



DATA CENTER CLIENT, CHEYENNE, WY, USA

CASE STUDY

Commissioning Services for LEED Gold 36 MW Data Center

Data Center Commissioning



Commissioning Services for LEED Gold 36MW Data Center



Objective

The scope was to verify the data center was built according to contract documents and operationally ready to be turned over to the owner's operations team. Our team helped achieve this objective by reviewing submittals, attending FWTs, verifying completion and reviewing of FAT and L1-L3 documentation, and performing L4 and L5 tests.

Overview

CAI was brought in to provide commissioning services for the design, construction, and fit-out of a LEED Gold certified 36 MW Data Center in Cheyenne, Wyoming. The turnover of the facility was performed in five different phases.

Our team reviewed submittals to ensure the vendors met the specifications, noting deviations and highlighting potential commissionability issues.

CAI participated in multiple Factory Witness Testing (FWT) events for various equipment types to set the standard and expectation of these activities. During the FWT, CAI witnessed the first of kind for each equipment type and helped establish the standard approach subsequent Factory Acceptance Tests (FAT) would be expected to follow. Potential long-term issues with installation and future operations were assessed and documented for correction.

CAI reviewed all FAT and L1-L3 documentation that was uploaded into the clients commissioning platform. The review verified all required documentation was uploaded, all required tests were performed, and test results were within specification. Any issues from the documentation review were captured.

CAI performed L4 and L5 testing on all mission-critical electrical and mechanical equipment. At the start of L4, our team performed a general inspection to verify the installation was done correctly, with any issues documented for resolution. Systems were validated to their design limitations to verify they would perform as expected at full design load through various failure scenarios.

With the Data Center's multiphase turnover, CAI worked closely with the general contractor and owner on the scheduling of commissioning events. As the project progressed through each phased turnover, the schedule and sequencing of events were reviewed to find efficiencies and shorten the commissioning process's timeline.



CLIENT:
CONFIDENTIAL

LOCATION:
CHEYENNE, WY, USA

TIME FRAME:
2 YEARS

CONTRACT SIZE:
\$1,820,000

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Equipment

- 47 - Electrical Panel Boards
- 69 - 480/208 Transformers
- 21 - 13.2 kV/480 Transformers
- 21 - 13.2 kV Switches
- 2 - Medium Voltage Switchgear
- 50 - Switchboards
- 64 - Static Transfer Switches
- 128 - Power Distribution Units
- 44 - Automatic Transfer Switches
- 45 - Uninterruptable Power Supply
- 1 - Diesel Generator
- 20 - Natural Gas Turbine Generators
- 21 - Control Panels (transfers between utility and generator)
- 7 - Remote Starting Panels for generators
- 160 - COLO AHUs
- 1 - Admin AHU
- 12 - AHU Central Controllers
- 80 - Transfer Fans
- 20 - Heat Trace Panels

Services Provided

- Attendance at L1 FWT's and issuance of detailed reports noting any long term issues or notes for commissioning of like equipment for same
- Submittal and documentation review
- Witnessing of first of kind L2 (QA/QC) and L3 (start-up) tests and documentation of issues
- Verification of L1-L3 and FAT documentation uploaded to client's online platform and verification of L1-L3 test results
- Coordinated L4/L5 Cx Activities with Morning Cx Meetings with Client, Operations, Main Contractor, and Vendors
- Developed site specific Functional Performance Test (L4) and Integrated Systems Test (L5) scripts
- Completion of Functional Performance Test (L4) and Integrated Systems Test (L5) Tests for all critical electrical and mechanical equipment including specific BAS (Building Automation System) and EPMS (Electrical Power Monitoring System) testing
- Coordination of electrical and mechanical testing tracks to avoid clashes and make the commissioning sequence more effective
- Generation, tracking, and closeout of all L4 and L5 issues
- Issuance of completed L4 and L5 scripts including related documentation (screenshots and test data)
- Developed turnover documents that documented the status of breakers, switches, control boards, and HVAC equipment at the time of turnover. Right before turnover, a walk with Operations was performed verifying the status of the equipment matched the turnover document
- Supported LEED certification of facility by supporting documentation collection and testing process validation

Value Delivered

CAI's team was instrumental in achieving a quality deliverable on time and within budget. Efficiencies gained during later phases of the project allowed for shorter turnover time periods. CAI was able to verify the proper operation of mechanical and electric equipment prior to the owner taking over the facility. Documentation of the commissioning process was verified and turned over to the owner.