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There is an ongoing power and cooling crisis facing data centers. A prospective solution to solve this crisis is the movement away from air-cooling through the use of liquid cooling. Liquid cooling uses a liquid, such as water or refrigerant, instead of air, to cool the data center and equipment. By implementing liquid cooling, we can increase cooling efficiency and lower electricity costs.

A key capability of using liquid cooling is that it increases overall efficiency. Liquid cooling conducts more than 3,000 times as much heat as air cooling and requires less energy to do so, thus decreasing the electricity cost. The liquid cooling system’s ability to be placed near the heat load, enhances the efficiency and reduces the fan power needed. Liquid cooling will increase cooling efficiency, which will reduce the large power load that is currently needed to provide cooling for the data center equipment.

Around the world, data centers consume about 30 billion watts of electricity for cooling alone. A Denmark based company named Asetek, uses both air and liquid cooling for its data centers. This company was able to cut its energy costs by 50%. A full rack draws 21 kW (Kilowatt), requiring 7kW to power computer room air conditioning. Its liquid cooling requires 3kW per rack, resulting in a $3,500 annual savings per rack, around $0.10 per kWh (Kilowatt hour). Our company should implement liquid cooling. Moving from air-cooling to liquid cooling will improve our efficiency because it requires less energy and can lower our electricity costs. Simply integrating liquid cooling with air-cooling can reduce our company’s electricity costs by 50%.

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