Cryogenic Standard Tanks Linde Engineering

Cryogenic Materials Data Handbook
Cryogenic Vessels. Large Transportable Vacuum Insulated Vessels. Fundamental Requirements
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Design and Construction of LNG Storage Tanks
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Stratification, Rollover and Handling of LNG, LPG and Other Cryogenic Liquid Mixtures
Cryogenic Vessels. Valves for Cryogenic Service
Cryogenic Materials Data Handbook
Experimental Techniques for Low-Temperature Measurements
Cryogenic Technology
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Advances in Cryogenic Engineering
Cryogenic Materials Data Handbook. Supplement
Advances in Cryogenic Engineering
Cryogenic Process Engineering
Measuring Systems
Advances in Cryogenic Engineering
Advances in cryogenic engineering : proceedings
Applied Cryogenic Engineering
Cryogenic Technology
Advances in Cryogenic Engineering
Cryogenic Engineering, Revised and Expanded
Cryogenic Vessels. Transportable Vacuum Insulated Vessels of Not More Than 1000 Litres Volume. Fundamental Requirements
Cryogenic Engineering
Advances in Cryogenic Engineering
Storage tanks for refrigerated liquefied gases with an outer concrete container
Advances in Cryogenic Engineering
Cryogenic Engineering
Low Loss Dewars and Tanks
Development of high-temperature superconductor cables for high direct current applications

BRYCE MARLEE

Cryogenic Materials Data Handbook
Springer
The National Bureau of Standards Boulder Laboratories was on September 5-7, 1956 again host to a national conference on cryogenic engineering. Supported financially by many of the leading industrial firms currently active in this rapidly expanding field, the conference, second of its kind, attracted more than 400 scientists and engineers from all parts of the world. This attendance was evidence of the present interest and growth in cryogenic engineering, a field which has as yet not found a satisfactory place within the bounds of existing professional societies. In all but two cases the Proceedings contain the summary or entire text of the paper presented at the confer ence. Forty-nine papers were presented at seven separate sessions. These sessions were divided into the following general topics: Cryogenic Processes Cryogenic Equipment Cryogenic Properties Cryogenic Applications Bubble Chambers The division in some cases had to be somewhat arbitrary since several papers could have been classified under more than one general topic. To make the Proceedings more valuable to the reader, an attempt was made to record the general discussion which followed each paper. Unfortunately, however, the recording devices were not sensitive enough for clear reproduction. The discussions, therefore, have not been included in the Proceed ings.
Cryogenic Vessels. Large Transportable Vacuum Insulated Vessels. Fundamental Requirements CRC Press
Cryogenic equipment, Cryogenics, Pressure vessels, Transportable, Cooling equipment, Liquefied gases, Cryogenic liquids, Tanks (containers), Road tankers
Advances in Cryogenic Engineering
Springer Science & Business Media
Cryogenic equipment, Cryogenics, Pressure vessels, Transportable, Vacuum insulation, Volume, Atmospheric pressure, Toxicity, Gases, Mechanical properties of materials, Loading, Corrosion, Testing conditions, Temperature, Design, Marking
Cryogenic Engineering Springer Science & Business Media
Cryogenics, a term commonly used to refer to very low temperatures, had its beginning in the latter half of the last century when man learned, for the first time, how to cool objects to a temperature

lower than had ever existed na tu rally on the face of the earth. The air we breathe was first liquefied in 1883 by a Polish scientist named Olszewski. Ten years later he and a British scientist, Sir James Dewar, liquefied hydrogen. Helium, the last of the so-caBed permanent gases, was finally liquefied by the Dutch physicist Kamerlingh Onnes in 1908. Thus, by the beginning of the twentieth century the door had been opened to astrange new world of experimentation in which aB substances, except liquid helium, are solids and where the absolute temperature is only a few microdegrees away. However, the point on the temperature scale at which refrigeration in the ordinary sense of the term ends and cryogenics begins has ne ver been weB defined. Most workers in the field have chosen to restrict cryogenics to a tem perature range below -150°C (123 K). This is a reasonable dividing line since the normal boiling points of the more permanent gases, such as helium, hydrogen, neon, nitrogen, oxygen, and air, lie below this temperature, while the more common refrigerants have boiling points that are above this temperature. Cryogenic engineering is concerned with the design and development of low-temperature systems and components.

Advances in Cryogenic Engineering Springer Science & Business Media

A design process for HTS DC cables was developed for high current applications. Based on the design process, a 35 kA HTS DC cable demonstrator was developed. The superconducting elements of the demonstrator were manufactured and tested individually at 77 K. Afterwards, the demonstrator cable was assembled and tested at 77 K. The assembled demonstrator successfully reached 35 kA at 77 K and self field conditions.

