STATEMENT OF QUALIFICATIONS

Optimized Systems

Your Energy Advocate

SPECIALTY ENGINEERING FOR ENERGY SUSTAINABILITY

- Third-Party Commissioning
- Energy Optimization
- Building Advocation
- Facility Assessments
- Energy Audits

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Optimized Systems

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COMPANY PROFILE

Overview

Established in 2014, Optimized Systems is an Omaha, Nebraska-based specialty engineering and energy sustainability firm. Our primary mission is to help building owners achieve the optimum balance of occupant comfort, building performance and energy efficiency in their new and existing buildings of all types and sizes. We also offer owners fully-independent third-party commissioning and a full menu of facility support services that help ensure long-term system performance and lowest total cost of operation. As energy experts, we can also help you find opportunities to save energy in your facilities.

GOVERNMENT CONTRACTING PROFILE

Business Type:	Emerging Small Business
CAGE Code:	8B8P2
DUNS #:	040132512
NAICS Codes:	541330, 541350, 236220, 561790

POC: Mike Taylor
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Optimized Systems is totally independent and does not sell or represent any products or equipment. Our team includes highly credentialed professionals with extensive experience in every major brand of building automation controls and equipment, thus ensuring we can support building owners regardless of who their vendors are or what type or brand of equipment they may have. Our staff members also have considerable experience as owner representatives in healthcare facility management, so we understand day-to-day building operations from first-hand experience. Our collective knowledge and expertise in controls, equipment and design give us a unique ability to make mechanical systems work like they are supposed to and troubleshoot problems elusive to others. Additionally, our holistic understanding of complex building systems and their interconnected dependencies have proven repeatedly to be essential to uncovering and resolving deficiencies that are commonly missed by others during the commissioning process.

For Omaha, Nebraska area projects involving city funding, Optimized Systems is a certified Tier I Emerging Small Business (ESB) with the City of Omaha.

Operating Beliefs

Optimized Systems' primary operating belief is simple: reputation and relationship before revenue. All decisions, actions and recommendations provided by Optimized Systems are grounded on this principle. Optimized Systems also believes in complete transparency — to truly represent the owner, it is essential

that persons and companies in advisory roles not have relationships or associations, formal or informal, that could result in biases or influences that could result in decisions or actions contrary to the best interests of the owner. Optimized Systems is fully independent and operates accordingly.

Operating Approach

As an advocate and representative for the owner, Optimized Systems brings a dedicated "what's best for the client" approach to every project.

ENERGY OPTIMIZATION

Optimized Systems' fundamental approach to energy optimization is to develop and deliver mechanical and electrical systems that incorporate the most effective blend of technology and simplicity for a given facility, its occupants and its operations staff. While state-of-the-art systems have the potential to offer desirable benefits, complex technologies with complicated operating sequences can be self-defeating if they are too complicated for facility staff to operate and maintain effectively. Thus, Optimized Systems embraces innovation but remains constantly mindful of all factors that may impact project objectives and the end user's ability to operate and maintain the system. These factors are key to maximizing occupant comfort, minimizing energy costs and achieving lowest total cost of operation. When occupancy and operations have competing interests, Optimized Systems prioritizes system objectives as follows:

1. Occupant Safety and Health

Indoor air quality and the safety and health of building occupants are always Optimized Systems' top priorities when creating or critiquing building systems.

2. Occupant Comfort

It doesn't matter how much energy a system is saving if occupants are not comfortable or lack essential services.

3. Equipment Longevity

Lowest cost life cycle and ROI are practical and important considerations for all owners and operators. As former owner representatives and facility operators ourselves, Optimized Systems understands the economic importance of equipment longevity, from first-hand experience.

4. Energy Savings

Everyone is interested in energy conservation and sustainability. Efficiently operating systems saves energy. Systems that have been optimized operate efficiently.

Because proper operation and preventative maintenance are essential to sustaining system performance and equipment longevity, Optimized Systems' operating approach also emphasizes facility staff training

and preventative maintenance plans. As part of every Optimization project, Optimized Systems provides thorough documentation and educates facility personnel on all retrofits and changes to the system.

