Impact of Refrigerant Leaks from Zeotropic Refrigerant–based Refrigeration System

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Performance Characterization and Fractionation of Refrigerants
- Improper system design optimization of high-glide, refrigerant-based systems
- Refrigerant charge optimization for critically charged system
- Effect of leakage of high-glide refrigerant in centralized refrigeration system and critically charged system
- Selection of low–global warming potential (GWP) solution for commercial refrigeration industry

Fractionation Study
- Fast leak vs. slow leak during operating and off cycle
- Two-phased leak on high-pressure and low-pressure sides
- 3 to 4 leak/recharge events to study performance measurements in between events
- Composition evaluated using gas chromatography analysis
- Refrigerants under analysis: R454C and R455A

Simulation and Experiments Study
- Condenser oversizing: subcooling
  - With liquid receiver
  - Without liquid receiver
- Evaporator/TXV
  - Proper superheat setting for TXV
  - Unstabilizing (hunting)
- Compressor sizing/selection
- Head pressure setting