INDUSTRIAL FACILITY

PROJECTED ANALYSIS

PROVING REPLACEMENT PAYS BEFORE THE CAPITAL REQUEST.

Four large rooftop units, one question from the facility team: is replacement worth it? We answered with a unit-for-unit engineering analysis instead of an opinion.

THE PROBLEM

Four 115-ton rooftop units were carrying an industrial facility at 9.0 EER and 1.33 kW per ton. The facility team needed to know whether replacing them would pay back, with numbers solid enough to support a capital request and a utility incentive application.

THE SOLUTION

We compared the existing units to four 120-ton replacements with variable speed scroll compressors, VFD fans, enthalpy economizers and BACnet controls. We modeled capacity, power draw, annual kWh and annual cost for each unit, and identified utility incentive eligibility during scoping, before any money was committed.

+19%
EFFICIENCY GAIN
9.0 TO 10.7 EER

104,720
KWH PER YEAR SAVED
ACROSS FOUR UNITS

~$14,660
ANNUAL ENERGY
COST REDUCTION

~$50,000
ESTIMATED UTILITY
INCENTIVE IDENTIFIED

PER UNIT	EXISTING	PROPOSED	CHANGE
Cooling capacity	115 tons	120 tons	**+5 tons (+4.3%)**
Efficiency (EER)	9.0	10.7	**+19%**
Full-load power draw	153.3 kW	134.6 kW	**−18.7 kW**
kW per ton	1.33	1.12	**16% lower**
Annual energy use	214,620 kWh	188,440 kWh	**−26,180 kWh**
Annual energy cost	$30,047	$26,382	**−$3,665 per year**

PROPOSED EQUIPMENT SPECIFICATION

- ✓ Variable speed scroll compressors
- ✓ VFD condenser fan for head pressure control
- ✓ Modulating stainless steel gas heat exchanger
- ✓ Factory VFDs on supply and return fans
- ✓ Enthalpy economizer with low-leak dampers
- ✓ Factory unit controller with BACnet interface

Projected figures from a proposal-stage analysis; the replacement was not carried out. Based on full-load EER, $0.14/kWh and 1,400 annual cooling hours, representative of Chicago-area commercial operation; excludes demand charge and part-load savings, which would be expected to add to real-world results. Incentives are subject to eligibility and approval.

REQUEST SERVICE OR A QUOTE

Weighing repair vs. replace on aging rooftops? Email sales@rabinemechanical.com or call 815.331.1035. Our own crews cover northern Illinois and southern Wisconsin; qualified service partners cover all other markets.