> *"A properly commissioned building only means that it has been built as designed. It does not mean the building is operating efficiently. Optimization brings a building's performance and energy efficiency up to its maximum potential."*
>
> **-Rick Kmiecik**
> President
> Optimized Systems

THIRD-PARTY COMMISSIONING

Building commissioning is generally centered on extensive industry protocols to verify that systems are installed and operate in accordance with Owner Project Requirements (OPR) and the Basis of Design (BOD). As design professionals, controls specialists and former facility mangers, our approach to commissioning is to look for issues through the lenses of these professions, thereby revealing deficiencies that are often overlooked by others due to their lack of experience in these fields, or because the issues are simply outside the typical commissioning scope. Optimized Systems identifies and addresses these issues while there is still time to correct them affordably and in a timely manner. While our purpose is not to assign blame when deficiencies are found, our approach does bring clarity and accountability during the commissioning process, especially when ownership of an issue is disputed and equitable solutions are needed.

BUILDING ADVOCATION

Proper operation and maintenance are essential to building performance and energy efficiency, yet not all building owners have the staff needed to properly operate and maintain their building systems once commissioning or optimization have been completed. To round out our commitment to clients who find themselves in this position, Optimized Systems offers a comprehensive set of services to meet the specific and individual needs of each client. Whether the client wants enhanced training and support for their staff so that they can perform all operational functions in-house or would rather outsource selected roles and duties, our approach to building advocation is designed to help clients get their program to where they want it to be as quickly and cost-effectively as possible.

Markets Served

Optimized Systems currently serves primarily the midwestern states and has considerable relevant project experience in in the following market sectors:

Education (K-12 and higher ed)
Healthcare
Religious
Non-profit
Commercial
Government

Core Capabilities

Optimized Systems' core capabilities include all professional and technical disciplines and credentials essential to planning, designing, installing, testing, operating and maintaining key building systems to obtain and sustain optimum performance and energy efficiency. This blend of capabilities, as well as associated competencies in energy and facilities operations and economics, provides Optimized Systems with unique insights and abilities when serving in their advisory role as independent commissioning agents and systems optimization specialists. Optimized Systems' core capabilities are outlined further in the Description of Services and Key Staff Profiles sections herein.

DESCRIPTION OF SERVICES

Energy conservation and sustainability have become fundamental objectives for building design, construction and operation – almost as fundamental as occupant comfort and functional efficiency. The performance of a building's new systems largely determines the degree of success achieved in meeting these objectives and, ultimately, the owner's requirements. This reality is the foundation of Optimized Systems' mission and service offerings.

Energy Optimization

BACKGROUND

Degradation in building systems performance and energy efficiency is inevitable over time, mostly due to insufficient preventative maintenance, changes in building occupancy and ad-hoc adjustments made to system settings that have lasting and unintended consequences. Other more vexing problems may be the result of misguided repairs or retrofits that negatively affect the interdependencies of other system components, causing the engineered design and technology to get lost in operation. And sometimes new buildings need optimization to address operational realities, even though the building and systems were built as designed.

Optimization is the process of resolving these issues and bringing systems, old and new, to peak performance and energy efficiency. A key benefit of Optimized Systems' approach to optimization is that it often reveals practical, cost-saving alternatives to outright equipment replacement.

SERVICE DESCRIPTION

The scope of optimization services is highly dependent upon existing conditions. Therefore, we approach optimization in an incremental fashion beginning with a thorough assessment of the existing facility and equipment. The initial assessment identifies system deficiencies of every magnitude. An optimization plan is derived from the findings of the assessment that identifies all the repairs and adjustments that are needed and prioritizes them in accordance with the owner's objectives and budgetary parameters. Energy consumption and life-cycle analyses are integral to the process to determine potential future energy savings associated with various energy improvement options, which are factored into ROI calculations and repair or replace decisions.

The next stage of optimization is the implementation of the action items presented in the Optimization Plan and approved by the owner. In addition to component repairs and replacement, key elements of the optimization process include modifications to the system's operational programming (operating

sequences), graphics enhancements, trend data analysis and development of alarm strategies. In some cases, portions of the optimization plan may be implemented over time to take advantage of remaining equipment life. The optimization report documents actions taken and may also include plans and cost budgets for deferred maintenance and future equipment replacement.

The final step of optimization is to develop and train facility personnel in sustainable operating and maintenance processes that will maintain system efficiencies indefinitely and maximize remaining equipment life. This final step ensures that owners realize the projected ROI and lowest total life cycle cost of their improvements.

Optimization of a new building is more forthright due to the new condition of the equipment. The process involves evaluation of existing operating sequences, trending data, energy costs and BAS controls, and the implementation of proven, proprietary methods that enable the building systems to operate at their peak level of performance, particularly during extreme weather conditions. The optimum time to optimize a new building is after it has been in operation for a full year.

