ASHRAE DAYTON CHAPTER

ISSUE VI | 2018

CURRENT OFFICERS

PRESIDENT
Bryan W. Schenck
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Habegger Corporation

TREASURER
Brian Turner
BTurner@ElitAire.com
ElitAire

SECRETARY
Nathan Launer
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Johnson Controls, Inc

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November 12th Meeting

Student Night

Mike Saunders

Senior Lead Innovation Technologist,
Emerson Climate Technologies

Tech Session: 5:00 PM to 6:00 PM
Social Hour: 5:30 PM to 6:30 PM
Dinner: 6:30 PM
Main Presentation: 7:00 PM

Tech Session

Helix Update

Main Presentation

DOE & EPA Impacts to Commercial Refrigeration

FREE to All
Chapter Members &
Prospective
Students Members.

$20 to All Others.

Please RSVP

to JPFauber@heapy.com

By Thursday 11/8 @ 5:00PM

Special dietary options are available upon request

Engineer's Club
110 East Monument
Dayton, Ohio 45402

FROM THE PRESIDENT

We had a great meeting in October at the Engineer's Club, with exceptional presentations from Rick Pavlak of Heapy Engineering and Chris Muller of Purafil. Thanks to both of them for their time and knowledge on Data Centers.

In November we celebrate our students on Student Night (November 12th) where we'll hear a great presentation update on the Emerson Climate Technologies' Helix Innovation Center on campus at the University of Dayton. Mike Saunders will provide an update during our tech session as well as his main presentation on "DOE & EPA Impacts to Commercial Refrigeration".

It is absolutely great to have Mike and Emerson discuss an integral topic to the refrigeration component of ASHRAE. Emerson has been a national leader in our industry for many years and has certainly done a lot for the Dayton region and Southwest Ohio, including this chapter.

We hope that you all invite a potential student member to the meeting and remind them that this meeting is free to them! Also, remind them that we are currently taking applications for the 2018-2019 Dayton ASHRAE Scholarships. All applications are due by January 31st, 2019. Apply online at www.DaytonASHRAE.org.

Bryan W. Schenck — **President Dayton ASHRAE**

Upcoming Events

November 7th
Board of Governors
8:00 AM, Heapy Engineering

November 12th
Chapter Meeting
5:00 PM, Engineer's Club

December 10th
Chapter Meeting
11:30 AM, Heapy Engineering

December 19th
Board of Governors
8:00 AM, Heapy Engineering

January 16th
Board of Governors
8:00 AM, Heapy Engineering

See Additional Events & Volunteer Opportunities Here

CHAPTER HISTORY (1983-1984)

President:	Jack Putnam	Lorenz & Williams
Vice Pres.:	Mark Rae	Greater Dayton H&C
Secretary:	Matt Stoermer	Stoermer Equipment Co
Treasurer:	Mark Ganser	Trane Co.
BOD:	John Stewart	Greater Dayton H&C
BOD:	Dick Wood	Enterprise Roofing & SM
Education:	Alan Watton	Sinclair
RP:	Larry Brelsford	Simplex
Membership:	Dennis Lammlein	Monsanto Research Cor

Meetings were held at the Ramada Inn.
CRC held in Cincinnati

83 Total Members
Received PAOE Presidential Award of Excellence

MEMBERSHIP

Committee Chairs

MEMBERSHIP
Jeremy Fauber
JPFauber@heapy.com
Heapy Engineering

HISTORY
Rob Mauro
RMauro@nelsonstark.com
Nelson Stark

COMMUNICATIONS
Nathan Lammers
Nathan.Lammers@waibelenergy systems.com
Waibel Energy Systems

RESEARCH PROMO
Open Position
Please Contact Bryan W. Schenck

STUDENT ACTIVITIES
Russell Marcks
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Sinclair Community College

CTTC
Evan Nutt
ENutt@elitaire.com
Elitaire

GOVERNMENT AFFAIRS
Paul Hawkins
Paul.Hawkins@waibelenergy systems.com
Waibel Energy Systems

YEA (Co-Chairs)
Steven N. Meier
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SKM Services

Phillip Reid
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Heapy Engineering

Board of Governors

Jeremy Fauber
Heapy Engineering

Rick Pavlak
Heapy Engineering

Larraine Kapka
Sinclair College

New Members

The Dayton Chapter is happy to welcome its newest members. If you see them please give them a warm welcome!

October
Andrew Kjellman, Joseph Frees, Randall Knick

Do you know a colleague that would benefit from joining ASHRAE?

You can go to http://web.ashrae.org/connect_a_colleague/ and quickly sign up for ASHRAE to send an email to ask them to sign up on your behalf.

Membership Recognition

We would like to recognize the following members who have been with ASHRAE for the following years! Thank you for all your contributions to the field!

25 Years
Chris Schreel

15 Years
Kevin Rogers

5 Years
David Ayton, James Heidenreich

Membership Promotion Committee

Looking for a way to get involved with your local ASHRAE chapter and meet new people? The membership promotion committee is looking for volunteers to join the committee. The committee's primary responsibility is to recruit new members and retain existing members. If you are interested in serving please contact Jeremy Fauber at JPFauber@heapy.com. Or by calling 937-224-0861

Membership Application Here

ASHRAE RP

INDIVIDUALS Level Begins at $100

David Crosley
Jeremy Fauber
Larraine Kapka
Nathan Lammers
Nathan Launer
Tom Mastbaum
Steven N. Meier
Evan Nutt
Richard L. Pavlak
Bryan W. Schenck
Brian Turner
Michael Weisman

SILVER Level

Waibel Energy Systems

RP NEWS

Make YOUR donations using the link below.

