CASE STUDY
DUST AND LINT CONTROL

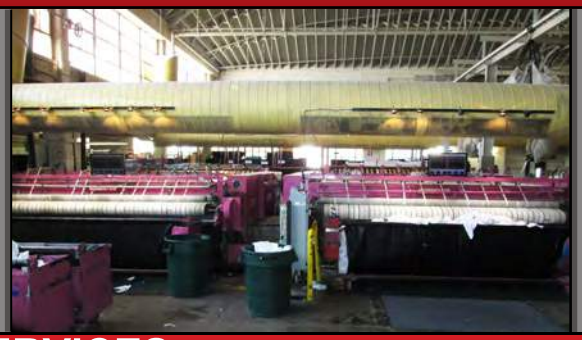
AIR DYNAMICS
Industrial Systems Corporation™

180 Roosevelt Avenue York, Pa. 17401 USA PHONE: 717-654-4050
E-MAIL: sales@airdynamics.net FAX: 717-654-4020

Case Study Overview:

Milum Textile Services approached Air Dynamics Industrial Services for a specialized central and portable vacuum system.

The system was built to accommodate the specific needs regarding Milum's lint and dust cleaning issue. Due to Air Dynamics careful design and engineering, all specific needs of Milum were met.

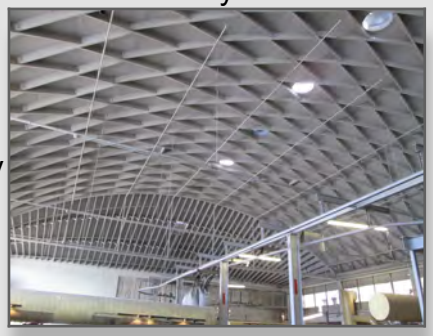


MILUM TEXTILE SERVICES

The Application-

Milum Textile Services is located in Phoenix, Arizona. The company's main focus is on the commercial linen and laundry service throughout most of Arizona, including many significant health care providers. Milum ensures a clean process that removes dangerous bio-hazards commonly produced in medical environments such as hospitals, surgery centers, hospices, and many other types of organizations. Specifically, Milum was concerned about recent health incidents involving hospital linens.

The president of the company, Mr. Craig Milum heard about the Children's Hospital in New Orleans, LA, suffering five independent child patient deaths to an initially unknown infection.[1] The cause was determined five years later to be airborne soil soil particles and lint contaminated by a potentially infectious mold. Due to cleaning procedures employing widespread use of compressed air at this facility the hospital's “clean” processed linens were contaminated. Since Milum deals with a large amount of hospital and health care linens they wanted to be proactive in preventing catastrophes like this in the future by improving their cleaning methods.



Milum Facility - Ceiling

The Challenge-

Air Dynamics Industrial Systems Corporation was approached by the president of Milum Textile Services, Mr. Craig Milum, with a need for a more efficient and adaptable vacuuming system. Due to the high volume of linens cleaned daily in the plant a significant quantity of lint accumulates. Milum regularly cleaned with compressed air to "herd" dust, followed by a manual sweep to remove the settled particulates. However, the use of compressed air even on a managed and controlled basis launched some dust and lint into the air introducing the potential hazard of re-contaminating clean, processed re-usable linens. Also, in the course of a day besides housekeeping activities, the processing of linens, airborne lint was generated some of which accumulated on overhead surfaces until removed by routine, conventional cleaning. Besides the potential threat to clean linens, the laundry and housekeeping practices increased the risk of fire.[2]

Milum Textile Service - Back of Dryer Units

Milum sought out a viable solution to their health and safety risks. After researching and contacting industrial vacuum companies, Milum chose Air Dynamics due to their extensive knowledge of the field. Craig Milum commented that, *"Daniel Lehman was several times more*

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knowledgeable [than the competition]" and, *"I took it as he's probably as knowledgeable as anybody in the country, actually, about the use of industrial vacuums".*

In addition to expertise, the vacuum system would need to drastically reduce the time it would take to perform the cleaning process. Air Dynamics was able to provide a versatile central and portable vacuum engineered specially for Milum's needs.

Providing the Best Solution, By Designing the Best Product

PLĒCO Central Unit - Note wheels for easy portability

When approached with the lint problem at Milum Textile Services, Air Dynamics recommended their versatile PLĒCO HEPA Vacuum system. The PLĒCO incorporates several U.S. patents. It also features a innovative vacuum system design that performs a variety of applications. One of the key features of the PLĒCO system is its adaptability. This is critical due to the wide range of hazardous dust, lint, and particulates generated in many factories and industries.

In the case of Milum Textile Services there were three major requirements that the PLĒCO needed to meet to perform its task properly:

1. Suction up all particulates in the facility (i.e. lint and dust from textiles)
2. Perform its duties in an easy and accessible manner
3. Provide significant reduction to the maintenance of the cleaning facility
4. Additionally design the PLĒCO to support two simultaneous users to increase productivity

Number of Operators	Diam.	lin ft	Per Hose SCFM	VELOCITY	section loss	cumulative loss	ICFM
1	1.5	50	122.72	10000.00	66.36	66.36	146.64
1	2	20	122.72	5625.00	6.26	72.62	149.39
1	2.5	80	122.72	3600.00	8.17	80.79	153.13
2	3	70	245.44	5000.00	10.69	91.48	316.65
2	3	100	245.44	5000.00	15.27	106.74	332.76

Example of Hose Length Calculations

In order to meet the needs of Milum Textile Services, Air Dynamics Industrial Systems Corporation engineered a PLĒCO vacuum system specifically for Milum. The PLĒCO system installed featured a 11.5 horsepower vacuum motor coupled with approximately 350' run for the vacuum line. The central system was connected to twenty-five individual 2.125" drops spread throughout the facility 30" above the floor. In order to provide ease of access and full coverage of the facility the drops were connected with an interchangeable 10' hose that spanned the distance between each drop-down tube. The operator can suction dust with a flexible 25' housekeeping hose. This hose can be equipped with a variety of nozzles and brushes capable of handling Milum's range of cleaning operations.

