earthquake (extent of the source mechanism, stress drop, wave propagation patterns) and how buildings and other works of construction respond to ground-transmitted dynamic effects may be overpowered by improved direct observations. Strong motion seismographs provide the information that enables

scientists and engineers to resolve the many issues that are intertwined with practical problems of building safe communities worldwide. They may be installed as arrays close to major fault zones, consisting of many instruments arranged in some geometrical pattern, or in the vicinity and mounted on buildings. This book, which contains papers by invited authorities, represents a unique interaction between seismologists and earthquake engineers who examine issues of mutual concern in an overlapping area of major interest. The papers have been grouped around three major areas. -Seismic Hazard and Extreme Motions -Engineering Uses of Strong Motion Seismograms -Arrays and Observations.

This comprehensive and up-to-date reference work and resource book covers state-of-the-art and state-of-the-practice for bridge engineering worldwide.

Countries covered include Canada and the United States in North America; Argentina and Brazil in South America; Bosnia, Bulgaria, Croatia, Czech Republic, Denmark, Finland, France, Greece, Macedonia,

Proceedings of the Fifth International Conference on Soil Dynamics and Earthquake Engineering SDEE 91, Karlsruhe, Germany, 23-26 September 1991.

Assessment of Vulnerability to Natural Hazards covers the vulnerability of human and environmental systems to climate change and eight natural

hazards: earthquakes, floods, landslides, avalanches, forest fires, drought, coastal erosion, and heat waves. This book is an important contribution to the field, clarifying terms and investigating the nature of vulnerability to hazards in general and in various specific European contexts. In addition, this book helps improve understanding of vulnerability and gives thorough methodologies for investigating situations in which people and their environments are vulnerable to hazards. With case studies taken from across Europe, the underlying theoretical frame is transferrable to other geographical contexts, making the content relevant worldwide. Provides a framework of theory and methodology designed to help researchers and practitioners understand the phenomenon of vulnerability to natural hazards and disasters and to climate change Contains case studies that illustrate how to apply the methodology in different ways to diverse hazards in varied settings (rural, urban, coastal, mountain, and more) Describes how to validate the results of methodology application in different situations and how to respond to the needs of diverse groups of stakeholders represented by the public and private sectors, civil society, researchers, and academics

A unique opportunity to review the latest progress in an expanding area of interest: the Mechanical Behaviour of Salt. These Proceedings include over

fifty papers and summaries describing the latest findings in ongoing studies from a number of research groups. For the 2007 conference, there was a particular focus on the understanding of thermal, mechanical, hydraulic and chemical coupled processes (THMC). Such processes are of specific interest when considering advanced problems in waste disposal, storage and mining. The book includes a number of themes: - laboratory and in-situ investigations modelling, e.g. derivation of constitutive equations - numerical computations and prediction of long-term behaviour - THMC processes in mining projects, storage and permanent disposal - case studies - geology - mining and storage applications and abandonment

The International Conferences on the Mechanical Behaviour of Salt have a long tradition, being initiated in 1981 at The Pennsylvania State University, USA. The present conference, the sixth of the series, took place in Hannover, Germany, in May 2007. The conference brought together mining engineers, researchers, and university professors interested in the mechanical behaviour of salt, mostly from Europe and beyond. Boundary Elements contains the proceedings of the International Conference on Boundary Elements Methods held at Beijing, China on October 14-17, 1986. The conference aims at interchanging the developments of the boundary element method or the boundary integral equation method, as well as

the techniques and advances in many engineering, physical, or mechanical field. The various papers presented in the conference are organized in this book into eight parts. Part I talks about engineering in general. Subsequent parts focus on fluid mechanics, thermo-mechanics, solid mechanics, and dynamics. Applications of boundary elements method to shell and plate analyses, as well as to other types of analysis, are also shown in other parts in this book.

Neben theoretischen Grundlagen steht auch bei der dritten Auflage wieder die Praxis der Ingenieurseismologie im Focus. Das Buch wurde um weitere Beispiele, auch zum neu erschienenen Weißdruck der DIN 4149, EC8, der Anwendung bei Sonderbauten wie Silobau- und Tankbauwerke sowie Schornsteine ergänzt. Auf der beiliegenden CD sind alle erforderlichen Programme und Abbildungen, Videosequenzen und Animationen zur besseren Veranschaulichung zusammengestellt.

