



COMMISSIONING SERVICES



- ▶ **Facility survey and condition assessment**
- ▶ **Measurement and verification (Data Logging, LEED MnV)**
- ▶ **Troubleshoot and problem resolution of complex HVAC and building automation systems**
- ▶ **Energy audits and efficiency assessment**
- ▶ **Energy modeling for life cycle costs and payback analysis**
- ▶ **Energy retrofit design engineering, renewable energy engineering, performance-commissioning, central plant optimization, test and balance**
- ▶ **Commissioning new construction**
- ▶ **Building enclosure commissioning**
- ▶ **Continuous commissioning**
- ▶ **Owner training**
- ▶ **Facility monitoring for performance assurance**

SUMMIT COMMISSIONING GROUP: OPTIMIZED SOLUTIONS

Building commissioning is the systematic process of ensuring that a building's complex array of systems is installed, and tested to perform according to the design intent and the building owner's operational needs. The commissioning of new buildings will be most effective when considered throughout the planning and early design stages of the project.

The goal of commissioning is to deliver a building that works, that meets the owners requirements, that the owner can operate efficiently, for the life of the building and systems. The Summit Commissioning Group provides an engineering based process to assess, functionally test, and optimize the integration and energy performance of building systems.

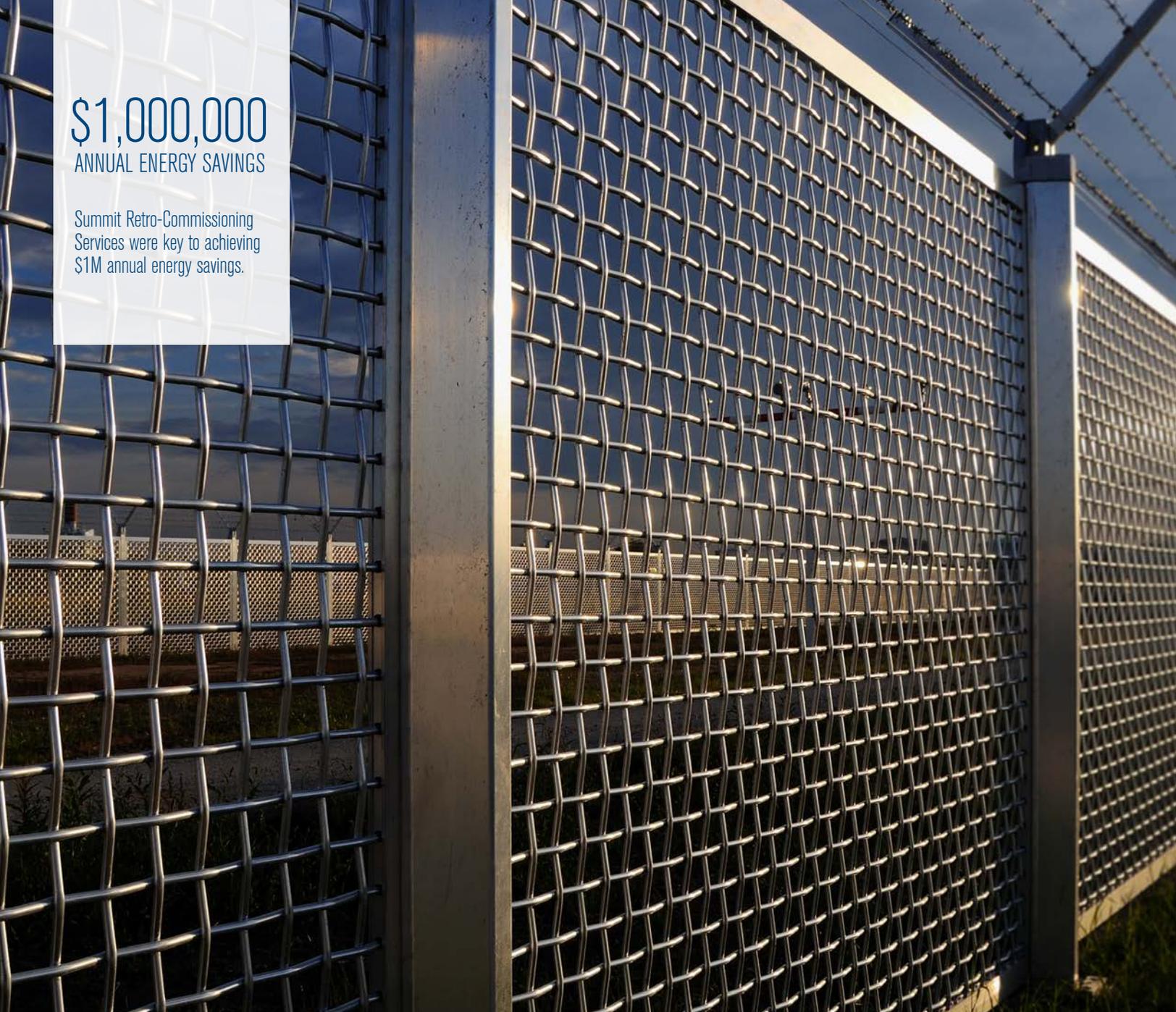
Our Performance-Commissioning combines the concept of original operation with the reality of current control technology and system enhancements. The results of our Performance-Commissioning allow a system to be energy efficient while operating as originally intended.

