



University of Michigan 2008 Results with eH₂O Non-Chemical Water Treatment



Air Conditioning - Chemistry Building

- ◆ Improvement in Energy Efficiency.
 - ◆ Condenser running full season with clean condenser tubes.
 - ◆ System operates without any thermal impedance deposits for entire season.
- ◆ Values of 0 bacteria and 1000 Colony Forming Units after 4 years of microbiological monitoring by University of Michigan.
- ◆ 53% water conservation improvement compared to chemical treatment.
 - ◆ Conventional 3 cycles increased to 4.43 cycles.
- ◆ Condenser tube brushing entirely eliminated.
 - ◆ Completely clean condenser tubes without routine brushing 2007 & 2008 respectively.
 - ◆ Results eliminate labor and equipment expenses.
- ◆ No biofilm present in condenser tubes.
- ◆ Greatly reduced algae presence on tower fans compared to prior chemical treatment.
- ◆ Excellent DeltaT and approach temperatures.
- ◆ Hot water dispersion deck chip deposits minimized.
- ◆ No shield covers on top hot water dispersion deck at Lorch Hall for 3 years with very clean results.



Photos • Left Hand View: 10-27-2005, algae before eH₂O treatment and gone after treatment. Above: 11-7-2008, close up showing clean tubes without any brushing. The normal deposits from the tower on the tube sheet wipe off, showing nothing was touched on condenser. Above Right: Closing condenser right after inspection.

Graphs Below: Microbiological test results on all 4 eH₂O water treatment systems at ISR, Lorch Hall, Chemistry, and Hatcher Library. Testing for the season is 0 bacteria and 1,000 Colony Forming Units which is extremely remarkable.

ISR	6/4/08	1000
ISR	6/11/08	0
ISR	6/18/08	1000
ISR	6/23/08	0
ISR	7/9/08	0
ISR	7/16/08	1000
ISR	7/22/08	1000
ISR	7/28/08	0
ISR	8/5/08	0
ISR	8/15/08	1000
ISR	8/18/08	0
ISR	8/27/08	1000
ISR	9/5/08	0
ISR	9/8/08	outdoor air
ISR	9/15/08	outdoor air
ISR	9/22/08	0
ISR	10/6/08	outdoor air
ISR	10/14/08	outdoor air
ISR	10/20/08	outdoor air

Lorch Hall	6/4/08	1,000
Lorch Hall	6/13/08	1,000
Lorch Hall	6/17/08	0
Lorch Hall	6/26/08	down
Lorch Hall	7/9/08	1000
Lorch Hall	7/17/08	0
Lorch Hall	7/21/08	1000
Lorch Hall	7/28/08	0
Lorch Hall	8/4/08	0
Lorch Hall	8/14/08	0
Lorch Hall	8/18/08	1000
Lorch Hall	8/27/08	0
Lorch Hall	9/5/08	0
Lorch Hall	9/8/08	outdoor air
Lorch Hall	9/15/08	outdoor air
Lorch Hall	9/22/08	0
Lorch Hall	10/6/08	outdoor air
Lorch Hall	10/14/08	outdoor air
Lorch Hall	10/21/08	outdoor air

Chemistry	6/2/08	1000
Chemistry	6/12/08	0
Chemistry	6/16/08	0
Chemistry	6/16/08	0
Chemistry	7/7/08	1000
Chemistry	7/18/08	0
Chemistry	7/21/08	1000
Chemistry	7/28/08	0
Chemistry	8/5/08	1000
Chemistry	8/14/08	1000
Chemistry	8/18/08	1000
Chemistry	8/27/08	0
Chemistry	9/5/08	1000
Chemistry	9/8/08	0
Chemistry	9/15/08	outdoor air
Chemistry	9/22/08	1000
Chemistry	10/6/08	outdoor air
Chemistry	10/14/08	outdoor air
Chemistry	10/20/08	outdoor air

Hatcher Library	6/3/08	0
Hatcher Library	6/13/08	1000
Hatcher Library	6/17/08	1000
Hatcher Library	6/27/08	0
Hatcher Library	7/9/08	1000
Hatcher Library	7/17/08	0
Hatcher Library	7/21/08	1000
Hatcher Library	7/28/08	0
Hatcher Library	8/5/08	1000
Hatcher Library	8/14/08	0
Hatcher Library	8/18/08	0
Hatcher Library	8/27/08	1000
Hatcher Library	9/5/08	0
Hatcher Library	9/8/08	0
Hatcher Library	9/15/08	0
Hatcher Library	9/22/08	0
Hatcher Library	10/6/08	0
Hatcher Library	10/14/08	1000
Hatcher Library	10/21/08	0