**Objective:**
- Extend the novel cycle configurations available
- Integrate variable speed equipment with experimental validations
- Add calibration and optimization routines and simulate seasonal performance

**Problem**
Enhance the flexibility of the code to allow the selection of components within a user-defined cycle

**Expected Results / Impact:**
- Extensive validation of all the vapor-compression cycles implemented
- Possibility of calibrating a detailed cycle model with experimental results provided by the user
- Accurately predict the performance during off-design
- Optimize units by utilizing variable-speed equipment
- Evaluate the impact of new working fluids

**Approach:**
- Modify vapor-injected cycle to handle two-phase conditions at the economized compressor inlet and multiple injection lines
- Add oil-flooded compression cycle for cold climate HPs
- Improve charge-inventory solution scheme with calibration procedures
- Add variable-speed models for the compressor and the fans

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### Schedule

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**A General Open-Source Platform for Evaluating Advanced Vapor Compression Air Conditioners and Heat Pumps (Y2)**

**Cycle modeling**

**Equipment modeling**

**GUI development:**
- Vapor-Injected compression system with economizer (left) and with flash tank (right)