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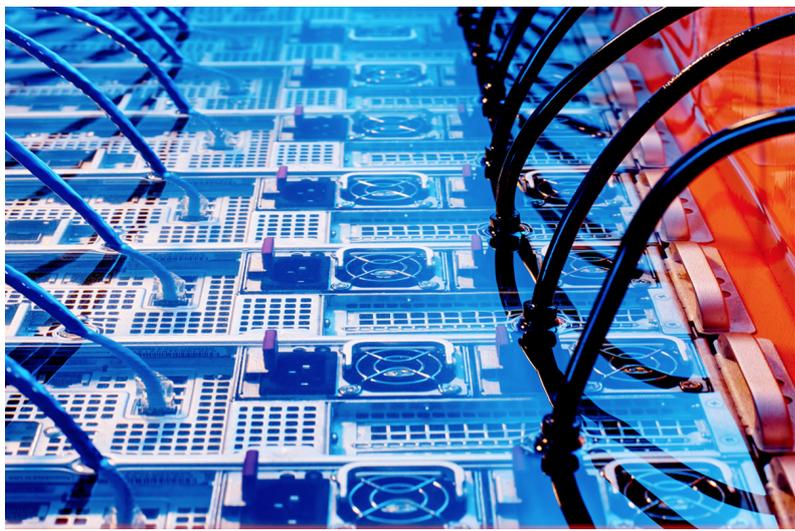
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DUG has developed revolutionary oil cooling technology which offers energy efficiency and reliability even under extreme conditions.

**DUG's Almighty Bruce among world's most energy efficient, helping to cool the planet.**  
Brian Wickins, 9 Jun 2016

Perth-based DownUnder GeoSolutions (DUG) has developed a **cooling system technology** that was recently named as a finalist in the 25<sup>th</sup> WAITTA Incite awards, showcasing ICT innovation and excellence. DUG's technology is listed under the **'Most Effect Platform'** category.

The breakthrough technology is making DUG's data centres more energy efficient than Facebook's or Google's. Patents are pending for the technology and the company is also working with several major computer vendors, to license the technology for global distribution. Leading open-source HPC computer company Penguin Computers is considering it as part of its open compute project.

DUG operates Australia's largest supercomputer, affectionately known as **Bruce**, which uses vast amounts of compute power to process seismic data. Traditionally, computers of Bruce's size are air cooled which is inefficient, expensive and environmentally unfriendly.

Instead, DUG has developed a cooling system which submerges the servers in a specifically designed oil-like substance called polyalphaolefin dielectric fluid. Fluid is cooled and circulated around the extremely hot components within the servers.

As a result of the innovation, DUG's Perth centre power requirements have reduced from more than 450 kW to around 250 kW, lowering costs by 45%.

The energy savings have contributed to a power usage effectiveness (PUE) rating of 1.03 – lower than the ratings achieved by both Google and Facebook. Google publicly states that its PUE is 1.06 at its best site or 1.12 across all of its data centres. Meanwhile, Facebook's Prindiville data centre has a PUE rating of 1.08.

In addition to its Perth site, DUG has implemented the cooling system in its supercomputers in Kuala Lumpur and Houston.

DUG's MD, Matt Lamont said since its inception, DownUnder GeoSolutions has been focused on innovation and the new cooling system is a prime example.

"More and more computing is being housed in large, high-density data centres around the world. These data centres are starting to aggressively tackle the amount of energy they consume in an effort to reduce their carbon footprint and save money," Matt Lamont said.

"Our cooling system technology offers the highest levels of cooling with the simplest design, installation and maintenance – it's cheap to build and easy to deploy. It can also easily be installed in existing data centres, providing a potentially huge world-wide market," he added.

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"We are excited to have been named a finalist in the WAITTA Incite Awards for 2016."

The winners of the WAITTA Incite Awards will be named at the end of June.

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