

Tiger Aster - TORO WATT - Hybrid HVAC

Are we going to look at water as a refrigerant as a non-synthetic alternative?

Anonymous Attendee

If refrigerants leaking into the environment is the cause of concern, isn't it better addressed by design to avoid leaks? To draw an extreme analogy, isn't this similar to 'containment' in nuclear reactors?

Houpei

Greeting, Stefan! As we noticed that the heat exchanger needs to be redesigned when the refrigerant is replaced by low GWP alternative so as to achieve higher performance. In some cases, the alternatives will be mixtures. Lots of researcher reported that the heat transfer of zeotropic mixture is relatively low, and the temperature profile in heat exchanger is different from pure fluids due to the temperature glide. What are the difficulties in designing heat exchangers for mixtures, and what are the possible solutions?

Dr V W Bhatkar

Can R1234ze be dropped in substitute for R134a in refrigeration?

Rohit Vedhara

Have you looked at ethers, such as DME?

Darren Key

Can you discuss pros and cons of various alternative refrigerant disposal?

Anonymous Attendee

How important is the development of low cost microchannel HX to the adaptation of refrigerants like CO2 and ammonia and what is being done in this space?

Sergio Bobbo

We are interested in the measurements of HFOs thermophysical properties, but we have difficulties to get samples of various of such fluids. Can you suggest us a way to get these samples?

Darren Key

Optimized Thermal Systems will have a webinar on HX redesign for alt refrigerants coming up in the next few months!

William Hill

It seems today that there are many different refrigerant options in use in various applications around the world.

William Hill

Is there an opportunity to reduce the variety of refrigerants in use in the future? Do the options have a wider operating range?

Zhenning (Jenny)

A question to Pega, as he said optimizing heat exchanger is a way to improve low-GWP refrigerant systems. Do you think optimizing refrigerant flow path, i.e. optimizing microchannel HX pass arrangement or tube-fin HX circuitry can make the system more compatible to low-GWP systems?

Fahad Farzan Chowdhury

Are there any specific refrigerants that are being used for refrigerating vaccines, what could the refrigerant requirements be in this case?

Anonymous Attendee

A handful of companies in Europe and Asia uses R-290 for residential applications, while it is a flammable refrigerant with very low incidents of explosion or fire. Why is North America from transitioning to it?

Zhenning Li

Bob's presentation shows system efficiency, that is, fuel consumption by electricity generation weights more than 90% CO₂ emission. If it is the case, to reduce greenhouse gas emission, we should mainly focus on improve system efficiency, but it seems using low GWP fluids cannot help to reduce emission. What do you think?

Jason Tancher

Thank you for the great presentation. What are the obstacles to having a small/medium commercial Ammonia based system for outdoor/roof top in a populated area? Has it been done?

Mark E Alston

Thank you for the interesting talk.

Lin

How important is the in-tube heat transfer and pressure drop performance of an alternative refrigerant as compared to its thermodynamic cycle properties?