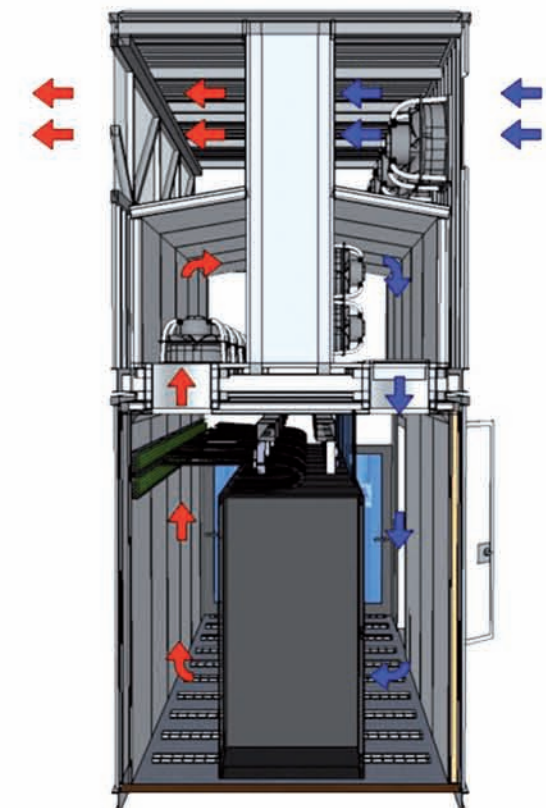


NATURAL FREE COOLING

PUE 1.07

FreeCooling@ 24°C (75°F)

Global Patent
P201030475



- SECURE
- MODULAR
- ENERGY EFFICIENT



Natural FreeCooling



DESCRIPTION



Data Center

- 100% FreeCooling at 24°C (75°F) and below.
- No cross contamination.
- Efficient hot/cold aisles distribution.
- Humidity control.
- Evaporative cooling.
- 100% Sensible cooling transfer.
- No moving parts.
- No single points of failure.
- Lower maintenance.
- Vertical and horizontal installation and standard Data Center environment.
- Efficient control System.
- Passive air to air exchanger in Data Center environment.



PUE-ROI



Data Center

EXAMPLE _____ 250 kW Data Center

CAPEX:

- Cost of natural Free Cooling technology: 435.864 \$
- Cost of conventional Cooling: 246.317 \$
- CAPEX Difference _____ 189,464 \$**

OPEX

- According to previous slide savings __ average of 107.412 \$/ year (at 50 kW)+ 12.640 \$ lower maintenance.

ROI _____ 1,57 Years



PUE-ROI

North America

	T <= 68 °F			68°F <= T <= 75°F			T >= 75 °F			TOTAL PUE
	Hours a Year	EER	PUE	Hours a Year	EER	PUE	Hours a Year	EER	PUE	
Reykjavik	99,54%	17,0	1,069	0,46%	15,9	1,074	0,00%	-	0	1,0690
Montreal	95,22%	17,0	1,069	3,69%	15,9	1,074	1,09%	2,95	1,413	1,0729
Seattle	93,76%	17,0	1,069	4,56%	15,9	1,074	1,68%	2,95	1,413	1,0750
Boston	92,87%	17,0	1,069	4,97%	15,9	1,074	2,16%	2,95	1,413	1,0767
San Francisco	88,87%	17,0	1,069	8,37%	15,9	1,074	2,76%	2,95	1,413	1,0789
Baltimore	82,34%	17,0	1,069	13,27%	15,9	1,074	4,39%	2,95	1,413	1,0848
Denver	80,47%	17,0	1,069	6,97%	15,9	1,074	12,56%	2,79	1,433	1,1150
Dallas	61,68%	17,0	1,069	19,67%	15,9	1,074	18,65%	2,79	1,433	1,1378

Europe

	T <= 19°C			20°C <= T <= 24°C			T >= 25°C			TOTAL PUE
	Hours a Year	EER	PUE	Hours a Year	EER	PUE	Hours a Year	EER	PUE	
Reykjavik	99,54%	17,0	1,069	0,46%	15,9	1,074	0,00%	-	0	1,0690
Copenhagen	97,09%	17,0	1,069	2,59%	15,9	1,074	0,32%	2,95	1,413	1,0702
Oslo	95,34%	17,0	1,069	3,84%	15,9	1,074	0,82%	2,95	1,413	1,0720
Stockholm	94,06%	17,0	1,069	4,89%	15,9	1,074	1,05%	2,95	1,413	1,0729
Amsterdam	93,71%	17,0	1,069	4,85%	15,9	1,074	1,44%	2,95	1,413	1,0742
London	93,39%	17,0	1,069	5,49%	15,9	1,074	1,12%	2,95	1,413	1,0731
Moscow	90,51%	17,0	1,069	6,62%	15,9	1,074	2,87%	2,79	1,433	1,0798
Paris	90,48%	17,0	1,069	7,42%	15,9	1,074	2,10%	2,79	1,433	1,0770
Geneva	86,27%	17,0	1,069	9,77%	15,9	1,074	3,96%	2,79	1,433	1,0839
Zurich	85,38%	17,0	1,069	10,23%	15,9	1,074	4,39%	2,79	1,433	1,0855
Madrid	78,20%	17,0	1,069	10,61%	15,9	1,074	11,20%	2,62	1,456	1,1129
Milan	74,36%	17,0	1,069	16,11%	15,9	1,074	9,53%	2,62	1,456	1,1067
Casablanca	63,89%	17,0	1,069	23,69%	15,9	1,074	12,42%	2,33	1,504	1,1242

CONFIGURATIONS

Container Mid Density (20', 40' and 53') @10 kW/rack



Container High Density (20', 40' and 53') up to 30kW rack

Traditional Data Center from 1 to 20 kW/rack