> *"In some of our buildings on campus, we were getting around 2,000 alarms every day. Once they optimized those buildings, we were down to only the most crucial, critical alarms that needed our focus and attention."*
>
> **- Wes Walling**
> Director of Operations
> Creighton University

Third-Party Commissioning

BACKGROUND

Commissioning (Cx), according to ASHRAE Standard 202, is the quality-focused process for enhancing the delivery of a project. The process focuses upon verifying and documenting that all commissioned systems and assemblies are planned, designed, installed, tested, operated, and maintained to meet the OPR. Moreover, the 2012 International Energy Conservation Code (IECC), which has been widely adopted by regulatory agencies, requires commissioning of building mechanical systems to promote energy efficiency. Independent third-party commissioning is required for certain LEED projects and is rapidly being recognized as an industry best practice for all commissioning. Failure to commission thoroughly and effectively often results in compromised system performance, high energy use, occupant comfort complaints and higher total cost of operation.

SERVICE DESCRIPTION

All Optimized Systems' commissioning and re-commissioning services are grounded in the owner's interests as expressed in the OPR and BOD, without prejudice towards or influence by competing interests. All commissioning activities are performed by Professional Engineers and credentialed technical professionals with many years of experience in design, controls and facility operations, under the direction of a Certified Building Commissioning Professional (CBCP) and Certified Energy Manager (CEM). Our experienced design engineers and former facility managers provide an essential third set of eyes and practical insight at the planning and design stages of commissioning, thereby minimizing the potential for design-related issues and their associated costs. Our technical staff, all of whom have considerable career experience with nearly every major brand and type of building automation controls and equipment and their operation, perform field observations during construction and thoroughly perform and document all functional performance testing and measurements. Facility personnel are thoroughly trained in the proper operation and maintenance of the system(s) and post-occupancy operation is monitored and supported for the specified period. The entire commissioning process, including all identified issues and their resolution, are tracked, managed and reported using state-of-the-art industry software.

Building Advocation

BACKGROUND

It is a recognized fact that improved operations can reduce waste, save energy and lower costs. Yet, many facility owners and managers do not have the trained staff that are needed to properly monitor, operate, maintain and/or troubleshoot their building systems–a deficiency that eventually results in diminished performance and reliability, shortened equipment life, occupant complaints and cascading operating costs. Owners in this situation need a flexible, reliable and affordable resource to turn to.

SERVICE DESCRIPTION

Building Advocation refers to the menu of field services and capabilities that Optimized Systems offers that enable facility owners and managers to properly monitor, operate and maintain their building systems. Advocation services are the natural extension of commissioning and optimization that help to ensure their benefits are sustained.

Advocation services are individually tailored to the specific needs, wishes and circumstances of every client, for the desired length of time. Advocation services may include any combination of:

- Development and/or implementation of preventative maintenance programs
- Ongoing staff training and education
- Staff augmentation

- Remote systems monitoring
- Responding to system alarms and comfort complaints
- Reviewing and tracking utility bills for energy savings
- Trouble shooting
- Oversight of service contracts
- Coordination of warranty claims

> *"Optimized Systems helped us better understand our system and keep it operating efficiently. In addition to the caring about our energy bills and system maintenance, they also cared about our mission and the girls we serve. We truly value our continuing partnership with them."*
>
> **- Roberta Wilhelm**
> Executive Director
> Girls, Inc.

Advocation is particularly valuable to building owners during the first-year warranty period following commissioning and optimization, and typically includes periodic site visits to see and listen to equipment, perform system maintenance and to respond to staff training needs. Advocation services are often used by building owners in place of traditional service agreements with multiple contractors and to support existing staff. Additionally, Optimized Systems can assist clients in evaluating their current service contracts and help negotiate costs based on the most appropriate scope and compliance parameters for their needs.

Supplemental Services

Optimized Systems offers a variety of services that are a natural extension of the company's core capabilities, including:

- Energy analyses & audits
- Facilities and systems assessments
- Design reviews
- Master planning, capital planning & deferred maintenance cost planning
- Custom controls software enhancements
- Custom "dashboards" for energy monitoring and reporting
- Assistance with energy improvements financing and rebates

KEY STAFF PROFILES

Optimized Systems is made up of a team of experienced and credentialed professionals who have extensive relevant experience in their fields. Collectively, the Optimized Systems team brings a diverse yet unified set of skills that are uniquely suited for assessing and addressing the needs of building owners and managers planning a new building or building systems or seeking better performance and energy efficiency from their existing systems.