Advances in Cryogenic Engineering Springer Science & Business Media

Publisher description

Cryogenic Vessels. Large Transportable Non-Vacuum Insulated Vessels. Operational Requirements Springer Science & Business Media

Worldwide, the use of natural gas as a primary energy source will remain vital for decades to come. This applies to industrialized, emerging countries and developing countries. Owing to the low level of impurities, natural gas is considered to be a climate-friendly fossil fuel because of the low CO2 emissions, but is at the same time an affordable source of energy. In order to enable transport over long distances and oceans (and hence create an economic and political alternative to pipelines) , the gas is liquefied, which is accompanied by a considerable reduction in volume, and then transported by ship. Thus, at international ports, many LNG tanks are required for temporary storage and further use. The trend towards smaller liquefaction and regasification plants with associated storage tanks for marine fuel applications has attracted new players in this market who often do not yet have the necessary experience and technical expertise. It is not sufficient to refer to all existing technical standards when defining consistent state-of-the-art specifications and requirements. The switch to European standardisation has made it necessary to revise and adapt existing national codes to match European standards. Technical committees at national and international level have begun their work of updating and completing the EN 14620 series. In the USA, too, the corresponding regulations are also being updated. The revision of American Concrete Institute standard ACI 376 Requirements for Design and Construction of Concrete Structures for the Containment of Refrigerated Liquefied Gases, first published in 2011, will be completed in the spring of 2019, and the final version, published in autumn 2019. This book provides an overview of the state of the art in the design and construction of liquefied natural gas (LNG) tanks. Since the topic is very extensive and complex, an introduction to all aspects is provided, e.g. requirements and design for operating conditions, thermal design, hydrostatic and pneumatic tests, soil surveys and permissible settlement, modelling of and calculations for the concrete structure, and the actions due to fire, explosion and impact. Dynamic analysis and the theory of sloshing liquid are also presented.

Advances in Cryogenic Engineering Springer Science & Business Media

More than sixty years have elapsed since Linde first liquefied air on a commercial scale and prepared the way for separating of other gaseous mixtures. His work, however, was not of an isolated nature. It was conceived eighteen years after air had, for the first time, been liquefied in the laboratory by Pictet in Geneva and Caillete in Paris. Linde's liquefaction of air was followed by Dewar's work on hydrogen liquefaction in London and by the setting up at Leiden of Kamerlingh Onnes's famous low temperature laboratory. These advances in low temperature or cryogenic technology have resulted in the establishment of a completely new and thriving industry. Cryogenic engineering is concerned with developing and improving low temperature processes, techniques, and equipment; determining the physical properties of structural and related materials used in producing, maintaining, and using low temperatures; and the practical application of low temperature techniques and processes. These low tempera tures are below those usually encountered in refrigerating engineering. It is rather difficult to assign a definite temperature which serves to divide refrigerating engineering from cryogenic engineering. A temperature below _lSOoC, however, is generally associated with cryogenic engineering.

Design and Construction of LNG Storage Tanks Springer Science & Business Media

Cryogenic equipment, Flexible pipes, Pipes, Cryogenics, Temperature, Pressure, Size, Design, Mechanical testing, Product tests, Type testing, Marking, Terminal fittings

Cryogenic Vessels. Cryogenic Flexible Hoses KIT Scientific Publishing

A compilation of selected papers presented at the annual conference of the Cryogenic Society of America.

Cryogenics Safety Manual Oxford University Press

The 1960 Cryogenic Engineering Conference Committee is pleased to present the papers of the 1960 Cryogenic Engineering Conference. Discussion of the papers, wherever available, has also been included to make the papers more valuable and interesting to the reader. This annual meeting once again has been held in Boulder, Colorado. Many delegates will recall that similar meetings were held in Boulder in 1954, 1956 and 1957. However, this year, because of the continued growth of this conference, the National Bureau of Standards Boulder Laboratories was joined by the College of Engineering of the University of Colorado in hosting this sixth national con ference. The Cryogenic Engineering Conference Committee is happy to acknowledge the help of an Editorial Committee which contributed valuable assistance in the difficult and thankless task of screening the preliminary papers and also re viewing the final drafts. This committee headedby R. B. jacobs, who also served as chairman for the Conference Committee, consisted of R. W. Arnett, D. B. Chelton, R. J. Corruccini, T. M. Flynn, R. H. Kropschot, R. M. McClintock, A. F. Schmidt, L. E. Scott and W. A. Wilson.

