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## Servers and Storage Technologies – Liquid Cooling

Liquid cooling will reduce both our data center's power usage and carbon footprint. Currently in the early mainstream maturity phase, this high benefit technology uses liquid instead of air to cool electronics more quietly, uniformly and effectively. Right now our data center is cooled by a costly system of air conditioning units and fans. By switching to liquid cooling, we can consolidate data center equipment and have space for new servers to increase the computing power of the company when needed.

Using coolant solutions, either water or a refrigerant, we can move the heat away from equipment. "Liquid (conductive cooling) conducts more than 3,000 times as much heat as air and requires less energy" (Phelps). When the heat is captured it is transferred to a water pipe where it can either be dissipated into the air using a radiator or used for heating other parts of the building. There is no need to cool down incoming water as "it is possible to cool the data center using incoming water at 35 °C" (Jones). Due to new piping technology, the probability of leaks is extremely low. Fewer fans mean that acoustic noise disruption will be limited. Liquid cooling allows for servers to be packed far more densely within the data center. This will allow us to increase the computing power of the organization without needing to expand the data center.

Initial costs of implementing liquid cooling will be high but in the long run our company will save money on costs. "Over a server's lifespan, power and cooling costs may be greater to or equal to the cost of the equipment itself." (Newenstein). Upgrading to liquid cooling is a smart business move. Lower power and cooling costs will enable the company to reduce its carbon footprint, which will help to improve our corporate image as a green company. When tallied, the long-term benefits of upgrading to liquid cooling now clearly outweigh the short-term costs.

**References**

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