

Digi-CRAC Reduced CRAC Energy 46% Telecommunication Data Center Application

Executive Summary

The data center located in NJ, has two switch rooms. Each switch room is served by six (6) 22-ton Liebert CRAC units. Digi-CRAC and Digi-CFC controllers including VFDs were installed for the six units in switch room1. This report summarizes the findings of the second test approved by the network team. This test was approved by the network team and conducted to ensure the accuracy of data collected.

For the second test, two units in switch room 1 were operated in baseline mode. These units were then switched to Digi operation mode. Trended data were collected for two weeks with each of the operation modes to measure energy savings.

The measured annual energy savings is 96,258 kWh. Energy savings is 46% of the measured baseline energy consumption. Peak demand reduction is about 15.7 kW which is 38% of total peak power. The annual cost savings at a utility rate of \$0.15/kWh can be \$14,439 annually.

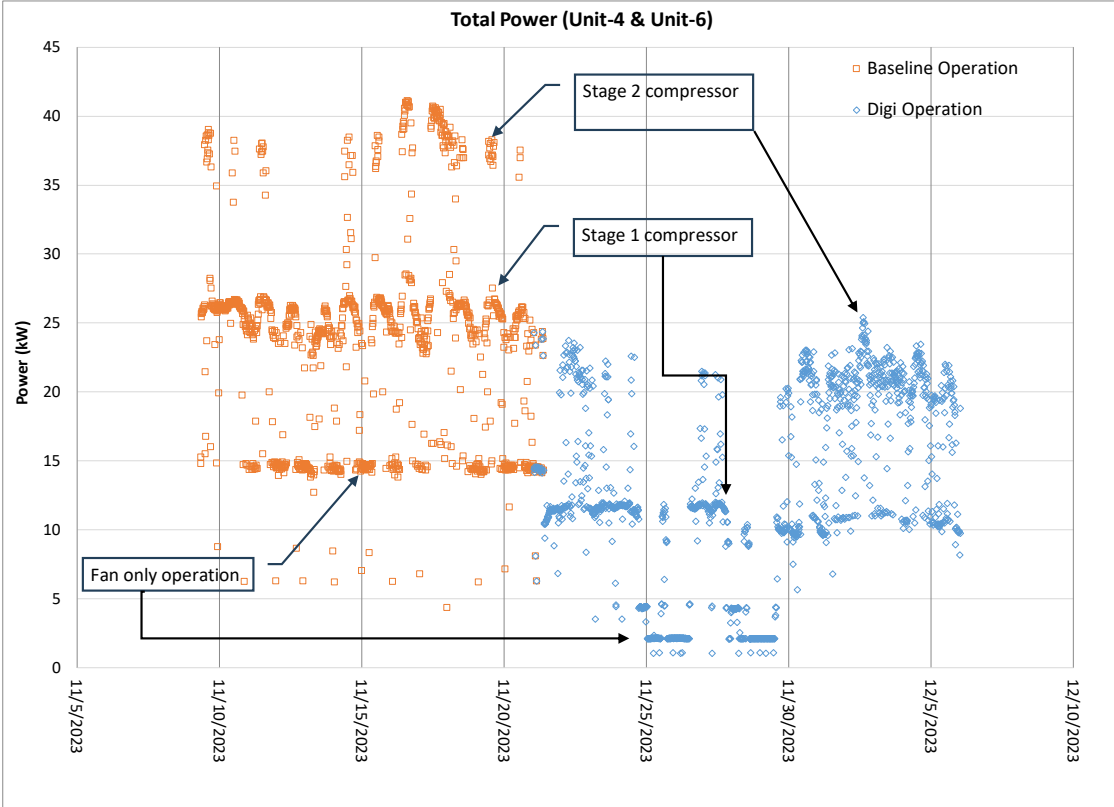


Figure 1 Daily energy consumption comparison for Switch room 1 in baseline and digi-operation

Energy savings for unit-4 and unit-6 are 49% and 42% respectively. Details of energy savings for each unit are provided in appendix A.

Appendix A: Energy savings by unit

The baseline energy data is from November 9th, 2023 to November 21st, 2023. Digi operation period is from November 21st, 2023 to December 6th, 2023. Average power savings for unit-4 and unit-6 are provided in table 1 below. Unit-4 data includes data for CRAC04 and ACC04. Unit-6 data includes CRAC06 and ACC06 data.

Total peak demand during baseline and Digi operation modes are 41.11 kW and 25.38 kW. Demand reduction is about 15.73 kW.

Table 1 Energy and demand savings summary for unit-4 and 6.

Parameters	Baseline	Digi	Reduction	Percentage Reduction
Unit-4 Average Power (kW)	16.0	8.19	7.77	49%
Unit-6 Average Power (kW)	7.73	4.51	3.22	42%
Total Average Power (kW)	23.68	12.70	10.99	46%
Total Peak Demand	41.11	25.38	15.73	38%
Annual Energy (kWh)	207,477	111,219	96,258	46%