Applications of Cryogenic Technology VCH

Cryogenic equipment, Valves, Cryogenics, Cooling equipment, Design, Metals, Non-metals, Compatibility, Approval testing, Leak tests, Pressure testing, Mechanical testing, Marking

Advances in Cryogenic Engineering

Springer
Cryogenic equipment, Cryogenic pressure vessels, Transportable, Vacuum insulation, Atmospheric pressure, Tanks (containers)
Advances in Cryogenic Engineering
Springer Science & Business Media
This report is a collection of ten essays introducing developments in the handling and storage of cryogenic liquids. The essays were first published in serial form in "Cold Facts", the journal of the Cryogenic Society of America, between 2001 and 2003.
Cryogenic Materials Data Handbook
By popular request, the National Bureau of Standards was again a host to a conference on cryogenic engineering on August 19-21, 1957. Similar meetings were held here in 1954 and 1956. The acceptance of over forty papers for this conference was certainly a sign of the increasing activity and interest in this engineering field. There seems little doubt that it will continue to grow, justifying the need for annual meetings. To make the Proceedings more interesting an attempt was made to include as much as possible of the general discussion which followed each paper. To obtain individual reprints of anyone particular paper, please contact the authors directly. 1957 CRYOGENIC ENGINEERING CONFERENCE COMMITTEE B. W. Birmingham National Bureau of Standards S. C. Collins Massachusetts Institute of Technology E. F. Hammel Los Alamos Scientific Laboratory R. B. Scott National Bureau of Standards K. D. Timmerhaus University of Colorado W. T. Ziegler Georgia Institute of Technology i ACKNOWLEDGMENTS The 1957 Cryogenic Engineering Conference Committee gratefully acknowledges the continued support and interest of the following organizations who have made the 1957 Cryogenic Engineering Conference and the publication of this Proceedings possible. L' Air Liquide Air Products, Inc. Allison Division, General Motor s American Messer Corporation Aro Equipment Corporation Beech Aircraft Corporation Bell Aircraft Boeing Airplane Company Cambridge Corporation Convair Curtiss-Wright Corporation Garrett Corporation General Electric Company Herrick L. Johnston, Inc. Hofman Laboratories Linde Company A. D. Little, Inc.
Stratification, Rollover and Handling of LNG, LPG and Other Cryogenic Liquid Mixtures
Written by an engineering consultant with over 48 years of experience in the field, this Second Edition provides a reader-friendly and thorough discussion of the fundamental principles and science of cryogenic engineering including the properties of fluids and solids, refrigeration and liquefaction, insulation, instrumentation, natural gas processi
Cryogenic Vessels. Valves for Cryogenic Service
This is a benchmark reference work on Cryogenic Engineering which chronicles the major developments in the field. Starting with an historical background, this book reviews the development of data resources now available for cryogenic fields and properties of materials. It presents the latest changes in cryopreservation and the advances over the past 50 years. The book also highlights an exceptional reference listing to provide referral to more details.
Cryogenic Materials Data Handbook
This short, practical book offers advice on the safe storage, handling and transportation of liquid natural gas (LNG), liquid petroleum gas (LPG) and other cryogenic fluid mixtures. It begins with a review of the physical properties of LNG and LPG, and a brief overview of basic handling and storage methods. The chapters that follow address more in-depth topics such as heat flows in LNG and LPG storage systems, insulation techniques and surface evaporation phenomena. Two chapters are then devoted to the specific sequence of problems caused by stratification and rollover, and the techniques used to manage and alleviate these issues. The book then considers the use of vacuum insulated tanks for the storage of pressurised LNG, and the effective transfer of liquids avoiding 2-phase flow. It concludes with a summary of safe storage and handling protocols, and addresses the specific health issues encountered when dealing with cryogenic liquid mixtures. Throughout the book the author presents real-life case studies to illustrate the situation being discussed. Written in a practical style, it will prove an invaluable companion to anyone working with LNG, LPG or other cryogenic liquid mixtures.
Experimental Techniques for Low-Temperature Measurements
With the 1975 Cryogenic Engineering Conference this se ries enters the third decade of presenting the latest advances in the field of cryogenic engineering. The 1975 Cryogenic Engineering Conference also marked the first time the meeting had been held outside the territorial limits of the United States. Based on the enthusiastic response of the attendees and the exemplary hospitality of the Canadian hosts, it certainly will not be the last meeting to convene beyond the confines of the fifty states. The Cryogenic Engineering Conference Board is extremely grateful to The Royal Military College of Canada and Queen's University for the invitation to hold this meeting in Kingston, Ontario, Canada. The assistance of A. C. Leonard and his staff added immeasurably in making this visit to Canada both a pie asant and a memorable one. The 1975 Cryogenic Engineering Conference was the first meeting of this group on the new biennial conference schedule. Since the last conference in 1973, the Western Hemisphere has experienced the impact of various energy shortages. Thus, it was appropriate that the theme "Cryogenics Applied to Natural Resource Management" for this Conference was not only timely but also an opportunity for the scientific community engaged in cryogenic activities to review the role of cryogenics in meeting these new challenges and problems facing the energy-deficient nations of the world. The Cryogenic Engineering Conference was also pleased to have the Interna tional Cryogenic Materials Conference join them in this meeting.
Cryogenic Technology