We deliver results. The Summit Commissioning process focuses on early identification and resolution of issues to facilitate achieving a high performance facility. Summit has provided fundamental and enhanced commissioning services for many Leadership in Energy and Environmental Design (LEED) certified projects, including New Construction (NC), Core and Shell (CS), Healthcare (HC), and Existing Buildings (EB).



\$1,000,000
ANNUAL ENERGY SAVINGS

Summit Retro-Commissioning Services were key to achieving \$1M annual energy savings.



CASE STUDY

OPTIMIZED FOR EFFICIENCY

FEDERAL CORRECTIONS CENTER / BEAUMONT, TEXAS

The Federal Corrections Center in Beaumont, Texas (FCCB) has approximately 2 million square feet of conditioned space spread out over three separate prison facilities. Summit Commissioning Group managed the two-phase commissioning project for the facility's existing mechanical systems. The first phase of the commissioning process was to evaluate the facility's current system. Once the evaluation and testing of the system was complete, Summit Commissioning Group provided a complete equipment deficiency list. The list provided critical data for the functionality and efficiency of each piece of equipment in the system. The data was the basis for implementing system design improvements and repairs to the existing mechanical system.

Upon completion of phase one, Summit Commissioning Group started the performance commissioning phase of the project. The performance commissioning included work on 99 air handlers, 66 variable air volume boxes, 7 water cooled chillers, 9 cooling towers, 29 hydronic pumps and the existing direct digital control system.

PERFORMANCE-COMMISSIONING

Work included a complete evaluation of the plant's existing mechanical systems, operational characteristics, and implementation of design.

"Summit Commissioning Services were a critical component of exceeding energy cost savings goals."

HILL SAVOY - JCI FEDERAL PROGRAMS

CASE STUDY

OPTIMIZED SOLUTIONS

BELL HELICOPTER TEXTRON / FORT WORTH, TEXAS

Summit provided design engineering and retro-commissioning services to improve the central plant operating efficiency for the 1M square foot manufacturing facility.

The implementation of chilled water system design changes was followed by central plant and control system commissioning.

The system design change connected two independent chiller plants located 800 feet apart into one virtual plant. This design and commissioning effort increased the capacity of existing systems by 1000 tons - eliminating inefficiencies. This re-capture of 1000 tons of capacity avoided \$1.5M in future capital expenditures and maintenance costs.

RE-DESIGN & RETRO-COMMISSIONING

Work included a complete evaluation of the plant's existing mechanical systems; design for improved efficiency and utilization; and commissioning of the central utility plant and control systems.

\$1,500,000

CAPITAL COST AVOIDANCE

Summit Consultants Commissioning Services were key to a \$1.5M savings for future capital expenditures and maintenance costs.



\$100,000

ANNUAL ENERGY SAVINGS

Summit Retro-Commissioning Services of the 800,000 sq. foot facility were key to the overall energy savings.



