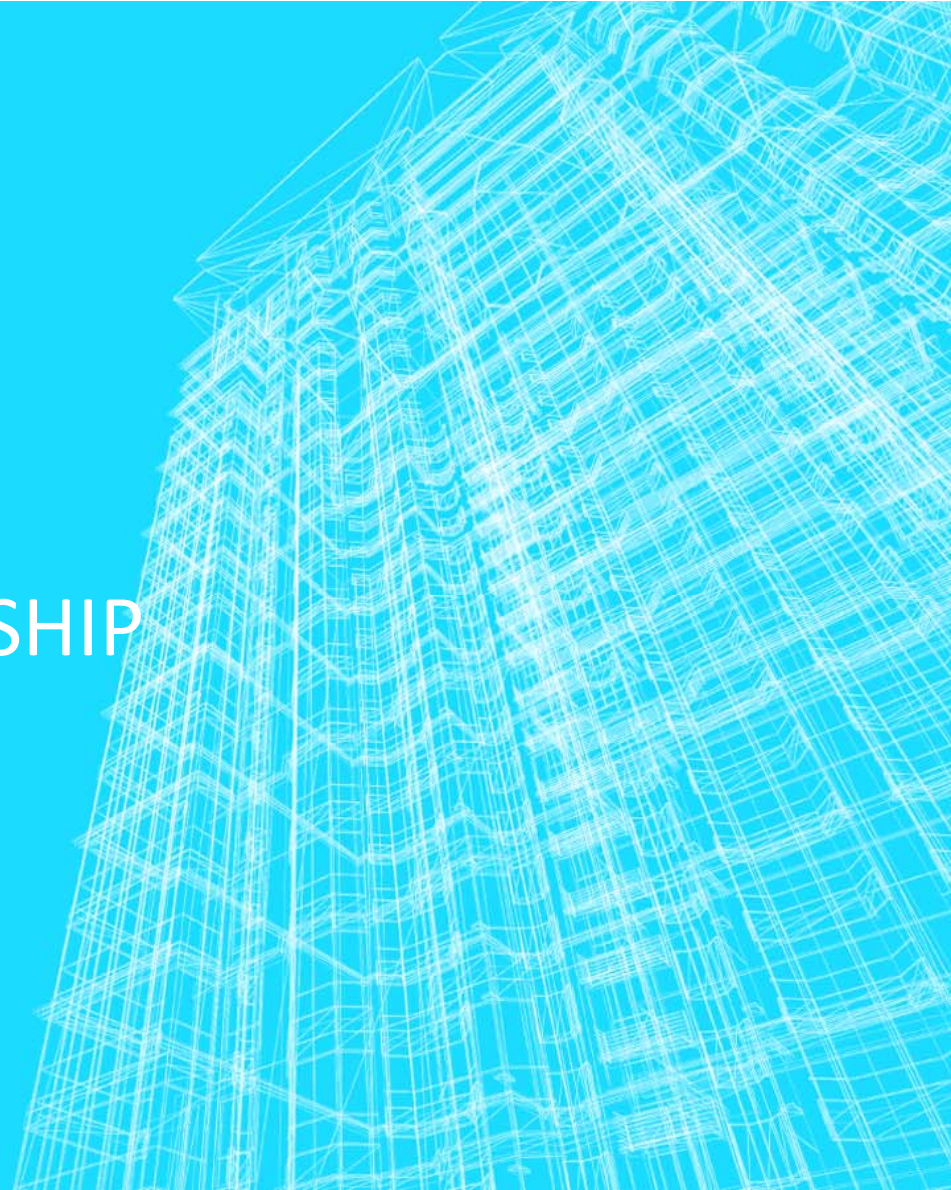


ENERGY ENGINEERING TECHNICAL SUPPORT PARTNERSHIP

Rebecca Rogers
Santa Fe College

Freedlengton Joseph
Affiliated Engineers Inc.





OBJECTIVES

- Understand when to apply an Energy Engineering partnership.
- Understand the type and scope of services that would be beneficial.
- Understand the expected outcomes from services provided through the contract.
- Understand how to move forward and tailor services to your institution's specific needs.