As a holistic system, the PLĒCO provides a high efficiency vacuum cleaning system with its primary filtration maintaining a 99.97% efficiency @ 1/3 micron. The combination of a centralized vacuum supplemented with a convenient and efficient portable unit provided the necessary versatility for proper maintenance at Milum Textile Services. In addition to the adaptable PLĒCO system, flooring to optimize the cleaning process

Secondary HEPA (High Efficiency Particulate Arrestance) 99.97% @ .3 microns

Air Dynamics recommended that Milum polish their flooring to optimize the cleaning process. The polish prevents lint from clinging to the floor and allows the PLĒCO system to function at a higher capacity

Conclusion

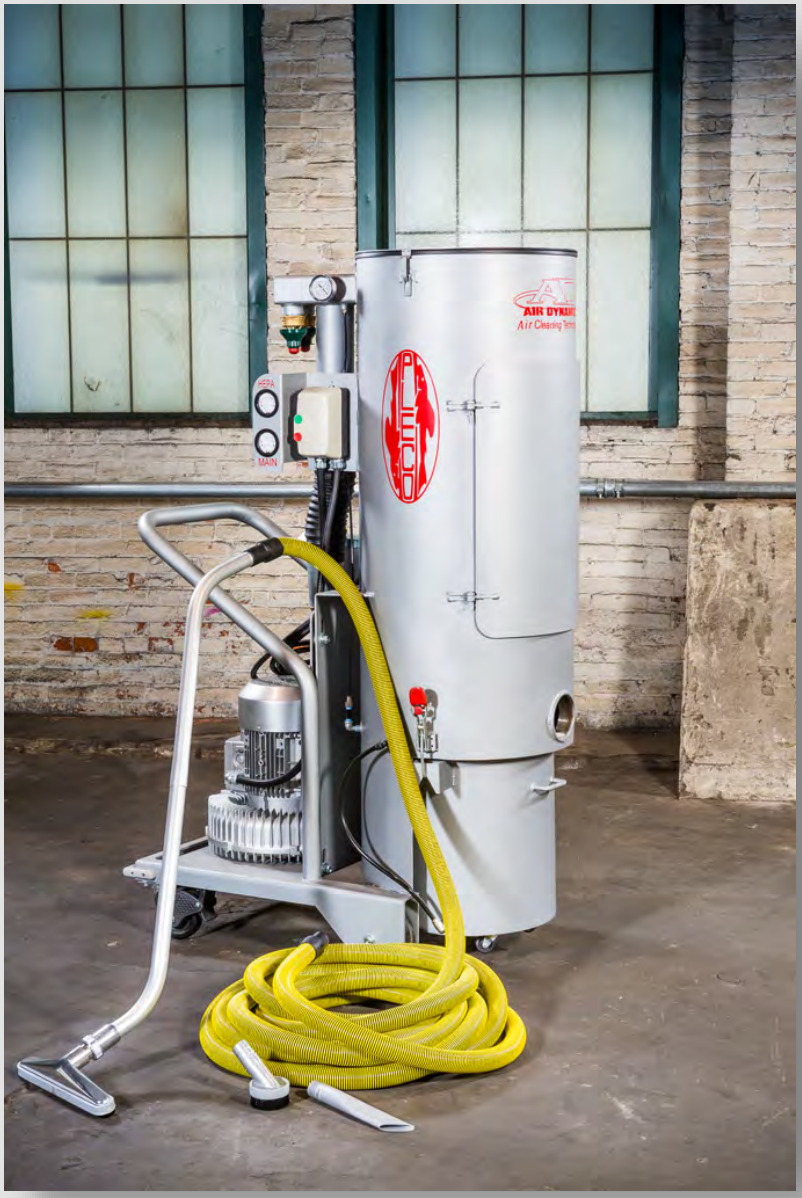
The PLĒCO Portable HEPA Vacuum System easily met the demands of Milum Textile Services. The adaptability of the PLĒCO was demonstrated once again by applying the right equipment to the precise needs of the customer. The president of Milum Textile Services, Mr. Craig Milum praised the efficiency of the PLĒCO HEPA Vacuum system stating that,

"Average time spent with compressed air "herding" daily is estimated at two and a half hours. Now we are doing the same areas with much higher quality in about 40% less time. We anticipate continued significant improvement during the next three months as we develop better techniques and tools"

Less wasted time and higher efficiency means greater fiscal gains. Milum Textile Services was able to realize these gains while simultaneously providing a cleaner and safer work environment for its employees. Clearly, the PLĒCO HEPA Vacuum System was the right choice for Milum, and very well could be the one for you too. Please consult our knowledgeable sales staff with questions or for a quote.

[1] http://www.nola.com/health/index.ssf/2014/04/childrens_hospital_investigate.html

[2] See https://www.ccohs.ca/oshanswers/chemicals/combustible_dust.html & https://www.osha.gov/dsg/combustibledust/ for more details



Do more, work less. PLĒCO

CONTACT INFORMATION

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