"The knowledge base at Optimized Systems is unmatched. Everyone with them has experience in different areas – mechanical, controls, management. And their work is of a higher caliber than most design mechanical engineers. Those engineers may have a basic knowledge of how things go together – but commissioning is where you find the problems. It's where you see what works and what doesn't. And when they're the commissioning agent and something doesn't work, they have enough experience that 9 times out of 10 their first solution is correct."

- Adam Sawyer, LEED AP
Jacobs Construction Manager
for Omaha Public Schools

RICK KMIECIK

PE, CBCP, CEM, GBE

Rick Kmiecik, PE, is President and Founder of Optimized Systems. Mr. Kmiecik graduated from Kansas University with a degree in Architectural Engineering and obtained his Professional Engineer (PE) license shortly thereafter. After working as a design engineer for eight years, Mr. Kmiecik joined a large, nationally recognized university medical center where he was ultimately appointed Director of Engineering and Strategic Energy Initiatives for the campus, consisting of more than 50 buildings and approximately 5-million square feet. During his 14-year tenure at the medical center, Mr. Kmiecik was credited with optimizing the performance and energy efficiency of a multitude of diverse building systems throughout the campus, saving the medical center millions of dollars in energy costs. After establishing a reputation as a skilled and resourceful engineer, Mr. Kmiecik founded Optimized Systems in 2014, taking his passion for energy savings and his experience as an owner's representative into private practice. Now, through the services of his company, Mr. Kmiecik provides some of the most recognized building owners and managers in his community with creative, practical solutions and operational support for their building systems.

CREDENTIALS

B.S. Architectural Engineering
University of Kansas

Professional Engineer (PE),
Mechanical and Architectural

Certified Building Commissioning
Professional (CBCP)

Certified Energy Manager (CEM)

Certified Green Building Engineer (GBE)

Certified Master Programmer

AREAS OF EXPERTISE

Mechanical Systems Planning and Design

Commissioning and Retro-commissioning

Facility Operations and Management

Facility and Systems Assessments

Energy Audits, Assessments and Optimization

Lifecycle Cost Analysis

Building Automation Systems

Controls Programming and Operations

Project Management

NICK COMBS

Mr. Combs joined Optimized Systems in 2015 with more than 38 years of experience in building and HVAC systems operations and maintenance, including large central plant utility operations. Prior to his current position as Director of Operations, Mr. Combs compiled more than 35 years of diverse facilities operations experience in medical, educational and research-type facilities for a major university medical center. During his tenure at the medical center, Mr. Combs managed the installation, commissioning, operation, repair and maintenance of nearly every type and brand of building system equipment and controls. Mr. Combs is highly regarded for his experience with VFR systems and is often sought for his insightful, hands-on experience and troubleshooting abilities. He is also credited with the design, implementation and operation of a highly successful campus-wide building automation system. From his early experience as a radio repair specialist in the United States Air Force and throughout his career, Mr. Combs has investigated and championed many new systems technologies and is recognized for his expertise with all types of HVAC and building automation controls.

AREAS OF EXPERTISE

Facility Management, Operations and Maintenance

Commissioning and Retro-commissioning

Facility and Systems Assessments

Energy Audits and Assessments

Lifecycle Cost Analysis

Building Automation Systems

Controls Operations

Project Management

KELLY JOHNSON, PE, LEED AP

Kelly Johnson, PE (Emeritus) is Director of Commissioning services for Optimized Systems. Ms. Johnson graduated from Kansas State University with a degree in Architectural Engineering and went on to obtain her Professional Engineer (PE) license. Prior to joining Optimized Systems in 2014, Ms. Johnson served in a project management role for the facility management and planning department of a large university medical center, which also included a private healthcare provider with multiple satellite facilities. Ms. Johnson, a LEED accredited professional, acquired extensive experience in commissioning and building automation from her work on several large and complex engineering projects during her tenure as an owner's representative. Ms. Johnson also compiled nine years of experience in design engineering and construction administration for two private consulting engineering firms where she worked on projects of various sizes and complexity.

