

Scope:

Efficient Carbon Capture Technology:

- o Develop a module capable of efficiently capturing CO2 emissions from HVAC&R systems during their operation.
- o Explore advanced post combustion capture technologies, such as absorbents, calcium cycles, cryogenic, or membrane separation, that can be integrated into various system configurations.

CO2 Utilization System:

- o Explore potential applications for the reused CO2, such as use in the building as synthetic fuels, building materials, or other valuable products.

Constraints:

Compatibility and Retrofitting:

- o Ensure the module is designed for straightforward integration into existing HVAC&R systems without causing significant disruptions.
- o Consider a modular design that accommodates various load requirements, and overall sustainability of the carbon capture and utilization module.
- o Prioritize materials and manufacturing processes with low environmental footprints.

Project Clients: Building owners, HVAC&R designers, Control contractors, and other sustainable building stakeholders.

Who is involved? Building owners and operators.

What are the goals? •]P v K i Ÿ À •W

Submit the design to the [2025 Sety Family Foundation Applied Engineering Challenge](#) by May 4, 2025 while remaining in compliance with the timelines for the course objectives below.

First Term (SEE 410W)

Project Proposal

Project Management Plan

Conceptual Design

Detail Design

Project Economics and Sustainability Report

Pro r œ

j ei