Since 1949 the "Committee for Waterfront Structures" has operated on honorary base as a committee of the Society for Harbour Engineering (HTG), Hamburg, and since 1951 also as working group of the German Society for Geotechnics (DGGT), Essen. Its full designation reads "Committee for Simplification an Standardization of Calculation and Construction of Waterfront Structures", which also outlines its goals. Following

on from the previous joint publications, this new edition of EAU 2004 contains the safety concept with partial safety factors in accordance with the Eurocodes or the European prestandards as well as with the new edition of the corresponding German standard, partially differing on account of practice experiences. The recommendations continue to satisfy the requirements for international acknowledgement and application with regard to planning, design tendering, the awarding of contracts, building and building supervision. Further, the inspection and accounting procedures for harbour and waterway constructions are given from uniform points of view.

This book offers a broad perspective on important topics in earthquake geotechnical engineering and gives specialists and those that are involved with research and application a more comprehensive understanding about the various topics. Consisting of eighteen chapters written by authors from the most seismic active regions of the world, such as USA, Japan, Canada, Chile, Italy, Greece, Portugal, Taiwan, and Turkey, the book reflects different views concerning how to assess and minimize earthquake damage. The authors, a prominent group of specialists in the field of earthquake geotechnical engineering, are the invited lecturers of the International Conference on Earthquake Geotechnical Engineering from Case History to

Practice in the honour of Professor Kenji Ishihara held in Istanbul, Turkey during 17-19 June 2013. The proceedings contain contributions presented by authors from more than 30 countries at EURO DYN 2002. The proceedings show recent scientific developments as well as practical applications, they cover the fields of theory of vibrations, nonlinear vibrations, stochastic dynamics, vibrations of structured elements, wave propagation and structure-borne sound, including questions of fatigue and damping. Emphasis is laid on vibrations of bridges, buildings, railway structures as well as on the fields of wind and earthquake engineering, respectively. Enriched by a number of keynote lectures and organized sessions the two volumes of the proceedings present an overview of the state of the art of the whole field of structural dynamics and the tendencies of its further development.

This acoustics handbook for mechanical and architectural applications is a translation of the German standard work on the subject. It not only describes the state of art of engineering acoustics but also gives practical help to engineers for solving acoustic problems. It deals with the origin, the transmission and the methods of abatement of air-borne and structure-borne sound of different kinds, from traffic to machinery and flow induced sound.

Seismic Design of Industrial Facilities demands a deep knowledge on the seismic behaviour of the individual structural and non-structural components of the facility,

possible interactions and last but not least the individual hazard potential of primary and secondary damages. From 26.-27. September 2013 the International Conference on Seismic Design of Industrial Facilities firstly addresses this broad field of work and research in one specialized conference. It brings together academics, researchers and professional engineers in order to discuss the challenges of seismic design for new and existing industrial facilities and to compile innovative current research. This volume contains 50 contributions to the SeDIF-Conference covering the following topics with respect to the specific conditions of plant design: · International building codes and guidelines on the seismic design of industrial facilities · Seismic design of non-structural components · Seismic design of silos and liquid-filled tanks · Soil-structure-interaction effects · Seismic safety evaluation, uncertainties and reliability analysis · Innovative seismic protection systems · Retrofitting

The SeDIF-Conference is hosted by the Chair of Structural Statics and Dynamics of RWTH Aachen University, Germany, in cooperation with the Institute for Earthquake Engineering of the Dalian University of Technology, China.

Bringing together the leading European expertise in behaviour and design of silos, this important new book is an essential reference source for all concerned with current problems and developments in silo technology. Silos are used in an enormous range of industries and the handling characteristics of many industrial materials require different approaches for successful, economical installations. For the first time, the many approaches

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taken by specialists in different fields are brought together in a unified way so that common problems can be addressed. This book is the result of a four-year European project - Concerted Action - Silos - funded under the Brite Euram programme which has involved over 100 expert engineers and researchers from all over Europe, in seven working groups.

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