PARK PLACE
LIQUID COOLING™

State-of-the-Art Data Center Cooling, Optimized.

PARK PLACE TECHNOLOGIES | GRC ICEraQ 10

LIQUID COOLING OVERVIEW

Ongoing trends like IOT and AI have dramatically increased the amount of computing power needed – and the need to have computing power closer to the end user.

Decentralized compute demands are impacting businesses and government agencies alike. And driving the need for more hardware, more space for that hardware, and more energy to run it all.

Decentralized Computing Challenges

More computing power requires more gear. Many operators are simply running out of space in their data centers.

Increasing energy costs are exacerbating the budget impact of running and cooling the gear. Plus, some operators are maxed out on the amount of energy the grid can supply.
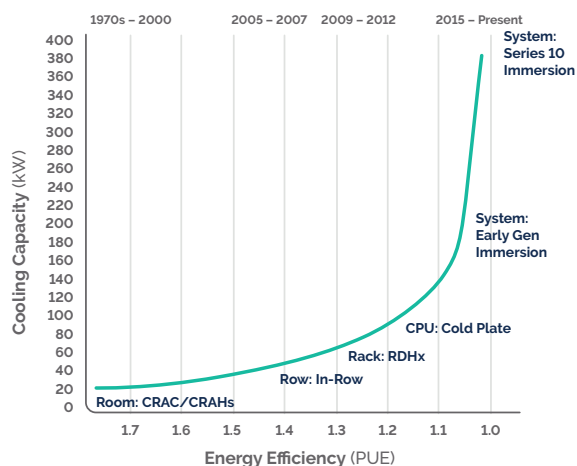
Given the growing importance of sustainability metrics, operators need to use less energy and water, not more.

How Liquid Cooling Can Help

Liquid cooling systems empower data center operators to do more with less. Less space. Less energy. Less cost.
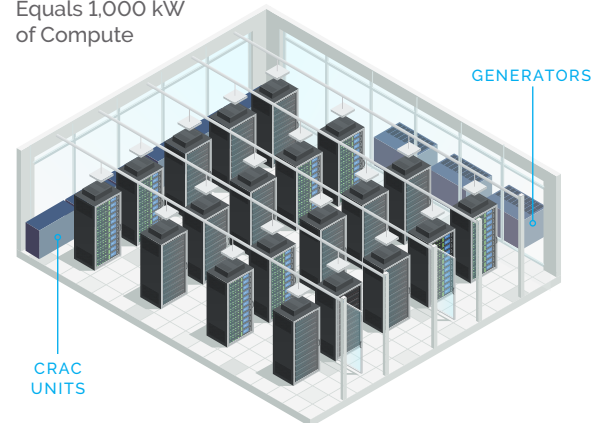
- Compared to traditional CRAC (Computer Room AC) systems, immersion cooling can increase PUE (Power Use Effectiveness) 18x
- Rack density can be increased up to 10X
- Power savings up to 50% can be realized

The Evolution of Data Center Cooling Leads to Immersion

| 1970s – 2000 | 2005 – 2007 | 2009 – 2012 | 2015 – Present |

Cooling Capacity (kW) — y-axis: 0 to 400
Energy Efficiency (PUE) — x-axis: 1.7, 1.6, 1.5, 1.4, 1.3, 1.2, 1.1, 1.0

- Room: CRAC/CRAHs
- Row: In-Row
- Rack: RDHx
- CPU: Cold Plate
- System: Early Gen Immersion
- System: Series 10 Immersion

LEGACY AIR

1,700 kW of Power in Equals 1,000 kW of Compute

GENERATORS

CRAC UNITS

IMMERSION COOLING

1,030 kW of Power in Equals 1,000 kW of Compute

GENERATOR

PARK PLACE HARDWARE MAINTENANCE™   PARK PLACE PROFESSIONAL SERVICES™   PARKVIEW MANAGED SERVICES™   ENTUITY SOFTWARE™   curvature A Park Place Technologies Company

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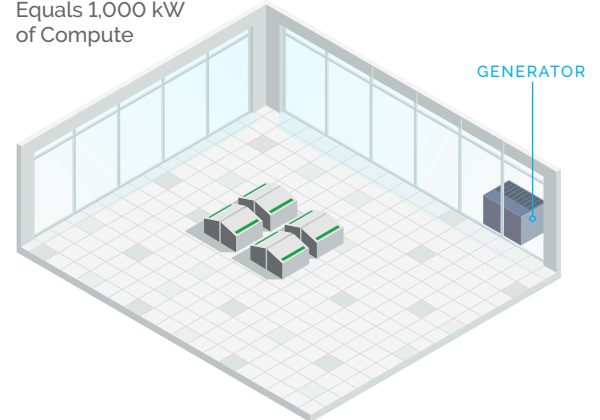
The Park Place Solution

