



Company Profile

Engineered Energy Solutions
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Company Background

How EES Started

Engineered Energy Solutions Inc. (EES), was started with the simple idea of using industrial-based control solutions to decrease the operating costs of our clients' mechanical systems within their buildings. Back in 1982, the founder of EES, Pat Miller, saw a need in the retrofit business whereby mechanical solutions were only meeting part of our clients' goals. The mechanical equipment was not being operated in the most efficient manner thereby increasing payback along with operational costs.

Standardized DDC (digital direct control) products were not flexible enough or capable of running a facility "on the edge" in a reliable manner. They offered a low cost initial investment but would ultimately cost the client more in terms of increased downtime, control equipment failures, and expensive service contracts which ultimately tied the hands of the client. EES utilizes PLCs (programmable logic controllers) to perform the optimization and control because they put control and ownership of the system with the client. EES clients want our expertise.....they are not tied to it.

The industrial-based equipment, utilized by EES, results in less downtime and increased reliability over DDC hardware. As a result, the cost of component replacement with DDC systems is greater and ultimately costs the client more during the life of the system. Also, if budgets are tight, clients tend to forgo fixing issues which leads to manual operation resulting in increased inefficiencies. Another factor is that upgrades to DDC systems can be costly and usually occur more frequently thereby using up capital. EES has an installed base of PLC systems that have been running for over 25 years without hardware issues or need for upgrade.

EES' first product was called PROCOS which stands for Programmable Chiller Optimization System. Along with PROCOS, EES developed an air handler solution, called AIRCOS, which can be used in conjunction with PROCOS to provide a system-wide optimized building. The solutions were expanded as our clients drove us to add more features including compressed air, electrical monitoring, cooling tower treatment, and other utilities.

These solutions utilized PLC-based industrial controls because EES found that no two plants were alike and they needed to be customized to fit each client. The idea that no two facilities were alike also provided the engineers at EES a greater level of experience in dealing with the complexities of building systems. System interaction





and the effects of optimizing one system at the expense of another is how EES can produce the lowest overall operating cost and greatest building efficiency. This is where EES truly differentiates itself – the ability to provide the best control solution with mechanical, electrical, and operational experience to provide the lowest total cost of ownership for our clients. The control hardware is the tool. The PROCOS PEOPLE utilize the tool to create value for our clients.

EES control solutions are automated and optimized. EES has provided systems where the operator makes decisions on which equipment to run all the way to systems which do not require any operator intervention. EES has a library of optimized algorithms that have been acquired through the years which can be applied across multiple mechanical systems. We ensure that your facility will operate in the most efficient and optimized manner. We will prove it by benchmarking the operation prior to project installation and then comparing it with the operation after the project has been installed.

Our methodologies, systems and products are integrated to provide the control, optimization and automation for chiller plants, boiler facilities, environmental space conditions, air quality management, hot water production from waste heat as well as strategic energy source management for new and existing facilities.

Market Expansion to Pharmaceutical, Transportation, and Life Safety

Using industrial-based PLC controls on building systems allowed EES to expand into other areas. EES had been involved in the Pharmaceutical production spaces, critical warehousing, active space pressurization control, and clean room applications were the next logical steps. EES has gained experience dealing with the FDA and can perform validation for HVAC, utility, and process systems. We have helped our pharmaceutical clients through the commissioning and validation process so that they meet FDA requirements and standards as well as their internal Validation Master Plans. Critical warehousing and cold storage facilities for manufactured products also fall under our level of expertise. EES can provide a turnkey automation solution or be involved in any manner from conception through start-up, commissioning, and validation. Our core competencies increased in the pharmaceutical sector to include QBAS (Qualified Building Automation Systems) and process control. Our clients have driven us to grow in these areas as it is our personnel which differentiate EES from other companies. Our clients realize value through the use of our HVAC, utility, and process subject matter experts.

With life safety projects, PLCs and industrial instrumentation are the norm. EES extended into the life safety market with tunnel ventilation systems. EES has installed





several systems around the tri-state area. Since EES has worked for the major public transportation agencies such as the MTA, Amtrak, and Port Authority, we have been asked to perform more work included SCADA applications, dry standpipe systems, electrical monitoring, and generator work. We have had extensive involvement with the FDNY and other agencies for the approval and implementation of our life safety projects. With EES involvement, we leverage our experience so the client can be assured that our systems will meet the regulations put forth by any governing agencies.

From Automation to Information

EES systems have transformed. This has been driven by our clients but also by our desire to innovate and leverage our expertise. Our installations have grown from automation and optimization to expert information systems. Only through measurement and verification, can our clients' return on investment be proven with real time data. EES has created energy dashboards, mechanical system diagnostics, and multivariate exception reporting so that the client can not only view system operation but analyze where potential issues using the EES knowledge base. Our systems also track consumption of water usage, chemical usage, totalized flow rates, and electrical consumption for each piece of equipment. Alarms and thresholds are programmed so operators are alerted with proactive messages. Our systems are designed to increase the lifetime of all mechanical equipment.

