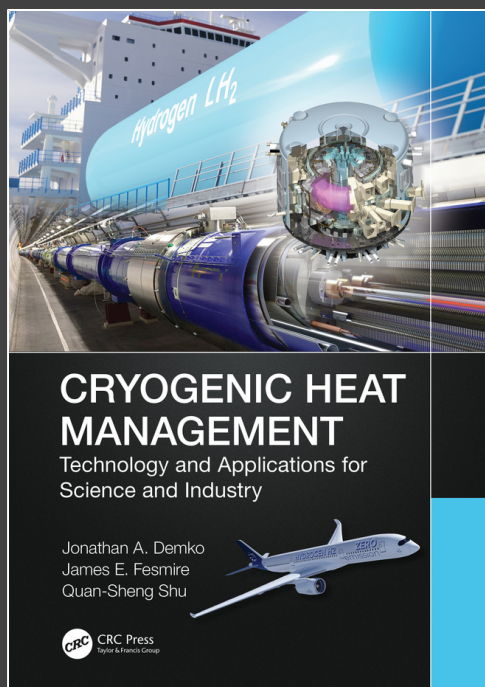




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Technology and Applications for Science and Industry

Jonathan A. Demko
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From Left: J. Demko, J. Fesmire, Q-S. Shu

Key Features of the Book:

- Presents simplified but useful and practical equations and methodologies that can be applied in estimating performance and design of energy-efficient systems in low-temperature systems or cryogenics
- Contains practical approaches and advanced design materials for insulation, support structures, shields/anchors, cryogen vessels/pipes, calorimeters, cryogenic heat switches, various cryostats, current leads, and RF couplers
- Provides a comprehensive introduction to the necessary theory and models needed for solutions to common difficulties and illustrates the engineering examples with more than 300 figures

Reviews by World Renowned Experts on "Cold Facts", 2022, Cryogenic Society of America:

Robert Duckworth, Fusion Technology Group Leader, Oak Ridge National Laboratory:

"This book is an excellent resource of cryogenic design theories and concepts from the thermophysical foundations to a broad spectrum of space, superconducting, and radio frequency cavity applications. A useful reference textbook with relevant and detailed references, it would also be an excellent undergraduate senior design or graduate-level advanced cryogenic design reference. The information this book provides would have saved me considerable time in previous cryogenic design projects; I look forward to using it frequently in the years to come."

Having focused on cryogenics and applied superconductivity since my college years, I am grateful to have spent time with each of the authors. Their style and experience, which I have had the privilege of seeing in action, come across clearly within this book. They have put together a diverse collection of cryogenic applications and resources that I would gladly recommend to any new staff member or engineer in the field looking to design cryogenic equipment."

Professor Carlo Pagani, University of Milano and INFN Emeritus Scientist:

"The book is a very useful reference for scientists and engineers working with low temperatures and facing the variety of problems of heat management. This field is huge and span from high energy physics experiments to space technology, from the transport and storing of liquid gasses to their management by the final users. Based on their great experience in the field, after a clear introduction on heat transfer, the authors address in the first chapters of the book the general problem of cryogenic heat management discussing separately a few common topics: insulation, supports, thermal shields, transfer pipes, storage vessels and vacuum. Comparative tables, pictures, and schematics, together with a consistent bibliography, are guiding the reader. The second part of the book is dedicated to instrumentation, cryogenic measurements, and large applications. I found of particular interest the discussion on current leads and RF couplers. These items are crucial in some important applications, but both represent an unavoidable penetration that creates a direct connection from the cold-mass and the room temperature."