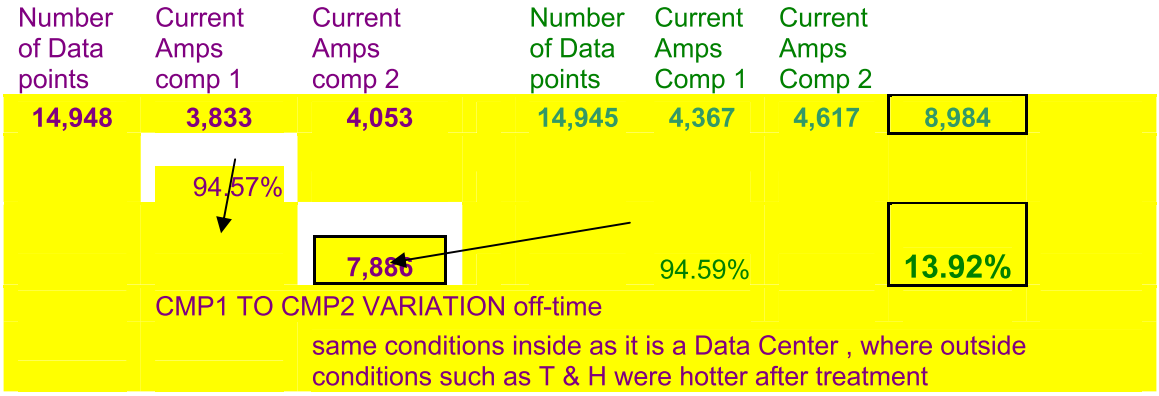
IceCOLD®

CASE STUDY

IceCOLD®

Over the past 10 years we have done hundreds of pilots and studies. Below I have listed studies that were all done on Liebert CRAC units. The first study was done at a Data Center in NYC. We tracked the unit of a UPS (uninterrupted power supply) room. The distinctive nature of a UPS room is its constant heat load. It is as close to a lab environment as you can get. It is actually better because it is real world equipment. We data logged the compressors and found them to be running 14% less after treatment.

New York Data Center - 2009



Reduce Run Time 14%

The absolute best way to confirm your results is to be able to repeat them.

This led to more pilots at another data center in LA, California.

IceCOLD®

LAX 10 Data Center - 2010

Where we treated 16 CRAC units at 4 separate suites. The results were a reaffirmation of the results obtained in NYC.

Due to the controlled environment nature, the only true variable that has to be accounted for at a data center is the ambient temperature. Below we have listed the ambient temperature taken from official LAX airport records.

Los Angeles Data Center
LAX 10

Suite	Crac Units	Meter#	AUGUST KW 29 days	September KW 32 days	Percent reduction in usage
330	1-8	18	596.56	549.1997	16.57%
400	13,14,15,42	60,64	57.47	49.51	21.93%
440	3	69	18.07	17.38	12.83%
460	8,9,10	68	23.84	21.45	18.48%
				Weighted AVERAGE =	18.04%

AMBIENT TEMPERATURE
August-September 2010

http://www.wunderground.com/history/
ZIP CODE 90017

Temperature	CDD	avg temp
Aug-10	255	72
Sep-10	277	74

Aug-10	Max	Avg	Min.
Max Temperature	97 °F	82 °F	66 °F
Mean Temperature	**82 °F**	**72 °F**	**65 °F**
Min Temperature	72 °F	64 °F	60 °F
Sep-10			
Max Temperature	111 °F	84 °F	72 °F
Mean Temperature	**94 °F**	**74 °F**	**66 °F**

Min Temperature	78 °F	64 °F	57 °F

Reduced Kwh by 18%

LAX10 Data Center UPS room - 2010

Since one of the suites at the LA data center was a UPS room we decided to log the return and supply air temperatures as well to monitor the total increase in efficiency.
The reduction in KW used was **only 13%** but the overall efficiency gain was almost 27% because of the almost 2 degree increase in temperature differential (return air – supply air).

Suite 440	UPS Room	Reading	Prior Month	Usage Kwh		Usage Mwh	KW	# of Days		Percent usage reduction
July	7/29/2010	186559.82	169239.92	17319.9		17.32	24.0554	30	0.58	
August	**8/27/2010**	**204629.4**	**186559.82**	**18069.58**		**18.07**	**25.0966**	**29**	**0.62**	**13%**
September	**9/28/2010**	**222009.92**	**204629.4**	**17380.52**		**17.38**	**24.972**	**32**	**0.54**	

Temperature data loggers placed on supply and return air		**Temp diff after**	**10.04**		**Diff/Mwh**	**0.58**	**D14/k11**			**Increase in Efficiency**
					D14/G11		**18.48**			**27.50%**
							D17/k10			**(I15-I17)/I15**
		Temp diff B4	**8.35**		**Diff / Mwh**	**0.46**	**13.40**			
					D17/G10					**Ambient temp adjustment** **+10%**

Switch & Data Data Center - 2010

At the same time we did the pilot in the LA data center we were also doing a pilot on 3 Liebert Crac units with Switch and Data in their data center in Jersey City, NJ.
They had an **independent 3rd party**, Source One of Boston, Ma. Collect the Kwh data. The results were as follows:

Expr3							KWH
July 25- July 31	4.35	17.39	CH58		Aug 29- Sept 4	3.79	15.16
AVG CDD = 15					AVG CDD = 17		
	2.05	8.20	CH57			1.71	6.84
	2.42	9.66				2.13	8.53
			KWH	KW15			
		CH58	12.82%				
		CH57	16.59%				
	Comparison KWH & KW15		15%	15%	More Efficient!!!		
					2 CDDs Hotter After!!!		
		TOTAL	20%+	20%+	More Efficient!!!		

The reduction in Kwh used was 13% and 16.5%, respectively. The ambient temperature was 2 CDD (cold degree days) hotter after treatment! Therefore the overall gain in efficiency is increased.

What we have is a clear and conclusive affirmation of an increase in efficiency.

SUMMARY

You might try to say that the first time was a fluke but when we have been able to repeat the pilots and come up with consistently very similar results, time after time, the conclusion one must draw is that treating a cooling system with IceCOLD® increases the efficiency of an AC system. How much? In excess of 15% more often over 18%!

We have been treating equipment since 2001. We have tested IceCOLD® with Intertek and Idemitsu both confirming IceCOLD's compatibility. The data center environment has confirmed IceCOLD®'s ability to work within Data center world.

In addition you will be reducing your GHG emissions annually.