CREDENTIALS

B.S. Architectural Engineering
Kansas State University

Professional Engineer (PE), Mechanical

LEED Accredited Professional

AREAS OF EXPERTISE

Mechanical Systems Planning and Design

Commissioning and Retro-commissioning

Facility and Systems Assessments

Facility Operations and Maintenance

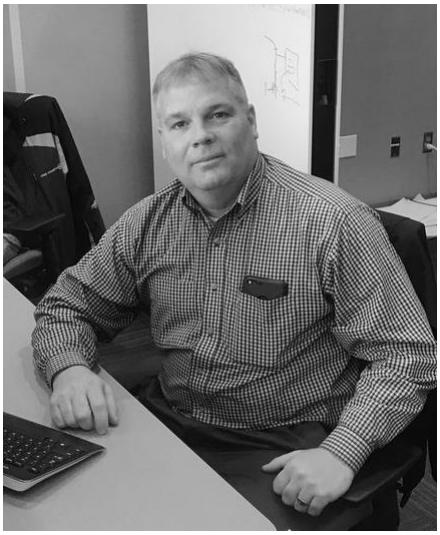
Building Automation Systems

Data Trend Analysis

Project Management

DONNY ZIMMERMAN

Mr. Zimmerman joined Optimized Systems in 2016 bringing more than 15 years of experience in energy optimization, building controls, software design, programmable logic controllers and control circuit design. As the company's Director of Building Optimization, Mr. Zimmerman's responsibilities include design, development, implementation and support of software-driven energy optimization solutions for the company's clients. Prior to joining Optimized Systems, Mr. Zimmerman served as Manager of Building Systems and Optimization at a large university medical center where he was responsible for working with contractors to develop control drawings and install, program and commission building automation control devices throughout the campus. Mr. Zimmerman has been recognized for his development of controls graphics and custom "dashboard" interfaces for measuring, tracking and reporting energy consumption in support of client sustainability goals. Mr. Zimmerman also has five years of experience in the electrical engineering field designing control circuits and programming controllers for custom built machinery, as well as five more years with a national controls company as a level III service technician specialized in the integration of differing controls technologies.



CREDENTIALS

Certified Master Programmer

Certified Master Operator

AREAS OF EXPERTISE

Programmable Logic Controllers

Control Circuit Design

Building Controls Programming and Operations

Building Controls Integration

Data Normalization

Software Design

Energy Optimization

Building Automation Systems

Controls Commissioning

Project Management

RICK HARRIS

Mr. Harris came to Optimized Systems in 2015 after occupying more than 16 years of facilities management and plant operations leadership roles. Mr. Harris' project experience ranges from small maintenance and repair projects to design, construction and post-occupancy testing and operation of a $50 million healthcare project. Since joining Optimized Systems, Mr. Harris' has been involved in all aspects of energy optimization projects of varying size and complexity and now directs the on-going maintenance and operational support needs of clients who do not have adequate in-house capabilities. His years of experience in building systems operations and maintenance serves as the foundation for the Building Advocation programs he develops and manages for clients of all sizes. To-date, Mr. Harris has implemented the company's Building Advocation services in schools, colleges, churches, theaters and multi-purpose buildings.

CREDENTIALS

A.A.S. Business Management
Metropolitan Community College

BS Business Administration
Bellevue University

AREAS OF EXPERTISE

Project Management

Facility Operations

Building Systems Assessment

Preventative Maintenance Plans

Budget Development

Building Controls Operations

HERMAN MOHENG

Mr. Moheng joined Optimized Systems in 2015 as an Energy Systems Programmer with more than 15 years of experience in control systems design, engineering and programming. In addition to possessing numerous industry certifications, Mr. Moheng is recognized for his intensive hands-on programming and systems integration experience and his expertise in custom software programming enhancing system efficiency and functionality. Throughout his career, Mr. Moheng has designed, installed, operated, optimized or supported most major controls brands in a variety of facility types and complexity. In project management roles, Mr. Moheng has been responsible for all aspects of project delivery, including scheduling, budget, testing, trouble shooting, end-user training and client relations.

CREDENTIALS

Niagara AX System Certified

Honeywell Spyder Certified

KMC BACStage Certified

Andover Controls Certified Systems Engineer

Schneider Electric Smart Struxure Certified Engineer

Electronics and LAN
Central Community College

AREAS OF EXPERTISE

Building Controls Programming and Operations

Building Controls Integration

Electronics

Network Administration

Data Normalization

Energy Optimization

Controls Commissioning

Mechanical Systems Operations and Maintenance

Budget Development

Project Management

PROJECT EXPERIENCE

Optimized Systems has considerable project experience in diverse building environments of various size and complexity. Following is a partial list of representative projects by market sector.

