

Clean Air Solution Report



Air Impurities
Removal Systems

Application: Oil Mist from Machining Operations

Location: Kohler Company
Kohler, Wisconsin



World renowned Kohler Company, headquartered in Kohler, WI, has been in business for over 130 years, and is a leader in plumbing products, engines and generators, furniture and accessories, and cabinetry and tile.

Over a several month period, Kohler held a Kaizen Event.....a focused, intense, short term project to improve the capture and removal of airborne pollutants created by their machining processes.

Testing was done in and around a Brown & Sharpe machine, initially without an air cleaner attached. Testing was then repeated in each location, with five different air cleaning systems.

Results of the readings taken by the Kohler team follow.

Summarily, each air cleaner underwent several tests. The Extract-All Model E-1400, manufactured by Air Impurities Removal (A.I.R.) Systems, Inc., provided the best results in almost 100% of the test readings.

Subsequently, Kohler Company replaced numerous existing air cleaners in their machining areas with A.I.R. Systems, Inc.'s Extract-All E-1400 systems. In addition, E-1400's are specified when new machine tools are installed at Kohler Company. As a result, Kohler is experiencing cleaner and healthier work environments in their manufacturing facilities.

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**KOHLER COMPANY
KAIZEN EVENT
Result's regarding A.I.R. Systems, Inc.'s Extract-All E-1400
Summary of Test
Browne & Sharpe 41**

Competitor 1	Competitor 2	E-1400	Competitor 3	Competitor 4
0.15	0.04	0.015	0.042	0.045
0.135	0.06	0.017	0.042	0.082

Test Area – Exhausted end of Air Cleaner RESULTS (AVERAGE CONCENTRATIONS IN MG/M3)

**Monitor Readings for Browne & Sharpe #41
Machine Running**

Average Readings					
Mist Control Unit	Test Area #1	Test Area #2	Test Area #3	Test Area #4	Average overall (Does not include #1)
Competitor 1	0.27	1.39	1.86	1.21	1.49
No Unit	0.94	3.18	3.49	3.69	3.45
Competitor 2	0.67	1.02	2.01	0.85	1.29
E-1400	0.13	0.47	0.72	0.43	0.54
Competitor 3	0.49	0.67	1.03	1.03	0.91
Competitor 4	0.03	0.92	1.14	0.96	1.01

Highest Readings

Mist Control Unit	Test Area #1	Test Area #2	Test Area #3	Test Area #4	Average overall (Does not include #1)
Competitor 1	0.41	2.61	3.5	2.22	2.78
No Unit	1.75	5.05	5.3	6.32	5.56
Competitor 2	1.02	1.4	3.7	1.17	2.09
E-1400	0.19	0.67	1.01	0.64	0.77
Competitor 3	0.59	0.91	1.35	1.49	1.25
Competitor 4	0.55	1.55	1.62	1.54	1.57

Lowest Readings

Mist Control Unit	Test Area #1	Test Area #2	Test Area #3	Test Area #4	Average overall (Does not include #1)
Competitor 1	0.21	0.34	0.39	0.35	0.36
No Unit	0.44	1.68	2.03	2.09	1.93
Competitor 2	0.3	0.4	0.65	0.45	0.50
E-1400	0.06	0.28	0.56	0.16	0.33
Competitor 3	0.33	0.38	0.77	0.57	0.57
Competitor 4	0.07	0.42	0.6	0.47	0.57

Range of Readings

Mist Control Unit	Test Area #1	Test Area #2	Test Area #3	Test Area #4	
Competitor 1	0.2	2.77	3.11	1.87	
No Unit	1.31	3.37	3.27	4.23	
Competitor 2	0.72	1	3.05	0.72	
E-1400	0.13	0.39	0.45	0.48	
Competitor 3	0.26	0.53	0.58	0.92	
Competitor 4	0.48	1.13	1.02	1.07	

Real Time Monitor Testing Locations:

RESULTS (AVERAGE CONCENTRATIONS IN MG/M3)

- Test Area #1 – Outside Above Door
- Test Area #2 – Above Bar Feeder
- Test Area #3 – Above Spindle Gear Chart
- Test Area #4 – Above Chip Chart