ASHRAE Thailand Chapter
Technology for a Better Environment

Thailand Chapter Office: 487 Soi Ramkamhaeng 39(Thepleela), Wangthonglang, Bangkok 10310
Tel. 0-2318-4119, 0-2318-4123 Fax. 0-2318-4120 e-mail:ashrae@ashraethailand.org

Co-Organizers

ACAT CRC บริษัท ซีอาร์ซี2016 จำกัด CRC2016 COMPANY LIMITED

ASHRAE Technical Seminar # 2

Co-organize a Technical Seminar presented by ASHRAE Distinguished Lecturer Titled: -

1. **Understanding Safety Relief Systems**
2. **Pressure Relief Device Capacity Determination & Vent Pipe Sizing**
3. **Defrosting Industrial Refrigeration Evaporators**
4. **Heat Recovery in Industrial Refrigeration**

Date: **Saturday, December 2nd, 2017**

Time: 08:30 – 16:00 hrs.

Swissotel Le Concorde Bangkok

CPD E โครงการพัฒนาวิชาชีพวิศวกรรมอย่างต่อเนื่อง Continuing Professional Development for Engineers

ใช้เป็นคะแนนสำหรับเลื่อนวุฒิสามัญ
วิศวกรต้องได้ CPD อย่างน้อย 9 หน่วย
หลักสูตรนี้รับ CPD Point 1.5 เท่า

By... ASHRAE Thailand Chapter
Air-Conditioning Engineering Association of Thailand (ACAT)
CRC2016 Co.,Ltd.

Abstract

1. **Understanding Safety Relief Systems**

Overpressure protection for refrigeration systems is required by ASHRAE Standard 15 and other related standards including the ASME Boiler and Pressure Vessel Code as well as model mechanical codes. Safety relief systems have basic engineering requirements that are commonly missed on system design and refrigeration system installations. This presentation will review the importance of safety relief systems, recent revisions in ASHRAE 15 related to overpressure protection and provide examples of proper and improper practices of this engineered system.

2. **Pressure Relief Device Capacity Determination & Vent Pipe Sizing**

Pressure relief valves are the primary component in an engineered safety system intended to prevent the catastrophic failure of refrigeration equipment due to over pressure conditions that can occur during abnormal standby or operating excursions. ASHRAE Standard 15 (ASHRAE 2007) prescribes methods for determining the mass flow rate (capacity) requirements for pressure relief devices aimed at protecting the pressure vessels and positive displacement compressors used in refrigeration systems. With the good intention of enhancing system safety, designers, contractors, or owners often install relief devices on other types of refrigeration equipment that may include: heat exchangers, piping and pumps. Unfortunately the sizing and selection of pressure relief devices in these situations often occurs without the use of a clear and consistent basis; thereby, decreasing rather than increasing system safety.

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This lecture reviews the pressure relief valve sizing methodology for vessels and presents approaches for relief capacity determination applicable for other types of refrigeration equipment not explicitly covered in ASHRAE 15 including oil separators, shell-and-tube heat exchangers, plate-and-frame heat exchangers, oil cooling heat exchangers, and product storage tanks. One of the principle aims of this lecture is to document a basis for relief device capacity determination to ensure these types of protected components remain safe during abnormal excursions that can lead to high pressures. Although the methods presented in this lecture are intended to apply across a wide range of refrigeration equipment and operating conditions, it is not possible to neatly prescribe relief device sizing and selection criteria to cover all situations. As such, the use of sound engineering principles and the application of engineering judgment should be always expected.

3. **Defrosting Industrial Refrigeration Evaporators**

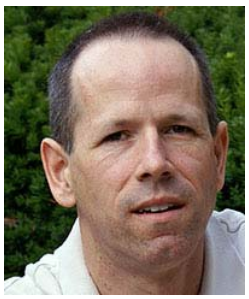
This lecture discusses techniques for removing accumulated frost on air cooling evaporators in industrial refrigeration applications. Although we review alternative approaches to defrosting coils, our primary focus is on the use of hot-gas for defrost, including valve group arrangements and their sequences of operation. Due to past incidents, particular emphasis is placed on valve group designs that offer enhanced plant safety. The article concludes with a discussion of the parasitic energy effects associated with the defrost process with an eye toward using this information to enhance the energy performance of defrosting.

4. Heat Recovery in Industrial Refrigeration

During the past year, concepts of sustainability have received a great deal of emphasis within ASHRAE. This lecture explores one aspect of sustainability in the context of industrial ammonia refrigeration systems. In this lecture, we explore approaches of increasing the use of primary energy consumed during the course of refrigeration system operation. Specifically, approaches of gathering and using heat normally discarded from a refrigeration system are discussed and evaluated.

About Speakers :

Douglas T. Reindl, Ph.D., P.E.



