AdaptivCool Demand Based Cooling System for Data Centers

AdaptivCOOL™ Division of Degree Controls Inc.

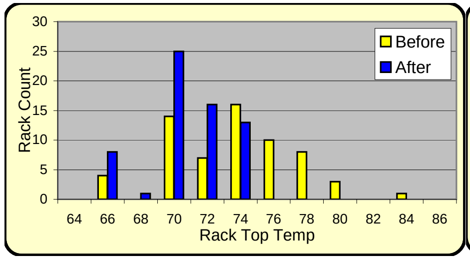
Case Study Summary

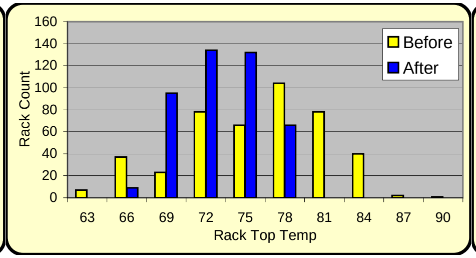
This Study shows the measured thermal and energy changes in a data center before and after installation of AdaptivCOOL Demand Based Cooling System. A better thermal management was achieved with less CRACs using active airflow distribution.

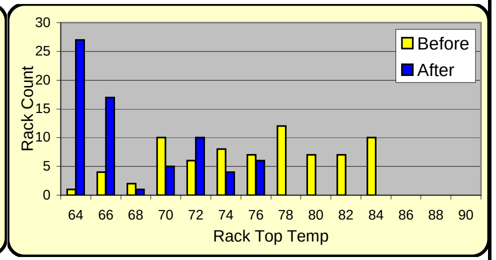
Site	**NH - Manufacturing**			**MA - Colocation**			**CT - Brokerage**		
Size sq ft	2000			18000			4000		
IT KW (Note 1)	87			895			226		
	Before	After	Improvement	Before	After	Improvement	Before	After	Improvement
Avg CRAC Return Setpoint ºF	71	74	3	69	71	2	72	72	Per Customer request
CRAC Return Range ºF (Note 2)	2	1	1	4	3	1	9	2	7
Avg Rack Top Intake Temp ºF	73.6	70.6	3.0	75.4	73	2.4	75.8	66.8	9.0
Temperature Range (TMax - TMin)	17	8	53%	28	12	57%	22.0	13.0	41%
Max Rack Top Intake Temp ºF	83	74	9	92	78	14	84	75	9
Operating CRAC Tonnage	60 (2 x 30T)	60	0	390 (13 x 30T)	330 (11 x 30T)	60	80 (4 x 20T)	80	N/A
Cooling Energy Reduction (Note 3)	18%			22%			24%		

Distribution of Rack Top Intake Temperatures

Before and After Demand Based Cooling System Installed







Site	**MA - IT Services**			**MA - Manufacturing**			**NY - Banking**		
Size sq ft	4000			2400			2600		
IT KW	83			105			29		
	Before	After	Improvement	Before	After	Improvement	Before	After	Improvement
Avg CRAC Return Setpoint ºF	72	72	0	72	72	0	72	72	0
CRAC Return Range ºF (Max - Min)	4	2	2	7	3	4	5	2	3
Avg Rack Top Intake Temp ºF	68.4	73.7	-5.3	76.2	74.1	2.1	73.4	72.5	0.9
Temperature Range (TMax - TMin)	17.0	8.0	53%	18.0	8.0	56%	18.0	10.0	44%
Max Rack Top Intake Temp ºF	77	78	-1	84	78	6	84	78	6
Operating CRAC Tonnage	150 (5 x 30T)	60 (2 x 30T)	90	60 (3 x 20T)	60	N/A	85 (4x20T + 5T)	40 (2x20T)	45
Cooling Energy Reduction	31%			22%			35%		

Note 1: Measured at UPS output

Note 2: Return temp of CRAC with Max temp - one with min temp

Note 3: Energy savings from Cooling loop