

Direct Re-Use of Waste Heat from Liquid-Cooled Supercomputers (AQUASAR)

Scope of project

The Information Technology (IT) industry has a key role in the global effort to reduce carbon-dioxide emissions as it consumes 2 % of the world energy with a strong, demand-driven, upward trend. The IT industry already strives to digitally control and to optimize emission-intensive hardware and software processes. Examples include the replacement of traditional activities with digital information processing thus decoupling knowledge transfer from physically moving material or persons, resulting in an order of magnitude decrease in emissions. In the field of simulation based sciences, current computational approaches have an efficiency that is on average below 20 % in terms of the hardware utilization. With computation becoming the third pillar of scientific enquiry along with experiment and theory in all scientific disciplines, it is essential to address the challenge of energy aware and low power high performance computing.



Liquid-cooling circuits on a prototype blade.

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