DISTRICT COOLING GUIDE

SECOND EDITION



Complete Reference

Planning & System Selection • Central Plants • Distribution Systems
• Thermal Storage • System O&M • End User Interface

District Cooling Guide

Second Edition

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Acknowledgments

FOR THE SECOND EDITION

District cooling (DC) continues to see increased interest worldwide, and significant developments have occurred since the publication of the first edition of the *District Cooling Guide* just over five years ago. This second edition of the *District Cooling Guide* expands on all areas of coverage contained in the first edition.

To capture as much new information and technology as possible at the outset of this project, a workshop to gain input was held in Sharm El-Sheikh, Egypt on Septmember 23, 2017. ASHRAE organized this workshop in cooperation with the United Nations Environment Program and the United Nations Industrial Development Organization during the International Conference on District Energy for Urban Development. This location was chosen to gather as much information as possible from engineers in the Middle East and North Africa region, where the greatest growth in DC is occurring and where all cooling technologies face special challenges due to high ambient temperatures (HAT). Over 40 individuals were in attendance at this workshop and significant input was received regarding all areas of DC system design and operations. This input served as our springboard into the revision of the first edition of this guide, and our team of six well qualified reviewers kept us on track and improved the publication in many ways with their input.

As the principal investigator for the project to update this guide, I would like to first thank ASHRAE for allowing my team the opportunity to undertake this effort and Empower Energy Solutions (Ahmad M. Bin Shafar, CEO) for sponsoring the effort. Special thanks go to W. Stephen Comstock of ASHRAE for getting all the parties together and the project in motion, and to all of the ASHRAE staff involved in the editing and publications process. I would also like to express my gratitude to my team members and subcontractors who added content and expertise in their respective areas of specialty.

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Gary Phetteplace
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Gary Phetteplace
January 2013

OWNER'S GUIDE for BUILDINGS SERVED by DISTRICT COOLING



Comprehensive Reference for Building Owners

District Cooling System Attributes • Design Necessities • Coping with Deficiencies

Owner's Guide for Buildings Served by District Cooling

Funding for this publication was generously provided by
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Preface

The purpose of this guide is to help building owners understand what district cooling is and why they should consider it when deciding how to meet the cooling needs of their building(s). The guide also explains what is different about buildings that are served by district cooling when compared to buildings that meet their cooling need with on-site cooling equipment. High-level guidance on designing buildings for service with district cooling that the building owner should make his designer aware of is provided, and references that the designer may refer to for more detailed information are also provided. Dealing with the issues of retrofitting buildings previously not served by district cooling to district cooling service is also covered.

Acknowledgments

District cooling (DC) continues to see increasing interest worldwide. Over five years ago, ASHRAE, via their research program, and with supplemental funding from Empower Energy Solutions, undertook the development of a *District Cooling Guide*. Since that first edition of the *District Cooling Guide* was published, significant developments have occurred, and ASHRAE, again with sponsorship from Empower Energy Solutions, has created an updated second edition of the *District Cooling Guide*. While the *District Cooling Guide*, Second Edition provides comprehensive guidance to the designers and operators of DC systems, a guide tailored to owners of buildings served by DC or owners evaluating the option of using DC was needed. The *Owner's Guide for Buildings Served by District Cooling* is intended to fill that need for building owners and also provide guidance to the designers they employ who may not be familiar with building design for DC service.

As the principal investigator for the project to develop this guide, I would like to first thank ASHRAE for allowing my team the opportunity to undertake this effort and Empower Energy Solutions (Ahmad M. Bin Shafar, CEO) for sponsoring the effort. Special thanks also go to W. Stephen Comstock of ASHRAE for getting all the parties together and setting the project in motion, and to all of the ASHRAE staff involved in the editing and publication process. Our team of four well-qualified reviewers kept us on track and improved the publication in many ways with their input, including reviewer Hassan Younes of Griffin Project Development Consultants, who also contributed a case study. I would also like to express my gratitude to my team members who added content and expertise in their respective areas of specialty.

And finally, thanks to my loving wife Karen Phetteplace, who not only put up with my long and unscripted hours in my office, but also proofread the entire document.

Gary Phetteplace
May 2019