Whether it is through rotated duty schedules, running the most efficient equipment, or highlighting equipment that is no longer running at design, EES solutions will ensure that the client has all the tools necessary to run their system in the most optimal manner. EES controls systems do not have set sequences which have a piece of equipment run as the lead all of the time. Our systems allow the operator to select as well as let the automation select the equipment to run.

All EES systems are designed for disaster recovery. Equipment may fail from time to time due to devices outside of the control system causing a failure. EES systems are designed to take evasive action in the event of such occurrences. EES will even design in features that may not have been specified but are important for the operation of the facility.

For example, plate and frame heat exchangers are not used for free cooling during the summer because they cannot meet chilled water supply temperatures because of the outside air conditions. At one pharmaceutical, EES designed in the use of the plate and frame heat exchanger in the event that no chillers were running to provide an





elevated level of cooling for production equipment. In one case, the heat exchanger ran automatically due to all chillers failing. The heat exchanger provided enough cooling for the production cycle to complete rather than have lost product. The value of the product saved was over \$2 million dollars.

Client Longevity

Most of our clients have done repeat business with us for years. Once, they experience the “EES Advantage”, they realize that we are truly there as a partner to help them achieve operational efficiency.

“I would like to take this opportunity to thank Engineered Energy Solutions for the dedication and effort the company has shown to New York Life over the years. EES has increased our overall energy efficiency and infrastructure reliability for over 20 years. The mix of control experience and mechanical expertise from EES has allowed New York Life to run their facilities in the most efficient manner to maximize cost savings while minimizing downtime and system repairs.

New York Life has implemented many EES solutions including AHU control, chiller plant optimization, data center energy reduction, and building management systems. Each system was designed, installed, and commissioned with minimal impact to current operations.

EES’ attention to detail, experience, and operational expertise are unique in the control industry and New York Life has benefited from this relationship. We consider EES to be a partner in our energy reduction initiatives.”

- Richard Plunkett, Engineer, New York Life Insurance Company

“EES performed exactly as we expected. Actually, you exceeded expectations. EES was regarded at the expert for the QBMS startup and commandeered a great deal of respect from the engineers, automation technicians and management.

The work was always thorough and delivered on time. Reviews and behind-the-scenes work seemed to always be complete and we didn't have to work with you on improving performance at all. That has been a great relief for me personally, as I find I generally have to hold hands with the contractor.

Lilly folks were impressed with the precise schedule and flawless execution of the schedule. By flawless I mean that although there were the unavoidable surprises that all start-ups have, EES led





the team through all issues and made sure they got resolved. That is the most I could hope for. I am very pleased.”

- Dan Grill, Automation Team Leader, Eli Lilly

New Approach to Project Execution

EES engineers have been categorized over the years as subject matter experts (SMEs). Our experience with mechanical systems in a myriad of vertical markets has allowed us to expand this expertise. As a result, EES can fulfill any role in the project execution life cycle. We can be on the engineering and design side, the construction side, and the service and maintenance side.

We have developed a unique delivery model which leverages our SMEs along with the ability for our clients to bid out the pieces which we consider to be more of commodity (i.e. panel building, installation, equipment purchase). The approach is called SPEC-DO-COMM.

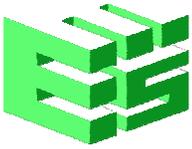
It is a design-build approach where EES SMEs will work with the client to develop a specification and drawings which is tailored to meet the exact needs of the client and create the greatest return on investment. We will also design the system for serviceability and ease of maintenance. This is the SPEC piece.

The client then takes the specification and bids it out to equipment suppliers, panel builders, mechanical contractors, and electrical contractors to get competitive pricing. Clients will use their own list of approved suppliers..EES documentation standards are leveraged to create detailed drawings including all point to point wiring and panel layouts. This is the DO piece of the method.

EES would retain the ability to program the system to maximize system efficiency and optimization. Once installation is complete, EES would come in, install the software, and commission the system for proper operation. We would ensure that as-built documentation is provided and proper training has been performed. The operation of a system will revert back to the skills of the operator. We provide the training so the operator utilizes his skill to maximize energy savings and reliability. This is the COMM piece.

This method can be applied locally or in remote installations which would allow the client to use local suppliers and contractors while leveraging EES’ expertise. EES would be on site only when required. The client gets the best of both worlds and has a system which will meet his exact needs. With clients who have multiple installations, a level of consistency will be maintained as well.





Engineered Energy Solutions



Certified Green Building Engineer



Uptime Institute™



