

Sustainable HPC is not a utopia

When it comes to the modern world, inventions and groundbreaking discoveries can only come to pass with technology, data, and advanced computing.

LONDON, UNITED KINGDOM,
September 7, 2022 /EINPresswire.com/
-- When it comes to the modern world, inventions and groundbreaking discoveries can only come to pass with technology, data, and advanced

computing. And with the evolvement of technologies such as 3D imaging, artificial intelligence, and the Internet of Things, the data required for companies to work with is only growing with time. Thus whether it be streaming a live sports event, testing new products, or even making discoveries, the ability to process data in real-time is crucial.



Sustainability & HPC

This is where the importance of [HPC](#) comes into play. HPC allows its users to process large amounts of data much faster than a standard computer, this leads to quicker insights and provides organizations with the opportunity to stay ahead of the competition. HPC solutions also have the ability to be one million times more efficient and powerful than the fastest laptop in the world and it allows firms to run immense analytical computations that use data up to terabytes (TBs). Thus engineers, designers, data scientists, and other researchers are now able to solve massive and complicated problems and make discoveries and inventions in a very short time in comparison to traditional computing.

However, this is just the tip of the iceberg; HPC also reduces physical testing by creating simulations, and with cloud-based HPC even small organizations now have the opportunity to afford to run HPC workloads by scaling up and down as needed and paying for only what they use. The benefits of HPC are massive and it plays a huge role in today's highly technological world. However, every benefit also comes with certain drawbacks.

As many are well aware nowadays there are aggressive government goals set to decarbonize their economies and broadly cut down on negative impacts made on the environment and computing is in a special place in this.

It has been estimated by researchers that the aggregate energy load for systems counts up to

600MW, or 5.2 terawatt-hours per year, whereas the top 10 systems consume up to 100MW of that load, which leads to at least two million metric tons of CO₂ per year, this is equal to around 285,000 average households and that too is only from 500 publicly ranked systems. Thus environmental costs of powering data centers depend directly on the carbon footprint of energy production, which largely varies with the energy mix of the country where the data center is located.

However, HPC's carbon footprint is not limited to just energy mix and usage, scope three emissions such as embedded carbon from along the value chain, are also soaring for the sector. It is a challenging practice consisting of fast-moving technology, leading to the disposal of systems after their short lifespan, and the production of components for HPC systems requires a very significant amount of energy. The extraction of precious metals required for the manufacture of hardware can take a toll on the environment as well. Long-term storage management, cooling, and maintenance are no different.

So does this mean that scientists and other users should avoid using HPC systems for their work? Definitely not. It has and will continue to help make great inventions and discoveries, which include the fight against climate change. But similar to the financial cost-benefit of HPC, the environmental cost should be considered as well.

Focusing on more than just energy mix and usage, [DeepSquare](#) has been able to come up with a more sustainable system after taking into consideration the multi-functionality of the service as both an HPC provider and a heat provider. The consumption of electricity and sustainability are not synonymous. We can be large consumers of electricity but consume it in a sustainable way by considering efficient cooling technologies combined with a reflection on where to reuse heat for other societal activities (social and economic dimensions) thus making the most of our own consumption of renewable energy.

The proper cooling system should not be judged based on its additional consumption of energy, but also by its design which helps to more than just suck the energy out of the room and replace it with cool air. One very promising alternative is the system used by DeepSquare to efficiently recover and reuse heat with the help of immersion cooling. Immersion cooling is the process of submerging portions or entire systems of electronics in a liquid that is thermally conductive and not electrically conductive; this provides an environmentally friendly substitute to traditional air cooling.

DeepSquare uses single-phase immersion cooling systems. So the coolant liquid that is used in the system is 99% more conductive in comparison to air and we have managed to convert the otherwise wasted heat into a valuable resource by capturing the heat that is generated by the hardware with the help of an exchanger. And our Proof of Concept (POF) cluster located in Sion is connected to the heating system in the city's district which enables the recovered heat to be used to provide heat to homes as well as hot water.

Overall, DeepSquare is driven to do its part in contributing to the overall growth and

development of the sustainable HPC industry and is contributing to the research in this area at the moment with the support of a dedicated sustainability team. We at DeepSquare are committed to remaining at the forefront of innovation when it comes to supercomputing while also making the most sustainable option be the obvious choice for businesses.

Maja Kehic

Deepsquare

[email us here](#)

Visit us on social media:

[LinkedIn](#)

This press release can be viewed online at: <https://www.einpresswire.com/article/589567716>

EIN Presswire's priority is source transparency. We do not allow opaque clients, and our editors try to be careful about weeding out false and misleading content. As a user, if you see something we have missed, please do bring it to our attention. Your help is welcome. EIN Presswire, Everyone's Internet News Presswire™, tries to define some of the boundaries that are reasonable in today's world. Please see our Editorial Guidelines for more information.

© 1995-2022 Newsmatics Inc. All Right Reserved.