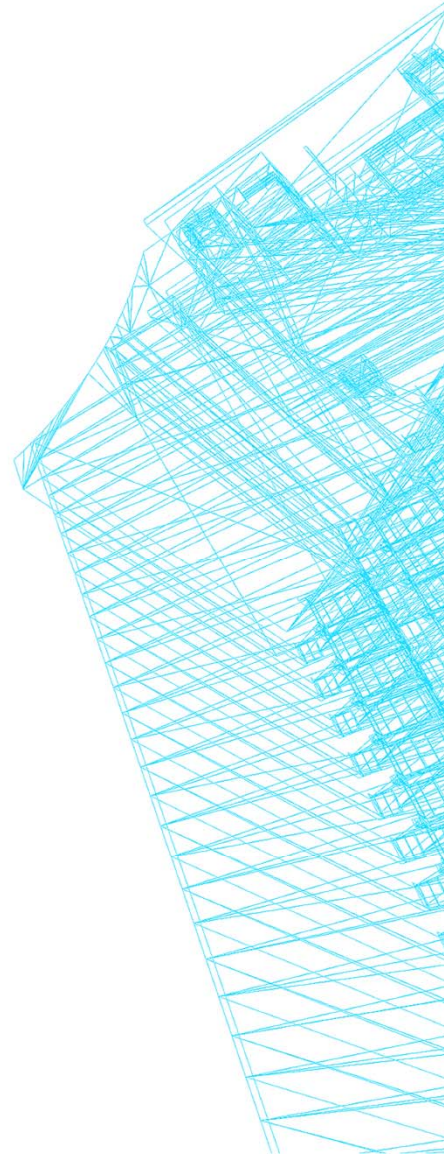


WHY ENERGY ENGINEERING?

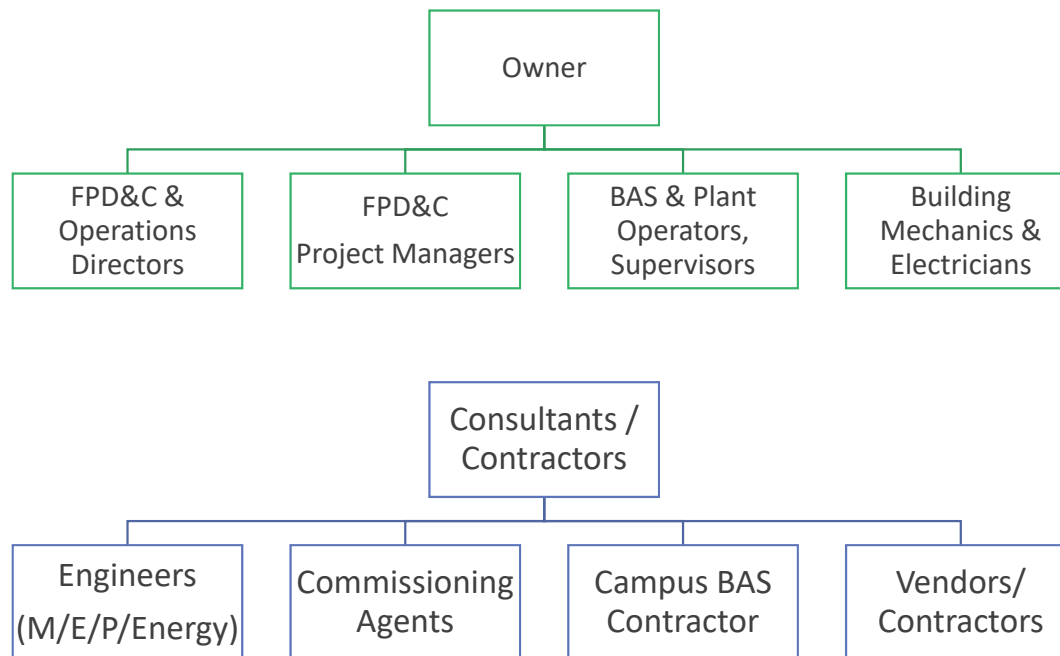
- Utilizing energy engineering as a tool to supplement the technical resources of your facilities department.
- A full service energy engineering firm provides staff with controls, mechanical and TAB experience to assist Owners with operating their facilities.
- Work is performed as needed on a time and material basis to meet the Owner's requirements year round. Monthly meetings are recommended to track and monitor progress.
- Process helps FPD&C staff identify potential future projects and budget appropriately.

PARTNERSHIP OPPORTUNITY

- Main Campus in NW Gainesville consist of 48 buildings with about one million square feet of program space.
- Six additional campuses in Alachua and Bradford Counties with 16 buildings and 180,000 sf of program space.
- AEI has been providing design services for the campus since the mid '90s.
- Energy Engineer Services initiated in 2009.