CASE STUDY

OPTIMIZED FOR PERFORMANCE

FORT WORTH CONVENTION CENTER / FORT WORTH, TEXAS

The Fort Worth Convention Center has over 800,000 square feet of conditioned space that is cooled, heated, and humidified to tight tolerances year around. With this comes high energy use. The facility includes a 10,000-seat arena, exhibition halls, meeting rooms, and ballrooms that were constructed in three different phases. Additional meeting rooms, ballrooms, lobby spaces, and circulation areas were added in the final phase of the expansion. The expansion also included two 350-ton air cooled chillers which connected to the existing 2600-ton central plant loop. These additions were to provide the additional cooling capacity needed to support the expansion.

Upon renovation completion in 2001, the Fort Worth Convention Center's plant manager noticed the cost to cool the building per square foot had increased. Summit Commissioning Group was then retained by the Fort Worth Convention Center to study the chilled water system and determine if there were any opportunities to save energy. Summit Commissioning Group performed a study and produced a performance-commissioning report that identified multiple cost saving measures, some of which were implemented immediately. Through system assessment, control sequence modifications and modeling of the existing piping, pump and chiller layout, Summit Commissioning Group was able to disconnect and remove the 350-ton chillers which allowed the plant manager to operate the facility with the original 2600-ton central plant. The result of the performance-commissioning was noticed immediately through lower energy costs.

Summit provided retro-commissioning of all the convention center's HVAC systems in 2011. The scope of work included a central utility plant, 101 air handling units, 115 VAV boxes, 45 exhaust fans, and ancillary equipment.

The pre-commissioning condition assessment identified over 1000 items in need of repair, replacement, recalibration, or reprogramming.

The city achieved \$100,000 in annual energy savings as a result of the retro-commissioning effort, a one-year payback.

PERFORMANCE-COMMISSIONING

Work included a complete assessment of the existing system and identifying long-term measures to save on energy costs.

"Summit's 10-year history in design and continuous commissioning services has played a key role in reducing energy costs and improving our customer satisfaction rating."

JAMES HORNER - CITY OF FORT WORTH



ADDITIONAL COMMISSIONING PROJECTS

CITY OF FORT WORTH TRANSIT AUTHORITY

Location: Fort Worth, Texas

Size (sq.ft.): 174,000

Scope of Services: Performance-Commissioning

- Energy savings performance contract
- 12 air handling units
- 66 VAV boxes
- 2 air cooled chillers
- 3 hydronic pumps

FORT WORTH DOWNTOWN LIBRARY

Location: Fort Worth, Texas

Size (sq.ft.): 160,000

Scope of Services: Performance-Commissioning

- LEED® EB Certification
- 21 air handling units
- 66 VAV boxes
- 2 chillers
- 2 cooling tower cells
- 6 hydronic pumps
- 2 steam boilers with heat exchangers
- 4 exhaust fans

COLLIN COUNTY COURTHOUSE ADDITION

Location: McKinney, Texas

Size (sq.ft.): 160,000 + 60,000 renovation

- Provided mechanical, electrical, plumbing, and fire protection engineering services
- Chilled water VAV units
- Upgrade central chilled water plant
- Upgrade thermal storage tank system
- Significant re-piping of the central plant
- 1000 Ton chiller and cooling tower
- Replaced the DDC automation control system

STATE FARM OPERATIONS CENTER

Location: Fort Worth, Texas

Size (sq.ft.): 160,000

Scope of Services: Performance-Commissioning

- Central plant re-design, chiller and boiler upgrades
- Provide energy study
- 8 central station air handlers
- 300 hydronic re-commissioned VAV boxes
- \$180,000 first year measured savings
- Obtained \$35,000 TXU rebate for the owner.
- \$2,000,000 construction cost

DALLAS CONVENTION CENTER

Location: Dallas, Texas

Size (sq.ft.): 160,000 + 60,000 renovation

Scope of Services: Performance-Commissioning

- Energy savings performance contract
- Evaluation of four central plants comprising 12,000 tons of refrigeration
- Exhibit hall lighting retrofit
- Re-piping all central plants to achieve variable volume pumping
- Replacement of two 1300 ton chillers
- Replacement of 18 pumps
- Installation of 23 variable speed drives
- Installation of 50 premium efficient fan motors
- Installation of a new cooling tower
- Installation of a new steam boiler
- Upgraded all pneumatic controls to DDC
- Installation of a solar water heating system
- Utilized Pipe Flo Professional Piping System Modeling software to analyze, diagnose, redesign, and re-commission a complex chilled water piping system that connects all four primary central plants at the facility.

