

Case Study: Butler University - Gallahue Hall



PROJECT PROFILE:

Type:
Renovation

Location:
Indianapolis, IN

Filtered Fume Hoods:
(30) Green Solution Hoods by
Air Master Systems featuring
Erlab's GreenFumeHood
filtration technology
(12) Erlab Captair 392 SMART
ductless filtered fume hoods
(2) Erlab Captair Filtered
Storage Cabinets
(1) Erlab HALO Laboratory Air
Filtration System

Statistics:
August, 2011 Completion
Square Footage: 14,500
(8) month project timeline
(4) Labs and (1) prep space

Architect:
BSA LifeStructures

Engineering:
BSA LifeStructures

Construction Manager:
Shiel Sexton

THE SCOPE



Butler University, a private university located in Indianapolis, Indiana, is ranked #1 in midwest colleges by US News. The university offers impressive academic majors, with their chemistry and organic chemistry labs located at Gallahue Hall. Here students learn about the role chemistry plays in the synthesis of drugs and other molecules, as well as ways to measure water quality, how chemistry interacts with biology, and environmental science.

With the growing demand for laboratory usage, the existing HVAC system was inadequate to handle the air change required thus causing overwhelming noxious odors. This created tremendous air quality issues, forcing Butler to make a decision; either upgrade the HVAC system, which would have been a significant investment and not financially feasible, or look into alternative solutions that would be both cost effective, and, most importantly, safe.

Through detailed analysis of their options and a recommendation from BSA Life Structures to look into filtered fume hood options, it became clear that only filtration would provide a logical solution. Additionally this choice would allow for adding hoods, increasing safety in the lab, and provide flexibility for changes and future growth with no added HVAC infrastructure.

THE CHALLENGE

For Erlab and the BSA engineers it was critical to fully understand chemical handling requirements within the hoods in order to provide an optimum solution. Critical to a successful outcome was determining a configuration that would allow maximum filter life while maintaining the stringent safety standards. It is especially challenging in an academic environment where changing curriculum requirements need to be anticipated in order to provide a solution that is flexible and adaptable for future needs. Erlab, sharing over 50 years of field expertise, worked with the teaching staff and EHS, as well as facility maintenance staff, to fully understand and bring the project to fruition.



Image Courtesy: AMS

THE SOLUTION

Butler's fume hoods are utilized for a wide variety of applications that include pouring, transferring and refluxing procedures. To fully meet the chemistry labs needs, Erlab initially furnished (30) Green Fume Hoods that utilized its advanced filtration technology. Based on the success of the first installation, Butler decided to install (12) additional Erlab's Captair filtered fume hoods for its rotary evaporators.

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To further enhance student safety in the lab, Butler decided to leverage Erlab's full eco system and added (2) Erlab Captair filtering storage cabinets and Erlab's HALO whole room air filtration system in the synthesis lab. The Halo specifically addressed an issue of emissions, which were generated from their solvent recovery system

All upgrades were achieved without adding any additional HVAC. The cost of the renovation project was decreased by 10% and the annual operating cost was reduced by \$51,000 per year.

In addition to these significant savings, Erlab was able to improve upon the safety of the faculty and students, by providing:

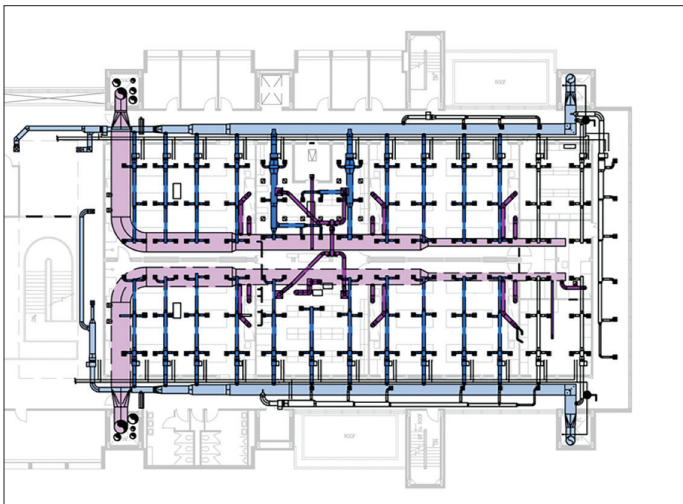
- Increased safety through filtration, detection and communication
- Increased hood capacity
- Balanced rooms (proper pressurization)
- Improved indoor air quality



