

BENEFITS

Highest efficiency

- Mechanical PUE as low as 1.05
- Up to 75% more efficient than DX systems
- 26-53% higher SCOP at full load v. ASHRAE 90.1 standard
- Automated transitions capture every economization hour
- Expansion valves increase DX efficiency at low ambient temperatures

Highly Flexible

- More than 30 combinations of capacity, airflow and application
- Available as outdoor packaged solutions for perimeter and rooftop installations and as split systems for indoor perimeter, gallery and full-face discharge applications

Finely Tuned Control

- Liebert™ iCOM controls provide smooth economization transitions
- Advanced, automated protection routines
- Multi-unit teamwork modes eliminate unit fighting
- Easy integration to BMS using onboard protocols

Low Maintenance

- No water-related servicing
- No dampers or louvers to manually maintain; software enabled biquadratic
- Fewer moving parts than other data center cooling systems¹
- Lower refrigerant charge than traditional DX systems

Water-Free Operation

- No water, no water treatment, no piping or water infrastructure to maintain

Liebert DSE 50-165kW units are certified by AHRI for efficiency and performance.



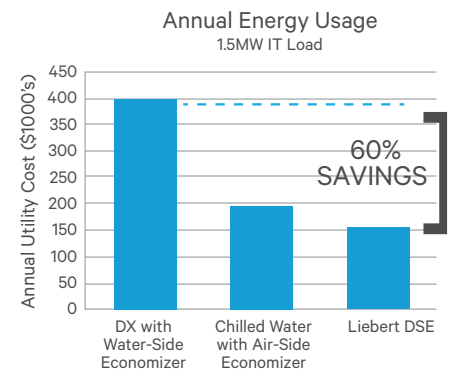
More Efficient. More Flexible. Smoother Transitions.

Reduce cooling costs and increase available economization hours with the highly efficient Liebert DSE free-cooling economization system. The Liebert DSE is the world's most widely deployed pumped refrigerant economization platform for data centers, with more than 6000 installations in diverse environments. Advantages include:

- Up to 75% more efficient than traditional DX systems, PUE 1.30 -1.05
- Finely tuned controls for smooth economization transitions
- More than 30 combinations of capacity, airflow and form factor
- Water-free operation cuts cost and complexity
- Complete separation of outdoor and data center air to eliminate cross-contamination

Now with Energy Saving Optimization

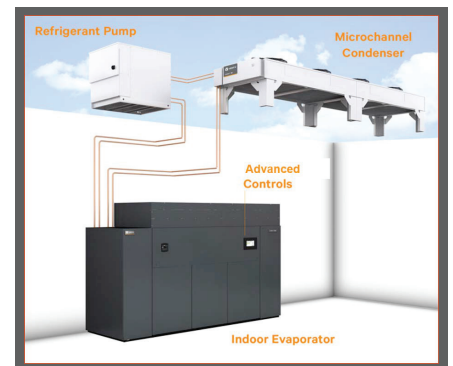
- 50% more efficient via new optimized controls algorithms
- Comes standard on all new Liebert DSE units
- Available as retrofit to existing Liebert DSE units
- 18 month average payback period on retrofits



How It Works

All of the system's main components — compressors, condenser fans, CRAC fans and refrigerant pumps — are coordinated by its Liebert iCOM controls. These controls automatically move the system between full and partial economization and full compressor phases, based on IT loads, return air temperatures and outdoor temperatures, maximizing the use of available economization hours.

In cold temperatures, iCOM deactivates the compressors and activates the economizer pumps which move refrigerant at a fraction of the energy usage. During the hottest temperatures, both compressors are activated, bypassing the economizer pumps. In moderate temperatures — fall, spring or even during the night — iCOM may activate one compressor and one refrigerant pump to gain partial economization and energy savings.



Liebert® DSE™ performance and dimensional data

PUMPED REFRIGERANT ECONOMIZER SAVINGS

Location: San Francisco
1 MW Data Center / 500-200 Racks / 4,000-5,000 Servers / 7500 Sq Ft.

	Chilled Water	Pure Refrigerant Economizer	Savings
Electricity	1.9MWh	1.6MWh	16%
Water	4 million gallons	0 gallons	4 million gallons
PUE	1.21	1.18	-

Source: California Energy Commission

Technical data

		MODEL						
		DA050	DA080	DA085	DA125	DA150	DA165	DA250
95°F DB, 52.3 DP	Total Capacity kW (net)	54	92	99	146	181	193	253
	Sensible Capacity kW (net)	54	92	99	146	181	192	253
	Full-load SCOP @ 95°F ambient	2.9	4.0	3.3	3.6	3.4	3.2	3.0
	SCOP @ 35°F ambient (kW/kW)*	8.5	12.0	11.0	10.0	8.6	8.6	4.0
85°F DB, 52.3 DP	Total Capacity kW (net)	49	84	90	130	165	177	228
	Sensible Capacity kW (net)	49	81	87	130	159	166	228
	Full-load SCOP @ 95°F ambient	2.7	3.0	2.9	3.2	3.0	2.8	2.7
	SCOP @ 35°F ambient (kW/kW)*	7.0	10.4	9.6	9.2	7.7	7.7	7.5

Notes:

- Economizer mode operating at 100% of DX capacity.
- Certified in accordance with the AHRI Datacom Cooling Certification Program at AHRI Standard 1360 Standard Rating Conditions. Certified units may be found in the AHRI Directory at www.ahridirectory.org.



BASIC DIMENSIONS			
Model	Length (A)	Width (B)	Height (C)
DA050	77"	35"	76"
DA080	100"	35"	76"
DA085	100"	35"	76"
DA125	144"	47"	76**
DA150	144"	47"	76**
DA165	144"	47"	76"
DA250	120 1/8"	83.5"	134"

*Add minimum 18" height for separate filter plenum, plus floorstand height