CUSTOMER STORY

BLOCKHEATING AND SESAME BY ITRENEW

Blockheating is out to redefine the role and idea of a data center. Sesame by ITRenew is making that possible, enabling the Netherlands-based startup co-location provider to do so competitively while minimizing environmental impact.

blockheating
Recycling datacenter energy
+
SESAME
BY ITRENEW

JEROEN BURKS, CEO OF BLOCKHEATING

"THERE IS THIS PERFECT OVERLAP BETWEEN ITRENEW AND BLOCKHEATING. ITRENEW GIVES SERVERS A SECOND LIFE, AND WE'RE GIVING THE ENERGY FROM THOSE SERVERS A SECOND LIFE."

CHALLENGING THE STATUS QUO

As a young boy, Jeroen Burks wondered why so much of the heat from the fireplace in his home appeared to escape right out the chimney. He was on to something. Traditional wood-burning fireplaces are surprisingly inefficient. Only about 20% of the heat they generate reaches our homes. The rest quite literally goes up in smoke.

“Couldn’t that waste heat somehow be preserved or repurposed?” he asked himself.

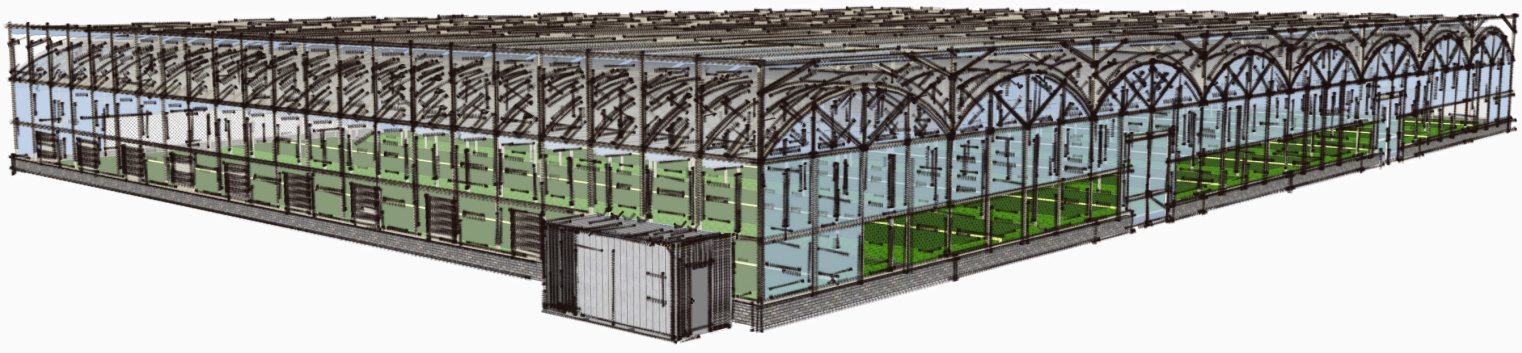
When Burks founded Blockheating in the Netherlands in 2018, he took that same notion and applied it to server infrastructure. He had seen that the data centers that power cloud platforms generate massive amounts of heat that has to be dissipated to keep the equipment cool.

That heat dissipation typically takes the form of air conditioning, which can account for as much as one-third of an operator’s energy bill. This is one reason why the IT sector as a whole is expected to account for 20% of global electricity consumption by 2025. And it contributes to the environmental and grid management concerns that are causing cities around the world to slow or even halt the construction of new data centers.

With his focus on efficient infrastructure at the edge, Burks came up with the inspired idea to create a green data center alternative—one that would repurpose the heat that’s traditionally defined as ‘waste’ and direct it toward applications where heat is desirable, such as in sustainable agriculture.

In the Netherlands, for instance, there are roughly 3,700 hectares of greenhouses that require heating year-round. A heat recycling process would enable Blockheating to minimize the ecological footprint of its data centers while providing practical benefits to industries outside of IT.

“FOR ME, SUSTAINABILITY ISN’T SIMPLY JUST RECYCLING. IT MEANS LOOKING AT THE WHOLE CHAIN—SOMETHING BIGGER THAN YOUR USUAL FRAME OF REFERENCE. SO WE’RE NOT JUST LOOKING AT HOW CAN WE RECYCLE THE HEAT. WE’RE ALSO LOOKING AT HOW WE CAN COOL SERVERS EFFICIENTLY. AND, LUCKILY FOR US, THOSE TWO ARE REALLY WELL CONNECTED.”



"WE'RE SAVING 20 TO 30% ON AIR-CONDITIONING COSTS BY GOING WITH OUR DECENTRALIZED APPROACH. CONSTRUCTION TIMES ARE ALSO SIGNIFICANTLY REDUCED. THOSE BENEFITS ALLOW US TO BE SUSTAINABLE AND ECONOMICALLY COMPETITIVE AT THE SAME TIME."

THINGS START TO HEAT UP

In 2019, Blockheating launched its first pilot program. The initial setup consisted of a containerized data center, a traditional air-conditioning system and two server racks modified with a custom water-cooling method. In what would prove to be Blockheating's primary innovation, the heat sinks on the server CPUs were modified in such a way that the warmed water could be redirected to the large greenhouses located adjacent to the data center.

This new water-cooling method had a dual benefit. First, it harnessed the superior cooling properties of water. As Burks explains, "Flowing water is more effective than air in heat dissipation. It takes a smaller volume of water to remove the same amount of heat."

Second, water cooling provided the greenhouse with a viable method of ambient heating that was more efficient and affordable than conventional natural gas.