AT&T FIREMAN DATA CENTER AND SWITCH

Location: Richardson, Texas

Scope of Services: Commissioning, testing, balancing

- Air handlers
- VAV boxes,
- Computer room units
- Fire alarm
- Fueling systems for the emergency generator
- Leak detection systems
- Hydrogen detection system

WILL ROGERS MEMORIAL CENTER

Location: Fort Worth, Texas

Scope of Services: Commissioning

- Analysis and re-design of the central plant piping systems
- New HVAC systems design for the John Justin Equestrian Arena at the same facility
- Summit is currently the engineer of record for a campus wide energy savings performance contract at the facility.



ROANOKE RECREATION CENTER

Location: Roanoke, Texas

Scope of Services: Performance-Commissioning

Size (sq.ft.): 38,000 square foot recreation center with a 3,600 square foot weight room, an aerobics room, two racquetball courts, two full-sized basketball courts, several classrooms, and a game room.

- 4 rooftop units
- 10 VAV boxes
- DDC controls and additional equipment

TRINITY TERRACE ASSISTED LIVING

Location: Fort Worth, Texas

Scope of Services: Commissioning

- HVAC and fire alarm systems for 95 residential units, kitchen, medical, and natatorium facilities.

- Stairwell pressurization
- Building smoke control systems

DONNA ISD

ENERGY CONSERVATION MEASURES

Location: Donna, Texas

Scope of Services: Performance-Commissioning

Size (sq.ft.): 2,000,000. The district wide project included 22 buildings.

- Condition assessment survey
- Test and balance services
- District wide building automation system and HVAC equipment upgrades

CANUTILLO HIGH SCHOOL

ENERGY CONSERVATION MEASURES

Location: El Paso, Texas

Scope of Services: Performance-Commissioning

Size (sq.ft.): 260,000

- Condition assessment survey
- Test and balance services
- Geothermal HVAC system
- 330 pieces of mechanical equipment

CANUTILLO ISD

ENERGY CONSERVATION MEASURES

Location: El Paso, Texas

Scope of Services: Performance-Commissioning

Size (sq.ft.): 800,000

- Energy modeling
- Test and balance services
- Geothermal HVAC system
- Replace 376 pieces of HVAC equipment and building automation controls

FOREST PARK MEDICAL

Location: Southlake, Texas

Size (sq.ft.): 142,000

Scope of Services: Commissioning

- Building envelope commissioning
- Air barrier testing
- LEED® Gold certified

PROVIDENCE HOSPITAL

Location: Waco, Texas

Scope of Services: Performance-Commissioning

Size (sq.ft.): 230,000

- Test and balance services

CITY OF FORT WORTH ENERGY SAVINGS PERFORMANCE CONTRACT (PHASE 7)

Location: Fort Worth, Texas

Scope of Services: Performance-Commissioning

Size (sq.ft.): 450,000 (the buildings included are:

City Hall, City Hall Annex, Public Safety Building, Emergency Operations Center, Southwest Regional Library, and East Regional Library.

- Condition assessment survey
- Engineering for energy savings projects
- Energy modeling

REFERENCE CONTACTS

Mr. James Horner
Assistant Director of Facilities and Public Events
Fort Worth Convention Center
(817) 392-2505

Mr. David Hoelke
Director of Physical Plant Administration
Tarrant County College District
Hurst, Texas
817-515-6480

Mr. David Phillips
Director of Facilities
Tarrant County Facilities Management
Fort Worth, Texas

Mr. Tony Cloud
Project Manager – Building Efficiency
Johnson Controls Solutions Group
Irving, Texas
210-260-8815



CORPORATE HEADQUARTERS
1300 Summit Avenue, Suite 500
Fort Worth, Texas 76102
Office 817-878-4242

DALLAS OFFICE
4144 N. Central Expressway, Suite 635
Dallas, Texas 75204
Office 214-420-9111

www.summitmep.com