EDUCATION

Creighton University, Multiple Projects, Multiple Buildings
Mechanical and Controls Systems Optimization
New Building Commissioning
Energy Dashboard

University of Nebraska at Omaha, Milo Bail Student Center
Mechanical Commissioning for Renovation

Omaha Public Schools, Multiple Projects, Multiple K-12 School Buildings
Mechanical and Controls Systems Commissioning
Warranty Period Building Advocation Services

Westside Community Schools, Multiple Projects, Multiple Buildings
New Building Commissioning
Mechanical and Controls Systems Optimization

Bellevue Public Schools, Multiple Projects, Multiple Buildings
New Building Commissioning
Mechanical and Controls Commissioning for Renovation
Design Review

Mercy High School
Mechanical Systems and Controls Commissioning

HEALTHCARE

CHI Lakeside Hospital
Mechanical and Controls Systems Optimization

Nebraska Medical Center, Multiple Projects, Multiple Buildings
Mechanical and Controls Systems Optimization

Creighton University, School of Dentistry Building
New Building Commissioning

COMMERCIAL

Mutual of Omaha, Wohlner's Grocery
Energy Optimization

Film Streams, Dundee Theatre
Condensed Commissioning
Building Advocation Services

Shamrock Development, Hilton Hotel
Condensed Commissioning, New Construction
Selective Systems Optimization

NON-PROFIT

Girls Inc., Renovation and Addition
New Systems Commissioning
Mechanical and Controls Systems Optimization
Building Advocation

No More Empty Pots, Renovation
New Systems Commissioning
Building Advocation

JFON
Facility Assessment
Mechanical Commissioning for Renovation

Kaneko
Optimization, Building Automation System

RELIGIOUS

Kountze Lutheran
Mechanical Systems Optimization
Capital Plan for Equipment Replacement and Deferred Maintenance
Building Advocation Services

St. Cecelia's Cathedral
Mechanical and Controls Systems Optimization

CASE STUDIES

Creighton University Campus Optimization

PROJECT NARRATIVE

The Creighton University campus consists of more than 50 buildings totaling more than 3,600,000 square feet. Some buildings date back more than 100 years. The buildings and building spaces include student housing, classrooms, offices, medical and research labs, and a Cathedral. The type, age and condition of the utility systems varies across the spectrum.

Optimized Systems has been hired by Creighton University to perform full retro commissioning (optimization) of multiple existing buildings and the commissioning of all new systems, regardless of size, to enhance the working and living environments of students, faculty and staff, as well as to promote sustainable energy conservation. This effort includes development of mechanical and systems controls standards to be used campus-wide.

The initial phase of optimization is saving the University more than $1.5M in operating costs annually. Additional energy savings are expected as optimization of more buildings is completed.

Optimized Systems also developed a dashboard system for the University for real-time monitoring and reporting of their energy consumption by building, campus wide. When fully implemented, the dashboard will also enable students, faculty, staff and others to monitor how their actual energy consumption is stacking up against their conservation and sustainability goals – in real time. Students will be able to see the effects of their conservation efforts in their dorms, classrooms and other buildings across campus. The dashboard allows the University to identify "energy hogs" and manage their energy consumption more effectively.

PROJECT DETAILS

Market Sector: Higher Education

Facility: Multiple Buildings, Various Uses

Role: Energy Optimization and New Equipment and Controls Commissioning.

Status: Ongoing

Omaha Public Schools Bond Program

PROJECT NARRATIVE

Omaha Public Schools contracted with Optimized Systems to serve as the commissioning agent for all construction projects performed under the District's $400M Phase One bond program. In addition to commissioning, Optimized Systems was asked to assist in the development of controls standards in order to achieve consistency, efficiency and maintainability in the design and installation of all building systems.

Because the projects vary significantly in type, scope, size and complexity, and involve multiple contractors, Optimized Systems works closely with equipment and controls contractors to ensure that installation meets the design intent. Optimized Systems verifies that building automation systems (BAS) are properly installed and configured, and that system graphics and alarms adhere to the District's standards, making operation and maintenance of the buildings as simple as possible for the facilities staff.

Due to the impact of the numerous new system improvements on the District's operations, and their limited resources for general operations, Optimized Systems was hired to provide building advocation services during the warranty period. In this supporting role, Optimized Systems ensures that all bugs are worked out and that the systems are operating properly. Additionally, warranty issues are monitored to ensure the owner does not pay for repairs that should be provided under the warranty terms. Optimized Systems also monitors and responds to alarms and trains facility staff on the proper operation and maintenance of the updated systems during this period. Our personal, one-on-one and small group training ensures staff members receive the training they need on the equipment they operate, empowering them to be more successful at their jobs.