"Traditionally, servers have been actively cooled with airflow, but warm air is extremely difficult to transport and store," says Burks. The greenhouse operator also pointed out another potential drawback to basic airflow: Simply pumping in hot air in would result in burned tomatoes on one side of the greenhouse and frozen tomatoes on the other.

"With water," he says, "we are able to use the existing pipes to distribute the heat more evenly throughout the facility."

In fact, Blockheating's cooling was so successful that the secondary air-conditioning system wasn't needed at all. After this successful proof of concept, the question was no longer about whether it was simply possible to recycle the data center's waste heat. It was about how this innovative model of the sustainable, distributed data center could be implemented at scale and within budget.

ITRENEW: AN IDEAL PARTNER

From the very start, it was important to Burks that the compute and storage hardware provider for his edge data centers shared his commitment to optimizing both environmental and financial results.

He also knew that his water-cooled solution would require adaptable technology and engineering partners who shared his vision—along with a sense of urgency. It was clear that common off-the-shelf solutions from major manufacturers wouldn't meet these needs.

"I started our journey using conventional data-center servers, just to see if they would work. As long as you don't try to change anything, that hardware is fine," he says. "But if you're breaking new ground, want to move fast and care about your impact on the planet, you need to look into open-source standards, more flexible solutions and who's leading transformation in the data-center industry."

That's what led him to ITRenew and their Sesame rack-scale solutions.

"WE CHOSE ITRENEW FOR THEIR SUSTAINABILITY CREDENTIALS, SUPERIOR TECHNOLOGY, 'OPEN COMPUTE' FLEXIBILITY, AND THE SKILL OF THEIR ENGINEERING TEAM TO DELIVER ON OUR REQUIREMENTS AT SCALE—ALL OF WHICH HAVE ENABLED US TO ACCELERATE OUR DEVELOPMENT."

High-performance, scalable architecture without premium cost

Supports flexible Open Compute Project (OCP) standards

Engineering skill to provide a targeted, tailored solution

Lower total cost of ownership (TCO) and increased ROI

Multiplier effect of end-to-end sustainability

Built on open architecture and available globally, Sesame by ITRenew uses recertified technology from the world's leading hyperscalers to build turnkey compute and storage solutions that are designed with 100% sustainability in mind. So not only does Sesame rival the cost and specs of any similar solution in the market, it delivers unique environmental and economic advantages known as circularity.

Burks was confident this technology could provide the flexibility and performance he needed at the right price point. Moreover, ITRenew had the engineering expertise and enthusiasm to work with him to incorporate Blockheating's custom heat-transfer design quickly and make the hardware easy to deploy in the company's new distributed data centers.

Equipped with the high-performance, cost-effective Sesame hardware to power its cloud-hosting platforms, Blockheating could get to market quickly with a robust platform for future growth. Through its fruitful partnership with ITRenew, Blockheating is now able to fully populate its data centers exactly as intended. Sesame's high-density design helps the company pack 50% more compute and storage power into a standard footprint, power and cool it more efficiently, and repurpose the derivative heat toward practical applications beyond IT.

In turn, both Blockheating's cloud customers and growers reap the multiplied financial and ecological benefits of ITRenew's circular solutions.

"Sesame by ITRenew helped us overcome some technical challenges in the development of this platform a lot faster and easier. Our partnership with ITRenew has meant accelerating deployment so we can focus on scaling across Europe and ultimately around the world," says Burks.

ITRenew and Burks' shared core philosophy and business proposition:

"WASTE IS ONLY WASTE IF YOU ALLOW IT TO BE."

RESULTS

As Blockheating expands its edge network of low-latency data centers across Europe, and looks beyond agricultural applications, Sesame by ITRenew is proving key not only to the company's current plans but also its vision for the future.

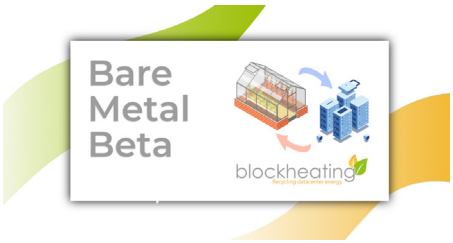
Along with its ability to scale quickly and efficiently, Blockheating is already seeing material benefits. The residual heat that the company sells to its commercial growers costs much less than natural gas and is available reliably year-round. Less gas consumed means less CO2 produced. That comes on top of the potential 25% CO2 and eWaste deferred as a result of ITRenew's established hardware reuse pathways.

Furthermore, Blockheating's novel decentralized approach has the potential to work wherever heat recapture and consistent temperature management go hand in hand. Looking ahead, that could help data center developers overcome legislative obstacles like construction moratoria through smarter, more sustainable commercial building designs.

About ITRenew

ITRenew, the Circular Cloud leader, refuses to settle for a world that pits economic success against social good. ITRenew creates second lives and reuse pathways for the most advanced technology on the planet, bringing circular economic benefits to the data center and IT hardware industry. This approach to unprecedented data, application workload and infrastructure demands opens up billions in new financial opportunity, slashes e-waste and CO2 impact, and makes hyperscale hardware accessible to and affordable for all. Our products and services power cloud and enterprise data centers, edge infrastructure, AI/ML, embedded and industrial systems, which is why the world's leading data center owners, service providers and enterprises choose ITRenew to revolutionize how their infrastructure is managed and deployed. ITRenew is headquartered in California with locations worldwide. To learn more, visit **itrenew.com** and follow ITRenew on LinkedIn and Twitter @ITRenewinc.

For more information please visit **itrenew.com/sesame**, call +1 (866) 744-9860 or e-mail us at sesame@itrenew.com.



For more information on Blockheating or to participate in their Bare Metal Beta, go to blockheating.com.