SWARM
Small Workplace Automation & Remote Monitoring

Building Operator Module

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What is SWARM?

• SWARM connects isolated buildings on campus to a central HVAC control and monitoring system

• This enables better temperature control in the space, better information for HVAC technicians, and the potential for energy savings due to more efficient HVAC use
What *isn’t* SWARM?

- **SWARM will not:**
  - Upgrade or fix **HVAC equipment issues** like balancing and broken units
  - Add more **temperature zones** to the building
    - If there are large spaces with **no thermostats**, we can add a **sensor** to average the space heating and cooling with a nearby thermostat
Benefits of SWARM

- **Reduce** equipment runtime
- **Remotely troubleshoot** equipment
- Collect building **temperature history** for cold/hot calls
- SWARM equipment **funded by energy savings**
SWARM Installation Process

ONGOING

Make a list of buildings not on the central BAS that are SWARM candidates

1 MONTH

HVAC team helps decide on best thermostat technology for SWARM buildings

1-6 MONTHS

SWARM team orders Ethernet port installation in the building and orders equipment

1 MONTH

SWARM team orders & programs thermostats with equipment and schedule details

ONGOING

HVAC team installs thermostats and monitors equipment

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How Does One Use SWARM? – *SWARM Website*

- The main interface for SWARM is on a website hosted by Pelican Wireless, the makers of the thermostats.
- View thermostat settings and history within each site.

![Diagram showing Pelican Site Manager with options for Alarm Notifications, 1050 Extension, Ag Field Station, and Aggie Stadium, along with a grid of thermostats showing current temperatures and settings.]
Using SWARM – Configuring Thermostat

• Input system type (heat pump or conventional) and stages
• Boundaries for heating and cooling (usually ~60F-68F for heating and ~72F-80F for cooling)
• Input air change rate and other operation settings
• Input power consumption for heating and cooling
• Input notification settings as “Custom”, “5°F”, and “Yes”
• Ensure that the outputs on the website match the physical wiring
Using SWARM—Thermostat Dashboard

- Within each thermostat, you can:
  - View the current temperature and status
  - Change the heat and cool set points
  - Lock/unlock the physical thermostat
  - View/change the schedule
  - Create an event
  - Look at historical data
    - (see next slide)
Using SWARM – Monitoring Equipment

• To remotely monitor HVAC equipment, look at “History Graphs”

• View temperature history, equipment (fan, cool/heat, economizer) runtime, economizer position, and CO$_2$ in the space if the thermostat is equipped with a CO$_2$ sensor

• Most of these features are available with technology other than Pelican, such as the JCI TEC-3000s

Cooling failure visible; alarm notified staff
Thank you!

Questions or concerns? Email SWARM@ucdavis.edu