Implementing a liquid cooling solution can come with its own set of challenges. To name a few:

- Existing hardware needs to be prepared for the immersion cooling process
- Training is required for regular maintenance of immersed gear
- Many vendors are involved from the tanks, to the cooling liquid and more

Park Place Technologies removes the complexities of the immersion cooling journey – serving as a single-vendor solution for the entire process.
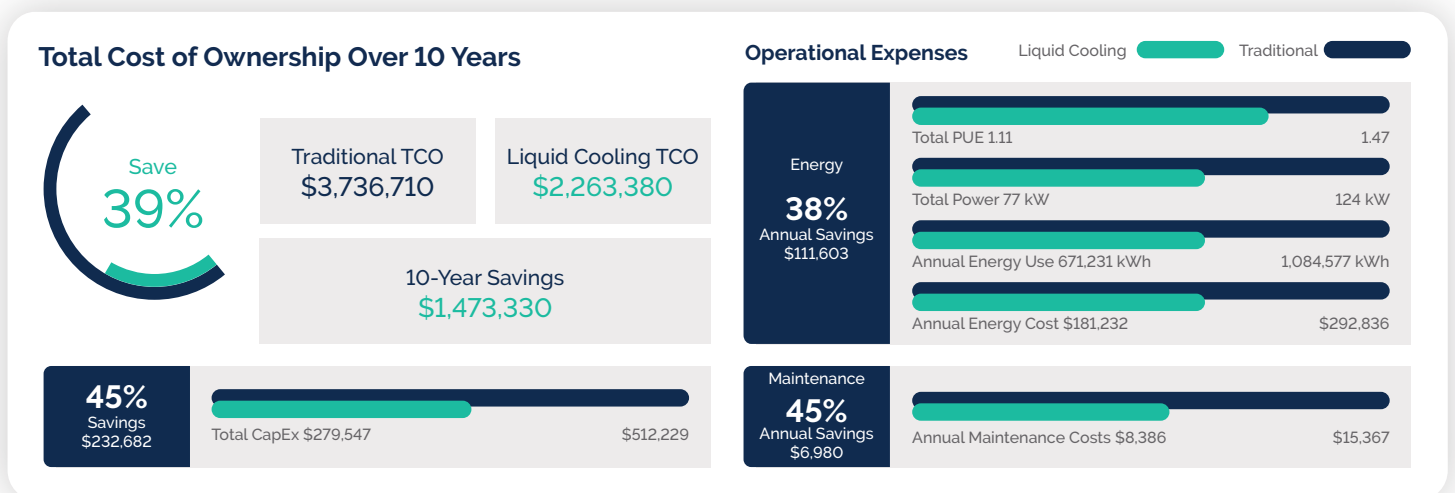
A Complete, Turn-Key Liquid Cooling Solution

PROCURE
Procurement of all hardware needed for immersion cooling (tank & fluid)

CONVERT
Conversion of air-cooled servers to operate in an immersion tank

DISPOSE
Appropriate, sustainable disposition

INSTALL
Installation of the complete solution (server, fluid & tank)

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TECHNOLOGIES

MANAGE
Server management

MAINTAIN
Maintenance of immersion tank, servers, and fluid

MEASURE
Performance and sustainability monitoring

MONITOR
Tank, server, and fluid monitoring

Return on Investment

Although immersion cooling requires an initial capital investment, with the reduced total cost of ownership (TCO), operators can see a significant return on investment (ROI) over the following years.

Example assuming 42 servers:

Total Cost of Ownership Over 10 Years

Save **39%**

Traditional TCO
$3,736,710

Liquid Cooling TCO
$2,263,380

10-Year Savings
$1,473,330

45%
Savings
$232,682

Total CapEx $279,547 — $512,229

Operational Expenses

Liquid Cooling | Traditional

Energy
38%
Annual Savings
$111,603

Total PUE 1.11 — 1.47
Total Power 77 kW — 124 kW
Annual Energy Use 671,231 kWh — 1,084,577 kWh
Annual Energy Cost $181,232 — $292,836

Maintenance
45%
Annual Savings
$6,980

Annual Maintenance Costs $8,386 — $15,367

Of course, every situation is different. Your scenario can be plugged into this TCO tool: https://www.grcooling.com/grc-tco-calculator/

Or if you would like to provide some details, we can run the numbers and present to you later.

For more information, contact Chris Carriero ccarreiro@parkplacetech.com

**Think Bigger – and Act Faster
with Park Place Technologies**

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