PROJECT DETAILS

Market Sector: Education (k-12)

Facility: Multiple Grade School, Middle School and High School Buildings

Role: Full Commissioning of Mechanical and Controls Commissioning.

Status: Ongoing

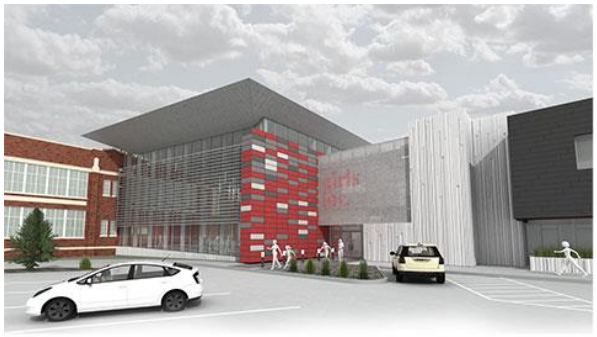
Girls, Inc.

PROJECT NARRATIVE

Optimized Systems performed construction period commissioning services for this 55,000 SF expansion project at the Girls, Inc. facility. The expansion included a new gymnasium with upper walking deck, medical facilities, a workout space and variety of multi-use areas needed to accommodate enrollment of girls of various ages.

The project involved water source heat pumps, an energy recovery ventilation system, a new fluid cooler, a new boiler, a rooftop air handling unit and a variety of unitary equipment. An existing boiler with acceptable remaining useful life was repurposed.

Optimized Systems also provided building Advocation services for a one-year period following construction to monitor building operations and organize a preventative maintenance program. Utility bills were also monitored to verify energy efficiencies.



PROJECT DETAILS

Market Sector: Non-Profit

Facility: 55,000 SF Multi-Use Facility

Role: Construction Phase Commissioning of Mechanical and Building Automation Systems

Status: Completed

CHI Lakeside Hospital

PROJECT NARRATIVE

Optimized Systems was approached by the facility manager of this technology-enhanced 200,00 SF, multi-story hospital. Although only ten years old, the facility was performing very inefficiently, resulting in occupant complaints and excessive operating costs.

After meeting with the owner to clarify their objectives, Optimized Systems developed a multi-phased plan to assess the building and evaluate potential options for optimization. The plan involved an incremental approach to identifying, evaluating and implementing corrective actions that offered suitable and cost-effective system performance improvements.

After establishing a baseline of how the facility was operating and assessing potential optimization outcomes, a thorough building assessment was conducted to identify deficiencies of every magnitude. While basic fixes and adjustments were made, the Lakeside facility staff reviewed the variety of mechanical, electrical and controls deficiencies that would need to be corrected as part of the optimization process. System repairs and modifications were directed by Optimized Systems and implemented by a combination of in-house staff, outside contractors and Optimized Systems staff. After repairs and modifications were completed, Optimized Systems revised the operating sequences needed to improv indoor air quality, performance and energy efficiency. The optimization process was finalized by producing updated system documentation and training facilities staff on proper operation to ensure efficiencies were sustained indefinitely.

While post optimization analytics were not performed to measure the energy savings, energy and operating costs were lowered substantially.

