Advantages over conventional air cooling

- Increased power density per rack
- More computing power in less space
- Dramatically less energy used for cooling

Air

3M Novec Fluid

- 4 - 40 kW
- Up to 10 kW per m²
- 1.1 - 2.0 pPUE
- 250 kW
- Up to 100 kW per m²
- <1.02 pPUE

How two phase immersion cooling works

- Vapor condenses on coil or lid condenser
- Fluid recirculates passively to bath
- Vapor rises to top
- Heat generated on chip and fluid turns into vapor
- Can reduce cooling energy costs 95%+

Using 10x less floor space

3M Novec Fluids

The Sustainable, Smart Solution

- Non-conductive
- No residue
- Nonflammable
- Low toxicity
- Zero ozone depletion potential
- Low global warming
- Non-VOC

3M: A proud history of electronics cooling innovation

- July: Allied Control begins building the most powerful two-phase immersion cooled data center in the world for BitFury Group
- June: PEZY Computing earns the top three rankings on the Green500 list, using a 3M™ Fluorinert™ Electronic Liquid for immersion cooling
- November: A supercomputer co-developed by PEZY Computing and ExaScaler Inc., using 3M™ Fluorinert™ Electronic Liquid immersion cooling ranks second on the Green500 list
- April: 3M debuts a fully functional supercomputer developed with Intel and SGI that uses 3M’s revolutionary two-phase immersion cooling technology
- February: Two-phase immersion cooling with 3M Novec Engineered Fluid earns bronze Edison Award
- October: 500kW two-phase immersion cooled data center operational in Hong Kong
- May: 3M Data Center Cooling Process wins Uptime Institute GEIT Award

First commercial-scale installation of an immersion cooling system for data center electronics employing Novec fluids

- 2015
- 2014
- 2013
- 2012
- 2009
- 2000s
- 1996
- 1970-1980s
- 1950s

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