CompuDynamics
UPTIME IN NO TIME

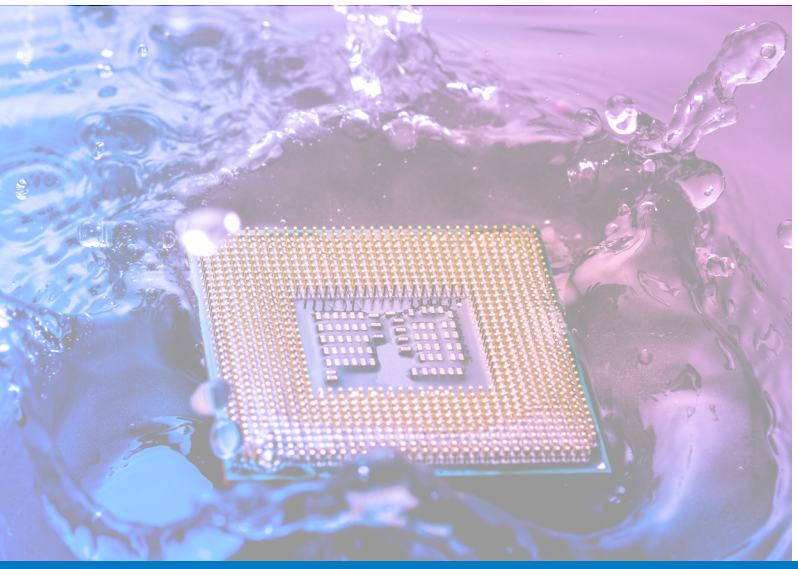
Liquid Cooling

As data centers continue to pack more computing power into smaller spaces to consolidate workloads and accommodate processing-intensive applications, such as AI, the need for more effective and efficient cooling is paramount. Liquid cooling is providing a very attractive alternative to the cooling issue.

Liquid cooling leverages the higher thermal transfer of properties of water or other fluids to support efficient and cost-effective cooling of high-density racks and can be up to 3000 times more effective than using air. At present, there are three main categories of liquid cooling for high density workloads:

Direct-to-Chip Cooling

- Method of cooling computer chips at the source, rather than cooling the entire system.
- Involves placing a heat sink directly on the surface of the chip to dissipate heat more effectively.
- Typically consists of microchannels or heat pipes which transport heat away from the chip.
- Helps prevent overheating and enhances the overall performance and reliability of the chips.



Rear-Door Heat Exchangers

- Cooling system installed on the rear doors of data center racks.
- Typically consists of heat exchanger coils and fans which extract hot air from the rack and transfers it to the cooling fluid.
- Often works in conjunction with the data center's existing cooling infrastructure to address high density loads.
- Systems are modular and can be retrofited onto existing racks or integrated into new data center designs.
- Placement of heat exchangers on the rear doors allows for efficient heat extraction without interfering with the front-to-back airflow.

Immersion Cooling

- Technique which involves submerging computer components into a specialized dielectric fluid or coolant.
- The coolant has a higher heat absorption capacity than air, allowing for more efficient heat transfer.
- The submerged components are typically housed in a sealed container or tank to prevent any contact between the coolant and other infrastructure.
- Eliminates the need for traditional cooling methods like fans or heat sinks.
- Provides more uniform cooling across all components, reducing hotspots and improving overall system performance.

Since 2016, Compu Dynamics has had its finger on the pulse of these emerging technologies. Our relationship with top providers in all three forms of liquid cooling means Compu Dynamics is ready to help you plan, prepare and implement this latest technology. Whether you are building new or retrofitting, let our team of industry experts assist you in transitioning to the latest cooling technology.

For more information, please contact us at sales@compu-dynamics.com.