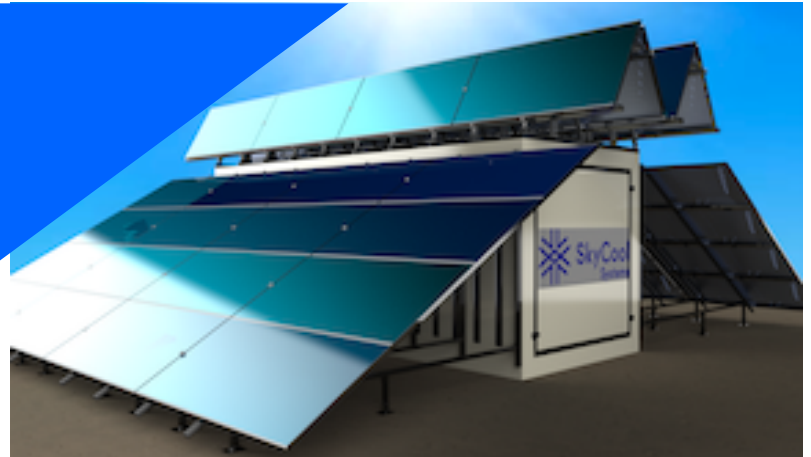


# A Highly Effective Passive Cooling Solution for Modular Data Centers and Server Rooms



## Data Center Status Quo

Today, data center power consumption accounts for roughly 3% of all electricity generated on the planet. Given the increase of connected devices and distributed computers, the need for data center cooling along with the demand for data center capacity is increasing at an extraordinary rate.

The emergence of IoT and the need for edge computing to reduce latency is driving increased interest in prefabricated and micro data center solutions. Containerized or modular data center systems are being adopted by companies of all sizes to meet compute demands today and in the future. Distributed computing in the form of modular data centers will be critical to the widespread use of technologies like 5G and autonomous vehicles.

## Inherent Challenges of Data Center Cooling

Currently, modular data centers are cooled with conventional vapor compression-based cooling systems. These operate with high electricity consumption and, although reliable, generate a significant carbon footprint. Only in the last several years have data center designers begun to consider energy usage and overall impact on the environment in facility operation. As compute demand increases and more modular and micro data centers are deployed, new cooling solutions for running data centers sustainably will be an imperative.

## SkyCool's Cooling Solution

SkyCool Systems has designed a high efficiency cooling system for modular data centers and server rooms. SkyCool's innovation reduces energy and water use in data center cooling systems.

SkyCool has developed panels that reject heat to the sky, and are capable of cooling data centers with zero water consumption while only using the electricity required to run a pump. The cooling of our panels is enabled by our patented multilayer optical film. The film reflects sunlight to prevent the panels from heating up during the day and also emits infrared heat to the sky, which cools the panels 24/7/365.

