

RETROFIT PAYBACK SCENARIO

Update or Replace: Old Equipment On A Replacement Schedule



In virtually every situation, retrofitting or upgrading data center cooling systems improves energy efficiency. Plus, you gain greater comfort in having more reliable equipment that requires less annual maintenance. Here is one of four scenarios developed by Vertiv to address the costs and benefits of retrofitting.

SCENARIO: Old Equipment on A Replacement Schedule

- 1MW Data Center in Columbus, Ohio
- Raised Floor
- 14 rows of 14 racks
- 16 older Liebert® Deluxe System/3 Units

SITUATION

The cooling units are 15 years old and you plan to replace them in five years. Until then, you'd consider an upgrade strategy, if you could recoup your investment between now and then.

PROBLEMS

- Units are inefficient
- Equipment being replaced within five years
- Outdated cooling unit controls create higher risk of failure from adverse events

SOLUTION

- Option 1: You can retrofit components to add another five years to the life of the equipment beyond the planned replacement date
- Option 2: You can replace the old equipment with new and more efficient units, and still achieve a payback within your 5-year timeframe

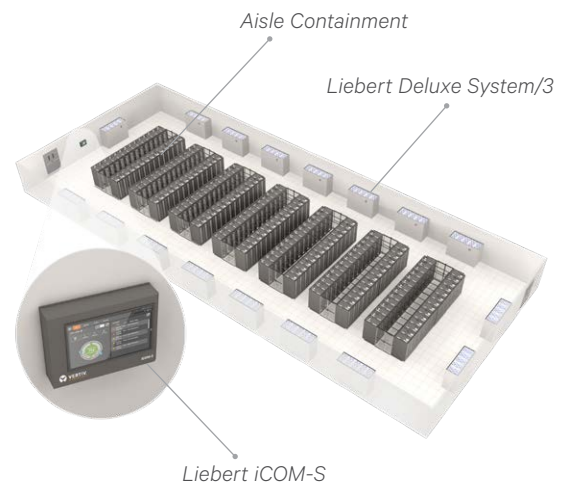
Solution - Option 1

- Add variable speed EC fans or variable speed drives
- Replace old controls with advanced Liebert iCOM™ unit controls
- Add Liebert iCOM™-S system controls to manage multiple units
- Add aisle containment

Upgrade Cost: Approximately \$349,321

Payback: 2.1 Years

- 70% of the investment cost is recouped in the first year, from energy savings and a utility energy rebate
- Annual cooling energy costs drop from \$385,000 to \$250,066 – a \$135,410 savings
- PUE drops from 1.44 to 1.29
- One-time energy rebate of about 25% of equipment costs – or \$431,000



CALCULATING THE PAYBACK

Annual Energy Cost Existing Liebert Deluxe System/3 Units	\$462,151
Annual Energy Cost Updated Liebert Deluxe System/3 Units	\$337,336
Annual Energy Savings from Updates	\$124,815
Equipment & Installation Costs EC Fans, Liebert iCOM Unit Controls, Liebert iCOM-S system controls, and Aisle Containment	\$349,321
Energy Rebate (25% of total E&I)	\$87,330
Net Cost - E&I Cost less Energy Rebate	\$261,991
Payback in Years (net cost / annual energy savings)	2.1

NOTE: See **Solution Option 2** on the Back



RETROFIT PAYBACK SCENARIO



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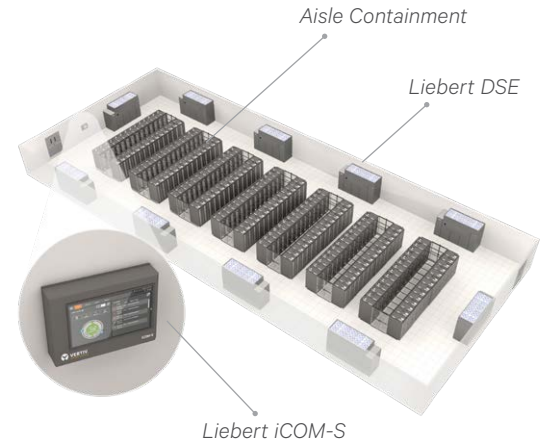
Solution - Option 2

- Replace old units with new Liebert® DSE™ free-cooling units which have new Liebert iCOM™ unit controls
- Add Liebert iCOM™-S system controls to manage multiple units for higher efficiency
- Add aisle containment for higher density and efficiency

Upgrade Cost: Approximately \$1,732,506

Option 2 Payback: 3.8 Years

- 44% of the investment cost is recouped in the first year
- Annual cooling energy costs drop from \$462,151 to \$128,282– a \$333,869 savings
- PUE drops from 1.53 to 1.16
- One-time energy rebate of about 25% of equipment costs – or \$87,330
- Plus, maintenance costs drop, as you go from operating 17 old units to 10 new units with much lower maintenance requirements.



CALCULATING THE PAYBACK

Annual Energy Cost Existing Liebert Deluxe System/3 Units	\$462,151
Annual Energy Cost Liebert DSE Units	\$128,282
Annual Energy Savings from Replacing Units	\$333,869
Equipment & Installation Costs Liebert DSE Units, Liebert iCOM-S system controls, and Aisle Containment	\$1,732,506
Energy Rebate (25% of total E&I)	\$433,127
Net Cost - E&I Cost less Energy Rebate	\$1,299,380
Payback in Years (net cost / annual energy savings)	3.8

For more on upgrading or retrofitting data center cooling equipment, visit www.VertivCo.com/Retrofits

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SL-18975 (R04/18)