DONATE NOW

Our goal is not set yet for this year in Total Research Dollars.

To-date we raised $2,350

JOB POSTING

Montgomery County Facilities Management

Energy Management Engineer Position Available

- Full-time with benefits
- Job description on web site
- Apply at www.mcohio.org

MONTGOMERY COUNTY FACILITIES MANAGEMENT

The HVAC Industry gives us all our livelihood. ASHRAE's research and educational programs are what keeps our industry and professions on the leading edge and assures its continued existence. Confident that you will recognize the benefits of this investment, we are asking you to help fund future HVAC&R research and development by donating this year. Thanks so much for your help in advance!

ASHRAE News

EWeek Set for February 17-23, 2019

Engineers Week (EWeek), an annual recognition of the contributions engineers make to human comfort and safety, will be celebrated February 17-23, 2019. EWeek promotes a diverse and well-educated future engineering workforce by increasing understanding of and interest in engineering as a career. EWeek has been celebrated for over 50 years and advances the importance of a high level of math, science, and technology literacy. This annual event encourages youth to pursue engineering careers in order to provide a diverse and vigorous engineering workforce. A sample letter and proclamation ASHRAE Chapters can use with Governors, Mayors and other elected officials are posted on the **ASHRAE Website at ashrae.org/eweek2019**.

IOnternational Energy Agency Releases its Annual Report on Energy Efficiency

The International Energy Agency (IEA) released its report titled ***Energy Efficiency 2018: Analysis and outlooks to 2040***. The report showed that the world's energy intensity fell by 1.7% in 2017, resulting in the smallest improvement to energy efficiency in over a decade. IEA attributes the decline to a slowdown in the implementation of energy efficiency policies and says more can be done. The 174 page report provides analysis for buildings and appliances and highlights that "two out of three countries lack mandatory building energy codes and 60% of the energy use for appliances is not covered by standards."

Supreme Court Denies Appeal for HFC Case

The Supreme Court denied an appeal by manufacturers and environmentalists to rehear *Honeywell v. Mexichem Fluor*, a case that struck down an Obama-era EPA rule requiring the phase-down of hydrofluorocarbons (HFC). The case, which was last ruled on in 2017 by the U.S. Circuit Court of Appeals for the District of Columbia, allows for the continued use of HFCs that have high global warming potential (GWP).

DOE Announces Research Funding for Solar Generation Projects that Increase Resiliency

The U.S. Department of Energy (DOE) announced up to $46 million in research funding for solar generation that will help advance "holistic solutions that provide grid operators the situational awareness and mitigation strategies against cyber and physical threats." The funding will be used over the next 3 years on 10 projects to support critical infrastructure.

Optimizing Cooling Performance of a Data Center Using CFD Simulation & Measurements

In this article, we present a case study that combines computational fluid dynamics (CFD) modeling and measurements to evaluate the cooling performance of a raised-floor data center. To improve the cooling efficiency, we propose enhancements such as equipping the blowers of computer room air-handling (CRAH) units with variable frequency drive (VFD) electric motors, adjusting the speed of the blowers to maintain a certain pressure below the raised floor, and increasing the temperature settings of the CRAH units. These enhancements were evaluated and fine-tuned using CFD modeling. After their implementation, the temperatures of the racks and energy consumption of the data center were monitored for several months. This data showed that the inlet temperatures of the racks stayed below the ASHRAE-recommended maximum value and the energy consumption of the data center was reduced by 58%. The cost of the enhancement will be recovered by the saving in operating cost over 1.5 years.

A large number of data centers are routinely overcooled, resulting in unnecessary increase in the energy consumption and operating cost. The reasons for overcooling include concerns, mostly unfounded, about the reliability of computer equipment, inability of the cooling infrastructure to respond to the changes in the data center, and lack of proper tools to get guidance for changes required to improve the cooling efficiency and to predict the effect of these changes. Several developments in the recent years have eliminated much of the rationale for overcooling. These developments include:

- A better understanding of the effect of cooling-air temperature on the performance of servers
- Availability of control systems on cooling devices
- Adoption of CFD modeling for predicting airflow and temperature distribution in data centers

In this study, we took advantage of these developments to improve the cooling efficiency of a data center. We used CFD to identify the cooling issues in the data center and to evaluate various enhancements. CFD modeling has been used widely in other industries since the early 1970s. It became popular for data center applications in early 2000. Now, it has become a standard practice in both designing new data centers and resolving cooling problems and inefficiencies in existing facilities.

We have used CFD simulations to propose changes in the data center and study the effect of these changes on cooling. For this simulation-based strategy to be successful, the CFD model must be validated. For this validation, we used measurements for the current (as-is) conditions in this data center. In an operating data center, there are uncertainties in the descriptions of certain inputs needed in the model. These measurements were also used to verify and fine-tune such input parameters.

The Data Center

The data center is a raised-floor space, with floor area of approximately 750 m2 (8,000 ft2), located in Rochester, N.Y. At the time of the study, the data center housed 175 server racks positioned in the hot aisle-cold aisle arrangement. The total IT heat load in the data center was 320 kW (1,088 kBtu/h). The space was being cooled by eight down-flow, chilled-water CRAH units working at 100% fan speed.

The data center does not have a drop ceiling; therefore, the hot air returns to the CRAH units through the room. However, extension ducts are installed at the return side of the CRAH units to pull in hot air from regions closer to the ceiling, preventing this air from reaching the racks. Perforated tiles with 25% open area equipped with dampers were used to deliver the airflow to the racks. For perforated tiles in front of racks with little or no heat load, the dampers were closed.

See the full article in the July 2018 (volume 60, number 7) ASHRAE Journal...