### Benefits

50-70% reduction in electricity use

Zero water use

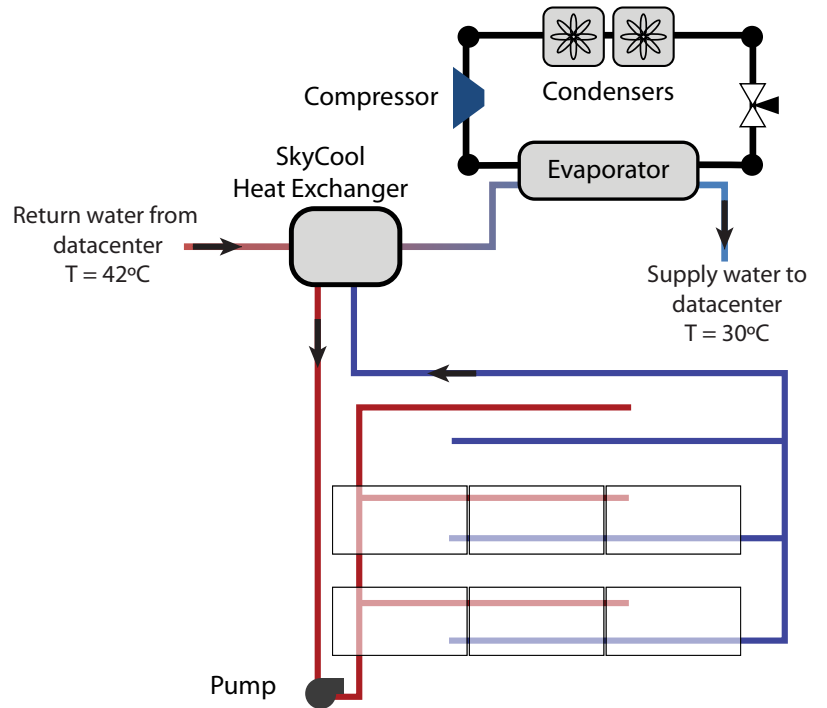
Low maintenance

Improved reliability

**SkyCool's panels directly reject heat from server racks, allowing data centers and server rooms to be cooled without compressors or fans.**

**The result? Electricity savings and increased reliability!**

Data center capacity: 20MWth  
 PUE Baseline: 1.5  
 Building Area: 20,000 m<sup>2</sup>  
 Cost of Electricity: \$0.10 / kWh  
 Chiller operating 95% of the year (8,322 hours/year)  
 Data Center Return Temperature: 42°C  
 Data Center Supply Temperature: 35°C  
**Panel Savings: 1036 kWh / m<sup>2</sup> / year**

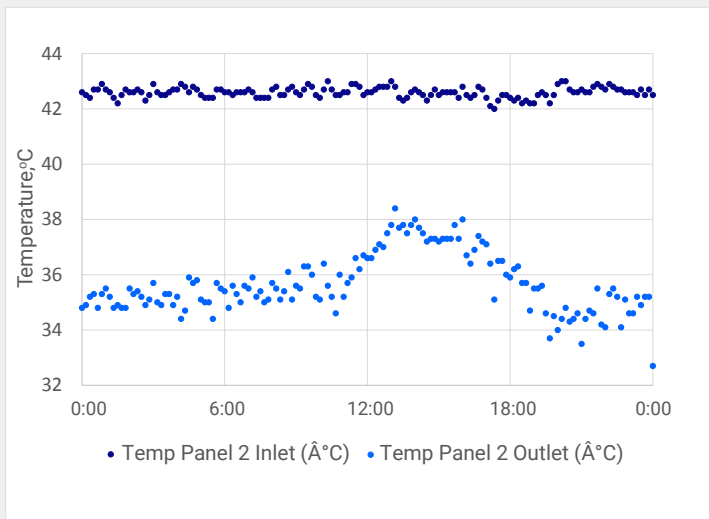


The configuration above serves as an example of how SkyCool panels can provide savings to a data center. SkyCool’s solution is easily scalable, reliable and highly efficient.

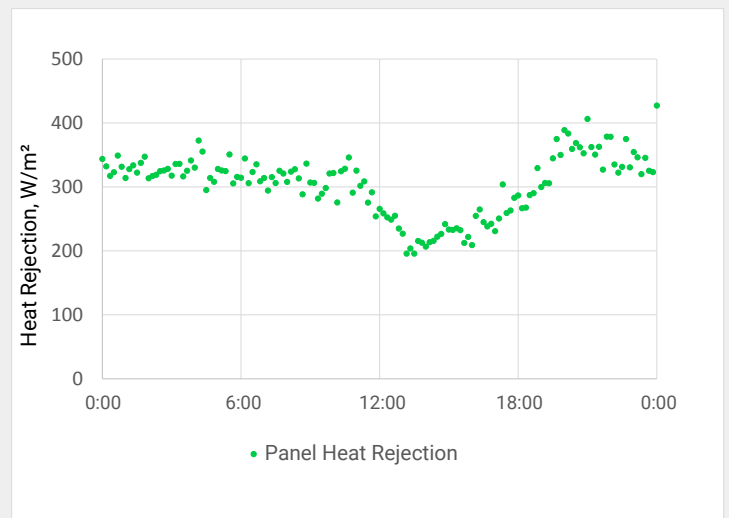
Panels can be used to directly reject heat from liquid cooled servers or as an add-on to existing chiller systems.

## Results

Panel Temperature



Panel Heat Rejection



**SkyCool is driving efficiency and cost savings through innovative data center cooling.**