METROPOLITAN NY CHAPTER

Refrigeration Service Engineers Society

Continued Education for the HVAC/R Industry

"Better Service Through Knowledge"

****

November 2013

WWW.METRONYRSES.ORG

RSES The HVACR Training Authority
Metropolitan New York Chapter

EMPIRE KEYSTONE ASSOCIATION BETTER SERVICE THROUGH KNOWLEDGE

Don't Be Afraid To Ask "Why?"

With all the different technologies in our industry, it is truly difficult for us to be well versed in all aspects of this trade. Occasionally we all have questions about how a system operates or how a system component functions.

There are several ways we can get answers to our questions. The easiest way is to just ask someone who has more experience with the system or component. Calling the manufacturer is also an excellent way of getting your questions answered. If that option is not available you can call your local wholesaler or distributor who sells the product. If that does not work, call on a friend.

Unfortunately sometimes the answer we get may not be clear or accurate. If an answer does not make sense or is unclear, we should not just simply accept it as fact, but should ask it again or ask "why".

Sometimes this may be difficult. We may be embarrassed by the fact that we do not understand the answer or we do not believe the person answering the question. If possible, ask for clarity. If that is not possible, don't give up, but ask the same question to a different person. Hopefully, that person will be able to answer the question in a clearer manner or provide an answer that makes sense.

When asking a second person the same question, occasionally you may get a totally different answer. This can be quite frustrating. Now you're faced with small dilemma: who is right? The best way to handle this situation is to ask a third person; hopefully that person's answer will match one of the first two. If the third answer is totally different, don't give up; keep going until you have an answer that is clear and makes sense.

Sometimes you may run into a road block and will not be able to get your question answered in this manner. When this occurs you do have some options: you can research the question yourself either online or through textbooks. This is a longer process but sometimes the answer will be in black and white and written in a manner that is clear and makes sense.

Recently a technician told me of an encounter he had with a question concerning a refrigeration compressor. He did not know what the RLA rating on the compressor stood for, so he asked around and was given two different answers.

One person told him it meant the "running load amperage" and another told him it was the "rated load amperage" of the compressor and really did not represent the actual amperage draw of the compressor.

After thinking about the two answers he realized that the first answer could not be accurate. He remembered the amperage draw of a compressor is based on the suction pressure, discharge pressure and applied voltage, so how could a compressor manufacturer stamp on the compressor the running load amperage when it varies?

After some additional investigation, he discovered that RLA did stand for the "rated load amperage" and is a mathematical calculation required to meet Underwriters Laboratories Inc. (UL) approval. The compressor manufacturer must run a series of tests to determine the Maximum Continuous Amps before the overload trips. Once that has been determined, UL says divide the MCC by 1.56 to determine the RLA. Some compressor manufacturers, such as Copeland and Carlyle, use a different factor. They divide the MCC by 1.44. If the RLA has any value it is to determine at what amperage draw the compressor overload will trip and to determine the fuse/circuit breaker size and the wire size.

The next time you have a question, don't be afraid to ask "why," but be prepared for different answers to the same question.

Liquid Petroleum (LP) Pooling

Liquid petroleum (LP) in its gaseous state has a specific gravity of approximately 1-1/2 time as the specific gravity of air, making it heavier than air. If a gas leak develops on an LP system, the fuel can easily collect (pool) at the ground level of the heating system. Extreme care must be taken to prevent igniting the fuel which has collected at the base of the appliance. A technician should properly ventilate the area before working on the heating system.

TEST YOUR KNOWLEDGE — REFRIGERATION PIPING

1. *True or False?* A condenser that produces subcooled refrigerant helps prevent the refrigerant from flashing in the liquid line.
2. *True or False?* The suction line suffers no disadvantages from either oversizing or oversizing it.
3. *True or False?* Oil return through the liquid line is usually not a concern because the liquid refrigerant mixes with the oil.
4. *True or False?* A pressure drop in the suction line that is equal to a 2°F drop in saturation temperature will permit much less pressure loss in a low temperature application as compared to a high temperature application.
5. *True or False?* Heat gain in the liquid line can cause flashing in the liquid line.
6. *True or False?* An electronic leak detector can easily test for flashing in the liquid line.
7. *True or False?* The liquid line never needs to be insulated.
8. *True or False?* The hot gas line never needs to be insulated for the sake of making the mechanical refrigeration cycle function properly, but it may need it for other reasons.
9. *True or False?* Pipe supports should not be separated from the refrigeration pipe by insulation.
10. *True or False?* The liquid line suffers no operating disadvantages for oversizing.

CAPACITORS

All capacitors are designed to be wired in series with the starting winding of an electrical motor.

Starting Capacitors are designed only to be in the electrical circuit for a short period of time. If left in a circuit too long they will overheat and "blow".

Run Capacitors are designed for continuous service which will not overheat.

Capacitors in Parallel: When connecting capacitors in parallel use the following formula to determined the total capacitance:

$$C_t = C_1 + C_2 + C_3 + \ldots\ldots$$

Capacitors in Series: When connecting capacitors in series use the following formula to determine the total capacitance:

$$\frac{1}{C_t} = \frac{1}{C_1} + \frac{1}{C_2} + \frac{1}{C_3} \ldots\ldots$$

ENGINEERING DATA

1 HP = 0.746 kW

1 kW = 3410 Btu/hr.

1 gallon of water = 8.33 lbs.

1 pound of water = 7000 grains

Specific heat of water = 1 Btu

Specific heat of ice = 0.5 Btu

Btu/hr = 1.08 X CFM X (T_1 - T_2)

Voltage = Current x Resistance

Density of water = 62.4 lbs./ft^3

PSIA = PSI + 14.7

Answers to Test Your Knowledge

1.T 2.F 3.T 4.T 5.T 6.F 7.F 8.T 9.T 10.T

COMING EVENTS

Intelligent Motors

Thermal Imaging

Ice Machines

Roof Blowers

Identifying and Sizing Fans & Blowers

Soldering & Brazing

If you have any suggestions or requests for Future programs, please let us know!

METROPOLITAN NEW YORK CHAPTER, RSES

For Information Call: Stan Hollander, CMS (718) 232-6679

Election of Officers

At the January meeting we will have Election of Officers and Board Members. If any member in good standing wishes to hold an office or be on the Board of Directors and/or would like to nominate another member for any of these important positions, please advise any current officer.

The Nominating committee is recommending the following slate:

Officers

President: Drew Garda
Vice President: Vacant
Treasurer: Steven Aiello
Secretary: Nito Mehra
Sergeant-at-Arms: Kurt Eggert

Members-Board of Directors

Howard DaCosta
Herb Meyer
Stan Hollander, CMS
Rich Bruno

Appointed Positions

Educational Director: Stan Hollander, CMS
Newsletter Editors:
Stan Hollander, CMS & Herb Meyer
Publicity: Available

Wednesday November 13th, 2013 at 7:30pm

at

RICCARDO'S
21-01 24th Avenue, Astoria NY 11102

Thermal Imaging & Diagnostics reaches a new level of precision and clarity

By

Chris Morley—Flir, Inc.

PLACE LABEL HERE

EDUCATIONAL PROGRAM
Wednesday November 13th, 2013
at 7:30pm
SEE DETAILS—THIS PAGE

RSES
The HVACR Training Authority
Metropolitan New York Chapter
Refrigeration Service Engineers Society
241 Halsey Street
Brooklyn, NY 11216