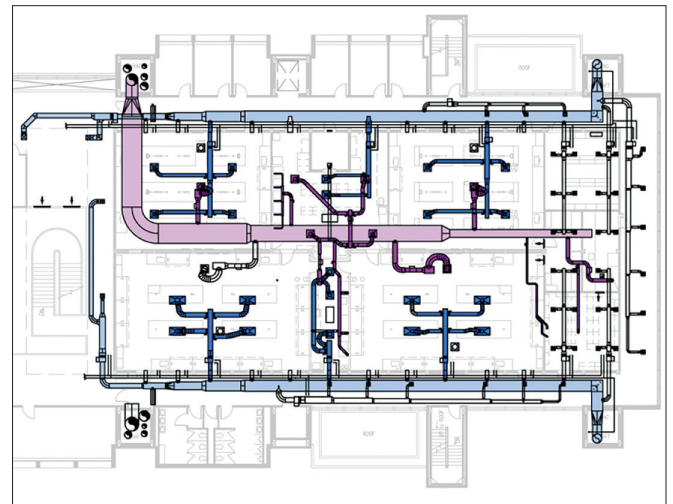
Image Courtesy: AMS

Chemistry Teaching Labs HVAC System

Before



After



Images credit: BSA LifeStructures

- Supply ductwork
- Main supply ductwork
- Exhaust ductwork
- Main exhaust ductwork

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Primary filters being replaced after 5 years of continuous use.

THE RESULTS

After 5 years of continuous operation, the results are in and expectations were surpassed.

Operational impacts:

- 42% increase in student enrollment in the chemistry program
- \$50,000+ annual operating cost savings.
- Filters lasted a full 5 years, 25% longer than expected.
- Improved IAQ and safety.
- Annual operating costs for each 6-foot hood is just \$1,065, including periodic acid detector replacement.

Construction savings:

- \$66,000 net construction cost savings (10% reduction).
- 3-month (27%) reduction in project timeline.

Erlab has been collaborating with Butler University for over 8 years, assisting in numerous laboratory upgrades that have added real value for their students and faculty.

"We have used the filtered fume hoods since 2010 in our teaching laboratories and have been very pleased with their performance. We have been able to manage routine maintenance on the hoods internally. Because of our experiences with the filtered fume hoods, we have also added several benchtop enclosures for rotary evaporators in our teaching and in our research labs."

*S. O'Reilly - Professor of Chemistry and
Biochemistry / Butler University*





Erlab's state of the art Research & Development Laboratory relying exclusively on filtration

North America

+1 800-964-4434 | captairsales@erlab.com

China

+86 (0) 512 5781 4085 | sales.china@erlab.com.cn

France

+33 (0) 2 32 09 55 80 | ventes@erlab.net

Germany

0800 330 47 31 | verkauf@erlab.net

Italy

+39 (0) 2 89 00 771 | vendite@erlab.net

Malaysia

+60 (0) 7 3 555 724 | erlab@tm.net.my

Spain

+34 93 673 24 74 | ventas@erlab.net

United Kingdom

+44 (0) 1722 341 940 | salesuk@erlab.net

www.erlab.com

About Erlab

We provide safety, we protect your health

Inventor of the ductless fume hood, Erlab is an expert in air filtration for the protection of laboratory personnel since 1968. With over 50 years of experience and 150,000 units installed in 40 countries, Erlab offers advanced technologies that protects lives, saves money, and enhances environmental sustainability. All our products are certified by experts for individual applications, ensuring that our products fully meet customer expectations.

With manufacturing facilities in the US, China, and Europe, employing highly trained engineers and scientists worldwide, we deliver solutions globally.

1 Erlab R&D Laboratory

The engineers and chemists in our state-of-the-art R&D laboratory understand molecular filtration. We are committed to designing products that are safe and of the highest quality as we strive to improve our products, and continuously develop new products that provide greater protection in the laboratory.

2 Strict Safety Standards

We hold ourselves to the highest standard and adhere to the strict AFNOR NF X 15-211: 2009 filtration safety standard as recognized by ANSI Z9.5-2012.

3 A Published Chemical Listing

It all begins here. Our chemical listing directory insures we are compliant with AFNOR NFX 15-211. Our in-house laboratory tests and independent testing verifies the retention capacity of over 700 chemicals for our filters.

4 Independent Testing

Erlab filters have been independently tested multiple times at various concentrations guaranteeing that our safety solutions adhere to the strict performance criteria of the AFNOR NF X 15-211:2009 standard ensuring that the emissions concentration at the filter exhaust will always be lower than 1% of the TLV.

5 Application Questionnaire

Our laboratory specialists will recommend the appropriate filtration fume hood, type of filter, and personalized advice.

6 Certificate of Validation for the chemicals used in the hood

A certified PhD chemist issues a Certificate of Validation with a list of the chemicals approved for use in the hood.

7 Our Safety Program

We support our products 100%. This program includes your specialized chemical evaluation, validation of your hood upon installation, and your filtration safety specialist that ensures your hood is operating to its full potential.