

# SYCOOL

ITC - Indirect Thermosyphon Cooling

# What?



SyCool® ITC (patent pending) offers data center owners and operators an energy efficient indirect cooling solution without the need for water.

✓ No Water Consumption

✓ Passive thermosyphon heat exchangers

✓ 250kW/500kW units

✓ Fully Serviceable from rear access

✓ Best-in-Class Dry Cooling

✓ Suitable for Containerized Shipping

✓ No Refrigerant Pump

✓ Sustainable Cooling

✓ Global Availability

✓ Extensive Passive Mode

## Significant energy savings compared to the best pumped refrigerant systems

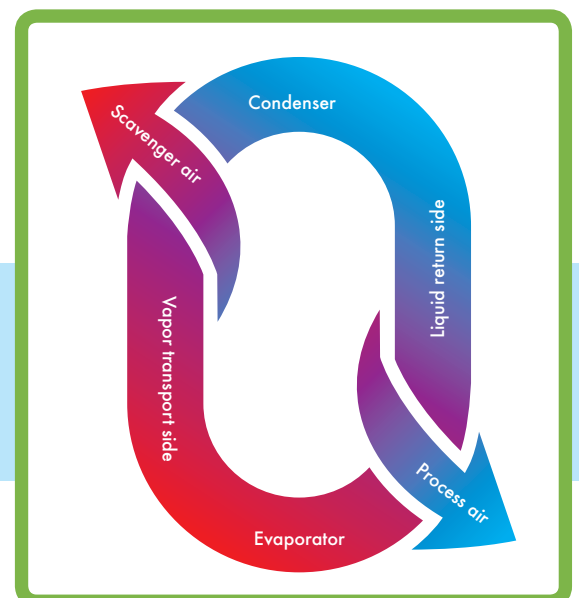
### Top of loop:

Cool scavenger ambient air condenses refrigerant that is returned to the evaporator by gravity.

### Bottom of loop:

Warm data center air evaporates refrigerant that rises back up to the condenser. Circular flow of refrigerant naturally moves heat from bottom to top whenever scavenger air is cooler than process air.

**Passive Mode:** No moving parts associated with the heat rejection. \* Extended passive mode range resulting from efficient thermosyphon.



# Munters New Cooling Technology for Data Centers

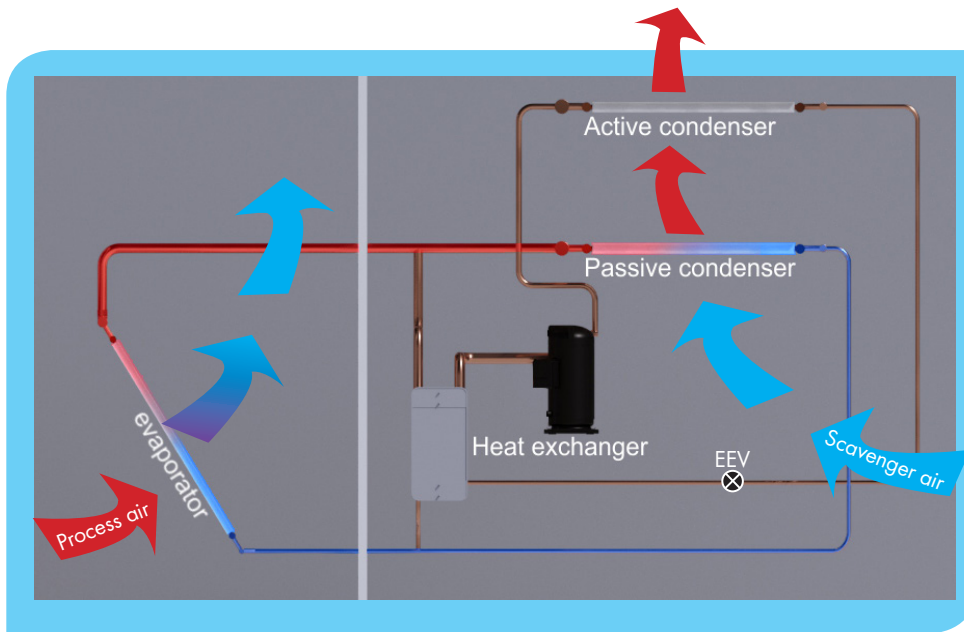


## Thermosyphon Cooling

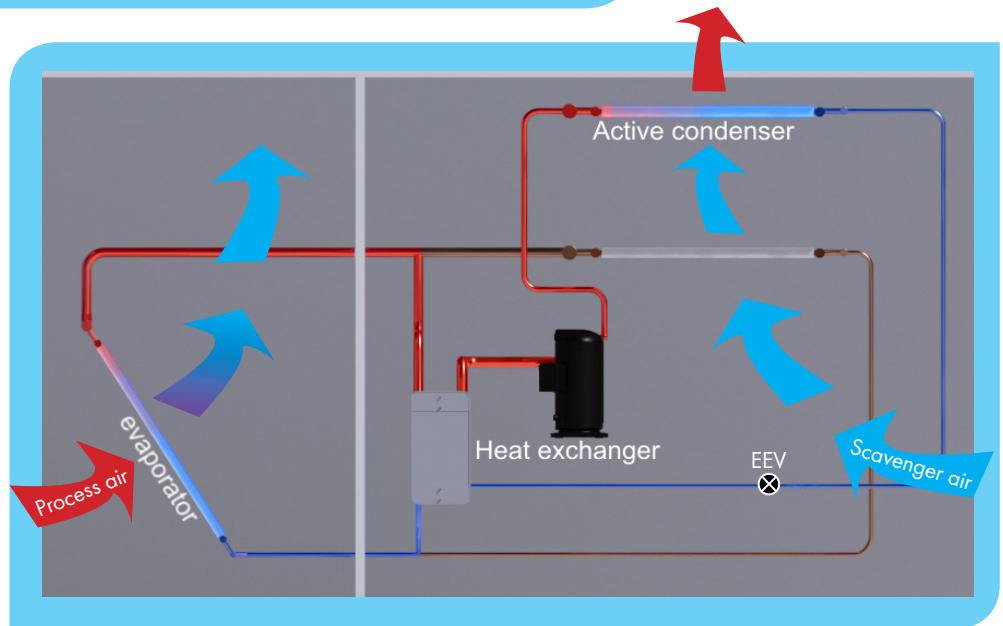
SyCool ITC rejects the heat from the data center using thermosyphon technology, which works by a combination of gravity and a syphon effect. The passive thermosyphon heat rejection cycle works without pumps and provides excellent economizing efficiency.