Professor
University of Wisconsin-Madison
432 N. Lake Street
Professional Development
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Speaker's Profile

Douglas Reindl is a professor in the Departments of Engineering Professional Development and Mechanical Engineering at the University of Wisconsin-Madison. In addition, he is the founding director of the Industrial Refrigeration Consortium (IRC) at the UW. He received his B.S. in Mechanical Engineering Technology from the Milwaukee School of Engineering and his M.S. and Ph.D. degrees from the University of Wisconsin-Madison. He is a registered professional engineer in the State of Wisconsin and presently serves on the Board of Directors of

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the International Institute of Ammonia Refrigeration.

As faculty member at the University of Wisconsin since 1996, Professor Reindl has taught at all levels: undergraduate, graduate, and continuing professional development. Professor Reindl has developed an internationally-recognized series of professional development courses focused on industrial refrigeration systems with an emphasis on the safe use of ammonia as a refrigerant. Through the IRC, Professor Reindl works with some of the world's leading food companies to improve the safety, efficiency, reliability and productivity of industrial refrigeration systems and technologies.

In addition to being an ASHRAE Fellow, Professor Reindl is also a member of the American Society of Mechanical Engineers, International Institute of Refrigeration, and the International Institute of Ammonia Refrigeration. He is a past recipient of ASHRAE's Distinguished Service Award and the first recipient of ASHRAE's George C. Briley Award for the best refrigeration article in the ASHRAE Journal. He is a past chair and member of ASHRAE's Standard 15 committee – Safety Standard for Refrigeration Systems.

Professor Reindl has published 6 books and nearly 100 technical papers on topics including: industrial refrigeration, building mechanical systems, energy systems, indoor air quality, and solar energy.

Commentator:
Dr. Apichit Lumplertpongpana
Managing Director
I.T.C. Group of Company

Target Audiences

1. ASHRAE Thailand Chapter, ACAT Members & Other Related Societies' Members
2. RHVAC Designer& Consulting Engineers and Contractors
3. University Lecturers in Dept. of Architecture & Engineering
4. End user, HVAC Facilities Engineers, Building & Refrigeration Plant Owner and others.

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Agendas:-

08:30	- 09:00	Registration
09:00	- 09:10	Opening Speech: President, ASHRAE THAILAND CHAPTER 2017-2018
09:10	- 10:30	Understanding Safety Relief Systems
10:30	- 10:45	Coffee-Tea Break
10:45	- 12:00	Pressure Relief Device Capacity Determination & Vent Pipe Sizing
12:00	- 13:00	Lunch
13:00	- 14:30	Defrosting Industrial Refrigeration Evaporators
14:30	- 14:45	Coffee-Tea Break
14:45	- 16:00	Heat Recovery in Industrial Refrigeration
16:00	- 16:10	Closing Speech: President, Air Conditioning Engineering Association of Thailand

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Application form for 2nd Technical Seminar

Topic: "Understanding Safety Relief Systems",
"Pressure Relief Device Capacity Determination & Vent Pipe Sizing",
"Defrosting Industrial Refrigeration Evaporators", "Heat Recovery in Industrial Refrigeration"
Saturday 2nd December 2017
At Intanil Rm. 3rd Fl. Swisssotel Le Concorde Rachadapisek Rd.

Name……..…..……Surname……..…..……Member No. ……

Company……..……Taxpayer Identification No.....

Address (For tax invoice)……..……..…….

Tel No. ……Fax No.……..…..…..E-mail……..…..……..……

Registration fee	Before 29 November 2017	After 29 November 2017
☐ ASHRAE/ ASHRAE Thailand Chapter/ACAT	O ราคา 2,300 บาท	O ราคา 2,600 บาท
☐ Others	O ราคา 2,600 บาท	O ราคา 3,000 บาท

- **Remark**
  1. Registration fee shown above included vat 7%, presentation materials, coffee break & lunch.
  2. CRC2016 Co., Ltd. is subjected to withholding tax 3%.
  3. CRC2016 Co., Ltd. is one in the Council of Engineers' network with the objective is to arrange activity involved with continuous development of engineering profession, to approve activity and PDU credit of continuous development of engineering profession, and issuing certificate in attending continuous development of engineering profession activity.
  4. For more details, please contact Khun Orawan, Khun Kulisara at tel: 02-318-4119, 02-318-4123 fax:02-318-4120

Method of Payment

O By cash at ACAT office
O By cheque payable to "CRC2016 Co., Ltd."
O By money transfer to Account Name: CRC2016 Co., Ltd. Account Number: 960-164-508-0, Name of Bank: United Overseas Bank (Thai) PLC, Si Yeak Sriwara Branch

After transferring the money, please fax money transfer document with name and address for correct tax invoice along with money transfer slip and registration form to fax no. 02-318-4120