PROJECT DETAILS

Market Sector: Healthcare

Facility: 200,000 SF Multi-Story Hospital

Role: Building Re-commissioning / Optimization

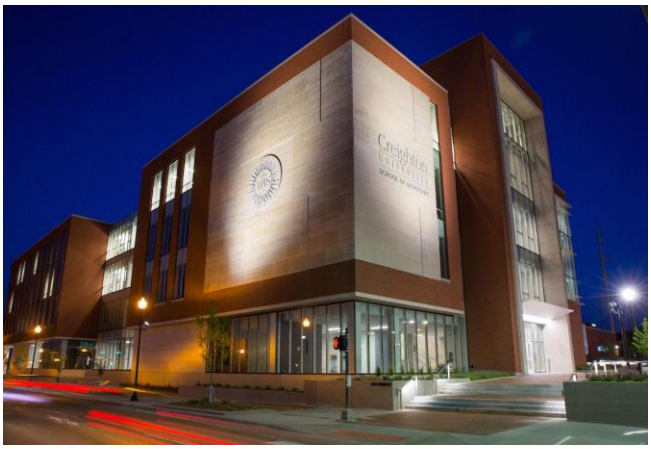
Status: Completed

Creighton School of Dentistry

PROJECT NARRATIVE

Creighton University contracted Optimized Systems to serve as the Commissioning Authority for their new School of Dentistry building. The 200,000 SF, multi-story facility accommodates a variety of advanced and technology-enhanced teaching and learning spaces, clinical and patient care spaces, research labs and offices. The building utilizes an expansive single-duct VAV reheat mechanical system and the building's energy systems, lab air monitoring, fume hood ventilation systems and indoor parking gas detection system are all controlled by a state-of-the-art BAS system, to ensure the comfort and safety of building occupants.

The advanced building design and diverse interior spaces posed unique challenges to the design and construction of the building and the commissioning process. Performance testing and extreme weather conditions revealed isolated functional deficiencies within the building's first year of operation. As the owner's representative, Optimized Systems worked with the designers and contractors to determine root causes of the problems and develop solutions acceptable to the owner.



PROJECT DETAILS

Market Sector: Higher Education / Healthcare

Facility: 200,000 SF Multi-Story, New Construction; Teaching and learning Spaces, Clinical Spaces, Patient Care Rooms and Research Labs

Role: Building Re-commissioning / Optimization

Status: Completed

Temple Israel

PROJECT NARRATIVE

Optimized Systems was contracted early in the construction phase to commission the mechanical and controls systems of this highly specialized building with unique and diverse spaces and uses. The mechanical system consists of two air handling units (AHU) served by an on-site air-cooled chiller and gas-fired boilers. Individual spaces are served by hot water reheat variable volume boxes and individual controls.

Several issues were identified during functional performance testing that were affecting the system's ability to properly condition challenging spaces. Relying on the company's mechanical and controls expertise, Optimized Systems was able to work with the design engineer and the controls contractor to devise and implement a more effective sequence of operation that enabled the system to perform as intended, and more efficiently. Optimized Systems worked with the owner to monitor utility bills the first year of operation to ensure the system was operating as efficiently as it was designed to perform.

PROJECT DETAILS

Market Sector: Religious

Facility: 58,500 SF Multi-Story and Specialized/Multiuse

- Sanctuary
- Social hall
- Offices & classrooms
- Special and common use spaces

Role: Commissioning of Mechanical and Controls Systems

Status: Completed

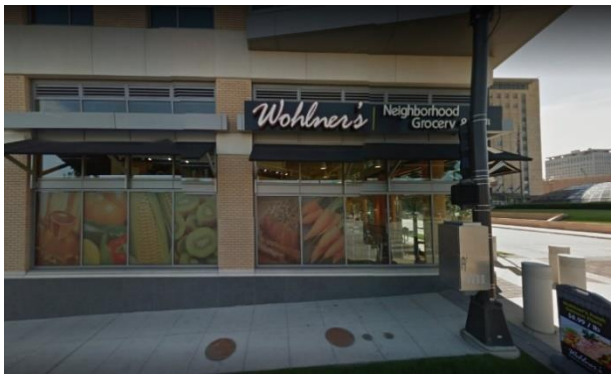
Mutual of Omaha, East Campus Realty

PROJECT NARRATIVE

Optimized Systems was hired by East Campus Realty to evaluate energy saving options for one of its tenants, a neighborhood grocer. Grocery stores rank among the highest energy consumers per square foot of all commercial buildings due to the amount of refrigerated equipment, lighting and extended operating hours, typical to their industry. The project goals were to reduce energy consumption and secure energy rebates while improving the environmental experience for the store's customers.

The initial step of the project involved an assessment of the mechanical and electrical systems and how they were operating. Analyses of historical utility data were used to establish system energy profiles and an energy consumption baseline.

The mechanical systems assessment identified four viable Energy Conservation Measures, which involved adjustments to various system components and operating sequences. In some instances, components were working in direct opposition to other components, causing the system to work much harder and longer than necessary, with limited chances of being successful, especially in extreme conditions.



PROJECT DETAILS

Market Sector: Commercial

Facility: 15,000 SF Retail Space / Specialty Grocer

Role: Energy Audit, Energy Optimization and Project Management

Market Sector: Completed

In addition to obtaining a $12,850 rebate for the client from the local utility company, implementation of the Energy Conservation Measures, which involved no new equipment, resulted in energy savings for the tenant of 10.2%. The optimization also resolved humidity and condensation issues that had plagued the store.