PARTNERSHIP TEAM MEMBERS





TOPICS

- Tool 1: Energy Management
 - Retro-Commissioning
 - BAS Auditing
- Tool 2: Continuous Commissioning
 - Class Schedule Integration
 - Fault Detection Diagnostics
- Tool 3: Operations & Planning
 - Work Order Management Integration
 - Studies and Assessments



ENERGY MANAGEMENT: RETRO-COMMISSIONING

Scope

- Identify deficiencies at existing buildings.
- Provide recommendations for optimizing systems and returning them to original design intent.
- Implement process based on: payback, known issues, complex systems.



ENERGY MANAGEMENT: RETRO-COMMISSIONING

Process

- Create priority list of buildings at start of Fiscal Year.
- Schedule activities with consideration for academic calendar and space usage.
- Evaluate systems with operations staff assistance.
- Document findings and recommendations through a comprehensive report and action items list.



ENERGY MANAGEMENT: RETRO-COMMISSIONING

Results

- Identified issues that may not be seen at BAS.
- Provided assistance in implementation of proposed solutions.
- Identified energy and operations related items that impact building performance.



ENERGY MANAGEMENT: BUILDING AUTOMATION SYSTEM AUDITING

Scope

- Identify intent.
- Perform quarterly review of the BAS controls.
- Provide recommendations for corrective action to Owner and campus controls contractor.



ENERGY MANAGEMENT: BUILDING AUTOMATION SYSTEM AUDITING

Process

- Create prioritized list of buildings to assess.
- Perform review of BAS graphics, logic programming and trend logs.
- Document findings and recommendations.
- Prioritize resolution and implementation of recommendations with Owner.
- Develop scope of work and review contractor quotes for fixing issues.
- Backcheck items that have been corrected.



ENERGY MANAGEMENT: BUILDING AUTOMATION SYSTEM AUDITING

Results

- Most frequent issues involved: sensor calibration, loop tuning, programming.
- Identified performance and operational deficiencies with direct energy and occupant comfort implications.
- Provided solutions and backchecked contractor to confirm performance improved.



CONTINUOUS COMMISSIONING: CLASS SCHEDULE INTEGRATION

Scope

- Implement scheduling software to decrease energy use.
- Provide technical support for implementation of class scheduling integration with the BAS.
- Create user-friendly graphical interface for the operators.



CONTINUOUS COMMISSIONING : CLASS SCHEDULE INTEGRATION

Process / Results

- Setup link between college's class schedule and the BAS space temperature control systems.
- Coordinate graphics and programming work with campus controls contractor.
- Review system operation to confirm zones are placed in occupied and unoccupied mode and space temperature setpoints are reset.



CONTINUOUS COMMISSIONING : FAULT DETECTION DIAGNOSTICS

Scope/ Process

- Implement fault detection diagnostic (FDD) software at pilot building.
- Install software on campus BAS network and integrated into the BAS to facilitate analysis of historical data.
- Develop custom logic-based rules for the air handling units, VAV boxes and exhaust fans.
- Application of software across new buildings in progress.



OPERATIONS & PLANNING : WORK ORDER MANAGEMENT INTEGRATION

Scope

- Integrate existing facilities workorder management system with BAS to notify maintenance staff of critical equipment alarms.
- System will be used to streamline maintenance response process.



OPERATIONS & PLANNING: WORK ORDER MANAGEMENT INTEGRATION

Process / Results

- Setup existing controls system to route critical alarms at major equipment to the workorder system.
- System creates the workorder, with pertinent information and emails operators for corrective action.
- Troubleshoot system functionality with input from operators.



OPERATIONS & PLANNING: STUDIES & ASSESSMENTS

Scope

- Provide reports to identify opportunities to improve performance of existing systems and equipment.



OPERATIONS & PLANNING: STUDIES & ASSESSMENTS

Results

- Recommendations are provided that identify improvements to equipment, operation strategies, control sequences and instrumentation.
- Capital projects may be created based on report results.



MOVING FORWARD...

- Tailor scope of services to meet your specific facility needs and organizational structure.
- Identify teaming partners.
- Establish tracking procedures.
- Establish baselines from existing conditions.
- Compare results with expectations and adjust approach as needed.
- Customize to your institution's goals & challenges.



QUESTIONS?