SyCool ITC uses an indirect economizer cycle that reduces the potential risk of contamination from air pollutants, as there is no outside air introduced for cooling.

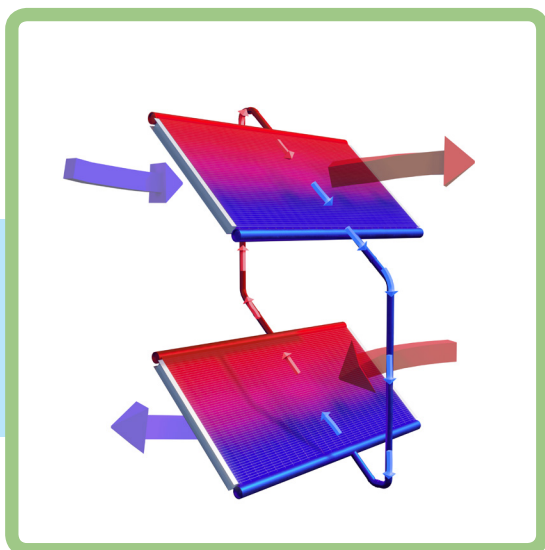
# Modes of Operation



Passive Mode



Active Mode



Future versions of SyCool will include in-room "Split Systems", such as above-aisle modules and perimeter CRAH units, providing scalable cooling for new build and retrofit applications.

"Adding the SyCool ITC cooling solution to Munters' portfolio, enables us to offer the industry a dry, indirect system that remains true to the Munters ethos of sustainability." says Neil Yule President Business Area Data Centers.



# SyCool ITC - P250 Packaged Product



250kW or 500kW units

**BEST-IN-CLASS**  
DRY cooling solution

**NO Refrigerant Pump**

**Indirect Air-Side  
Economizer cycle**

**Compact with  
Excellent Serviceability**

## SyCool® P250

With a capacity of 250kW, the P250 packaged system will be the first to market, offering a best-in-class dry cooling solution and boasting features such as high efficiency; oil-free & low pressure thermosyphon circuits; passive thermosyphon evaporator and condenser heat exchangers; zero water consumption and significant energy savings compared to the best pumped refrigerant systems currently available on the market.

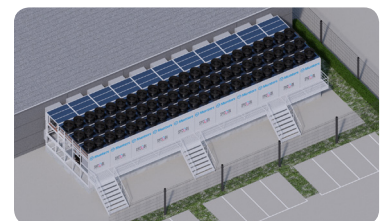
## ENERGY PERFORMANCE

City	Region	Passive [hours]		Active [hours]	Annual use 200k [kWh]	pPUE	DC Size 1MW
London	EMEA	7801	89%	959	171,657	1.098	858,285
Stockholm	EMEA	8439	96%	321	134,811	1.077	674,055
Frankfurt	EMEA	7166	82%	1594	196,643	1.112	983,215
Amsterdam	EMEA	7843	90%	917	173,261	1.099	866,305
Marrakesh	EMEA	3722	42%	5038	400,947	1.229	2,004,735
Reykjavik	EMEA	8759	100%	1	122,772	1.07	613,860
Copenhagen	EMEA	7958	91%	802	162,282	1.093	811,410
Lulea	EMEA	8352	95%	408	140,369	1.08	701,845
Dublin	EMEA	8419	96%	341	148,681	1.085	743,405
Tokyo	APAC	5687	65%	3073	367,359	1.168	1,836,795
Melbourne	APAC	6858	78%	1902	324,305	1.148	1,621,525
Beijing	APAC	5194	59%	3566	304,329	1.173	1,521,645
Newark	USA	5663	65%	3097	275,884	1.157	1,379,420
Dulles	USA	5581	64%	3179	275,843	1.157	1,379,215
Dallas	USA	3798	43%	4962	405,575	1.231	2,027,875
Chicago	USA	6150	70%	2610	250,126	1.143	1,250,630
San Jose	USA	6630	76%	2130	235,009	1.134	1,175,045
Wenatchee	USA	6405	73%	2355	244,353	1.139	1,221,765

\*Based on a P250 unit @ 80% utilization / 200kW Cooling power / 50,000 Sm<sup>3</sup>/h or 29,400Scfm / ESP 100Pa  
Return temperature = 36C - 97F / Supply temperature = 24C - 75F



The packaged AHU version of SyCool has been designed such that the units may be installed side-by-side with no space between, with all service access from the ends. Positioning an uninterrupted bank of packaged SyCool units along the perimeter of a data hall will provide class-leading levels of cooling output per linear foot of outside wall.



# SyCool® ITC

Indirect Thermosyphon Cooling



[www.munters.com/sycool](http://www.munters.com/sycool)



#SyCool

