



The Helix Innovation Center

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THE **HELIX** represents the
coming TOGETHER of
TECHNOLOGY AND ENGINEERING
to create solutions.

THE **name** represents
the **blue-sky** and the **practical**, of **academics** and
real-world practitioners,
of tomorrow's needs AND today's applications...
All to **CREATE** solutions THAT WILL MAKE A
difference IN THE **REAL WORLD**.

The Helix Overview

\$35 MILLION
TOTAL INVESTMENT
OVER FIVE YEAR PERIOD



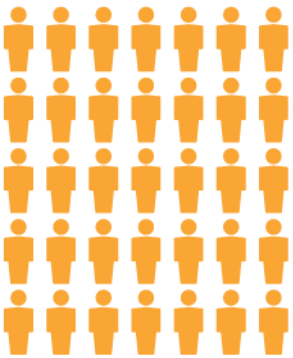
3 INDUSTRY learning labs
to host up to
600 visitors and
trainees per year



Located on University of
Dayton campus, part of
30 YEAR GLOBAL
PARTNERSHIP



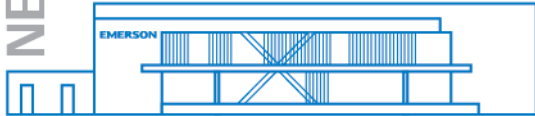
Employ
35
STAFF
PEOPLE
OVER FIVE YEAR PERIOD



5 SIMULATED
REAL-WORLD
environments



NEARLY **40,000**
square foot
FACILITY



OUR VISION

Broad and **blank slate thinking.**
Solutions ahead of the pace of change.
Fueled by new kinds of **collaboration**
and **conversation.**

Industry Modules

*The Helix is a different way of thinking.
A different way of innovation.*



Residential
Connected
Home



Light
Commercial
Building



Food
Service
Operations



Supermarket
Refrigeration



Data Center
Thermal
Management

Residential Connected Home Module



Fully functional two story 2,000 sq. ft. home built to DOE specifications

- House built on 4 ft. high temperature controlled crawl space
- Three bedrooms, entry, living, family, dining, kitchen, utility, 1.5 bath, attic
- Separate metering ability to measure energy consumption
- Reconfigurable walls on both floors

Global weather and annual performance simulation

- House ambient temperature control from -20°F to 120°F; ambient humidity control from 20% to 90%
- Simulated solar heating through use of radiant panels located inside house

Light Commercial Building Module



Light commercial HVAC module is the entire center

- Multi zone 50T roof top unit for first floor collaboration space and second floor training areas
- Separate 20T RTU for hallway at the south end of center
- VRF system for ideation and team studios
- All systems will be instrumented and monitored at monitoring and control station

Featuring Emerson controls for all building automation systems

Food Service Operations Module



Flexible, fully functioning licensed high density commercial kitchen

- 1,500 square feet
- Service up to 150 diners

Fully controllable ambient air for comfort and quality

All outdoor condensing units located in environment chamber

- -20°F to 120°F ambient control provides whole year performance simulation; ambient humidity control from 20% to 90%

Supermarket Refrigeration Module



***2,500 sq. ft. retail experience
designed to simulate supermarket
and convenience store***

- Includes refrigeration, dry goods, lighting, HVAC, heat reclaim and point of sale

***Transcritical CO2 booster
refrigeration system***

- 20% to 90% humidity control of space allows defrost strategies evaluation
- Separate chiller rooftop unit
- All outdoor condensing units located in environment chamber to enable control from -20°F to 120°F

Data Center Thermal Management Module



Approximately 1000 sq. ft. of data center space

Includes humidity control capability of data center

- All outdoor condensing units located in environment chamber to enable control from -20°F to 120°F

The Helix Fact Sheet

Operational by December 17, 2015



- Location: University of Dayton Campus
 - 40 West Stewart Street, Dayton, Ohio
- 40,000 square foot facility
- 35 Emerson employees over 5 years
- The facility includes
 - Three learning labs
 - Ideation rooms
 - Rooftop testing area
- Environmentally friendly design
 - LEED certified by the U.S. Green Building Council
 - Outlets for electric vehicles
- Five working industry modules
 - Residential connected home: Two story 2,000 sq. ft. home
 - Light commercial building: The entire center is the working module
 - Food service operations: Fully operational commercial kitchen
 - Supermarket refrigeration: 2,500 sq. ft. designed to simulate supermarket/convenience store
 - Data center thermal management: Approximately 1000 sq. ft. of data center space to develop intelligent, versatile cooling technologies and controls