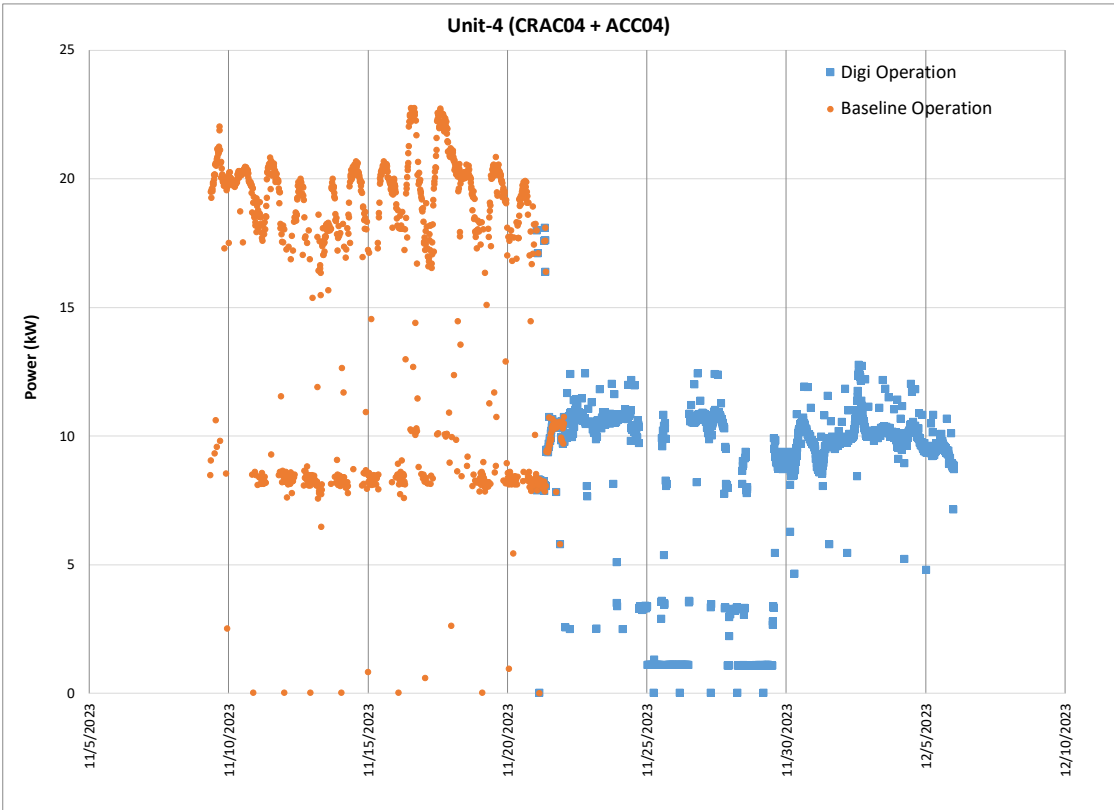


Figure 2 Unit-4 (CRAC04 + ACC04) total power in baseline and Digi operation modes.

Figure 2 provides the baseline and Digi operation data for unit-4 which includes the indoor unit power as well as the associated condenser unit power. Average power for baseline and Digi operations are 16 kW and 8.19 kW respectively. Power reduction for unit-4 is 7.77 kW which is 49% of baseline.

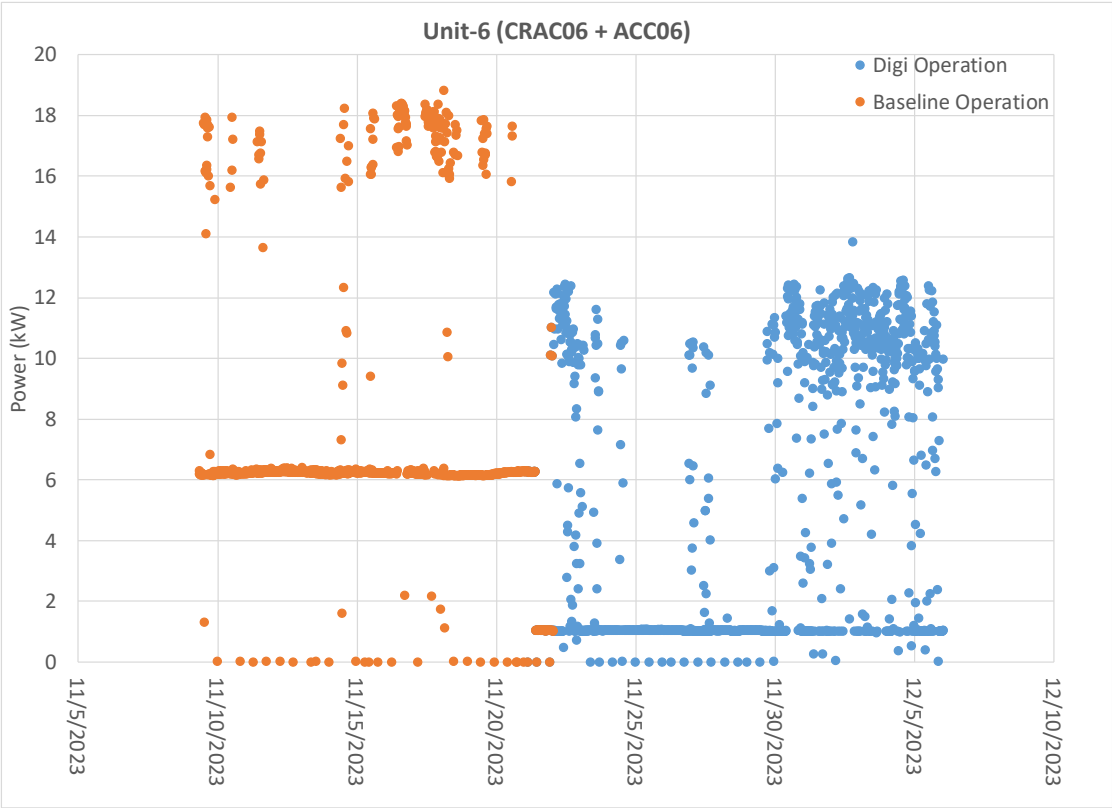


Figure 3 Unit-6 (CRAC06 + ACC06) total power in baseline and Digi operation modes.

Figure 3 provides the baseline and Digi operation data for unit-6 which includes the indoor unit power as well as the associated condenser unit power. Average power for baseline and Digi operations are 7.73 kW and 4.51 kW respectively. Power reduction for unit-6 is 3.22 kW which is 42% of baseline.