Innovative Science In Less Space

Mark Paskanik, AIA, NCARB, LEED AP BD+C
Learning Objectives

1. Understand unique laboratory solutions;
2. Holistic approach to the laboratory design process;
3. Practical strategies and tools for building consensus; and
4. Practical strategies to reduce overall carbon footprint and budget.
Modular Approach

• Structural Grid working with lab modules
• Mobile casework and overhead services in open lab
• Fixed equipment and plumbing in lab support zone
Visioning and Consensus
Visioning in 1 Day

**Pre-work**
- Step 1: Brief meeting with steering team.
- Step 2: Issue PreRead. Tour site.

**PreRead info received**!
- Step 3: Kickoff visioning session
  - Imaging
  - Polling
  - Dashboard
  - Plans
  - Visuals

- Step 4: End meeting with consensus concept plan.
Imaging Session
## Imaging Session

### Imaging Voting Sheet

- Voting Scale 1 through 5  
  \(1 = \text{Best}, \ 3 = \text{Average}, \ 5 = \text{Awful/Poor}\)

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Imaging Session
Visuals  Use images as graphics to convey ideas
Visioning – Polling

20 Polls
10 Participants
8 Average responses
74% Average engagement

1. Does natural daylight affect the operations of the lab in a negative way?

Answers
- YES: 2 responses, 22%
- NO: 7 responses, 78%

2. Can light sensitive operations take place in smaller support rooms?

Answers
- YES: 6 responses, 100%
- NO: 0 responses, 0%
Pre-work Steps
“SPEND ONLY 1 HOUR”
PreRead

PreRead Interview List

- Name: Lab User
- Group: Bioengineering
- Email: labuser@lab.com

Questions prior to kickoff meeting
PreRead

Questions:
• Please review the Room Data Sheets and indicate if there are any updates.
• How many staff work in the lab today and do you see any growth 5 years out?
• What improvements can be made to your current lab to improve storage need?
• Is there a defined basic workflow to the operation of the lab?
• What improvements can be made to the current labs to improve workflow?
PreRead

Shared Resources:

• What would preclude you from sharing resources with other labs.
• Can you share fume hood usage with other labs.
• How often are the fume hoods used (once a week, daily, hourly, other).
Strategies
5 “No Cost Strategies” for Your Lab Project

1. Visioning in a Day
   - Planning meetings ahead of time and using interactive tools can build consensus around project vision.

2. Use What Works
   - Minimize storage
   - Strategically locate fixture/raceway at the bench
   - Safety and ergonomics
   - Establish tour routes
   - Right-size flexible casework

3. Keep it Simple
   - Minimizing complexity can reduce utility and maintenance costs.

4. Standards vs. Requirements
   - Knowing the difference between requirements and standards can cut down on unnecessary expenses.

5. Leverage Space
   - Owning and leasing space each can lead to unique customization opportunities for your workplace.
Safety
Ergonomics
No Cost Details
VACUU•LAN®
Laboratory Vacuum Networks

A lab-by-lab approach to scientific vacuum systems that saves energy, bench space and maintenance.

Modular VACUU•LAN lab vacuum networks by VACUUBRAND replace central lab vacuum systems and individual vacuum pumps in new labs and renovated labs.
Milli-Q® IQ 7000 Ultrapure Lab Water System
An Ultrapure Water Solution Designed with You in Mind

It's intelligent. It's intuitive. It's designed to make your work as pleasant and comfortable as possible — and to maximize lab productivity. The breakthrough ergonomic design and powerful purification media ensure consistent production of superior-quality ultrapure water. See how the Milli-Q® IQ 7000 will change the way you work in the lab.

Related Resources

Key features, specifications & related resources about Milli-Q® IQ 7000, our most advanced lab water purification solution.

- Brochure: Milli-Q® IQ 7000

lab2lab

Novel sample and data transfer network system

lab2lab is a unique pneumatic transport system for samples in 2D barcoded tubes. This could be anything from sending samples between laboratories, storage systems or directly to online analysers such as a LC/MS or NMR.
Special Considerations

- Vibration criteria
- Impact to plenum
- Special bays

<table>
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<tr>
<th>Criterion Curve (see Figure 1)</th>
<th>Max Level (1) micrometers/sec.rms</th>
<th>Detail Size (2) microns</th>
<th>Description of Use</th>
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<td>Workshop (ISO)</td>
<td>800</td>
<td>N/A</td>
<td>Distinctly feelable vibration. Appropriate to workshops and nonsensitive areas.</td>
</tr>
<tr>
<td>Office (ISO)</td>
<td>400</td>
<td>N/A</td>
<td>Feelable vibration. Appropriate to offices and nonsensitive areas.</td>
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<tr>
<td>Residential Day (ISO)</td>
<td>200</td>
<td>75</td>
<td>Barely feelable vibration. Appropriate to sleep areas in most instances. Probably adequate for computer equipment, probe test equipment and low-power (to 20X) microscopes.</td>
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<td>Op. Theatre (ISO)</td>
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<td>25</td>
<td>Vibration not feelable. Suitable for sensitive sleep areas. Suitable in most instances for microscopes to 100X and for other equipment of low sensitivity.</td>
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<tr>
<td>VC-A</td>
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<td>Adequate in most instances for optical microscopes to 400X, microbalances, optical balances, proximity and projection aligners, etc.</td>
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<tr>
<td>VC-B</td>
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<td>An appropriate standard for optical microscopes to 1000X, inspection and lithography equipment (including steppers) to 3 micron line widths.</td>
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<td>VC-C</td>
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<td>A good standard for most lithography and inspection equipment to 1 micron detail size.</td>
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<tr>
<td>VC-D</td>
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<td>0.3</td>
<td>Suitable in most instances for the most demanding equipment including electron microscopes (TEMs and SEMs) and E-Beam systems, operating to the limits of their capability.</td>
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<td>VC-E</td>
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<td>A difficult criterion to achieve in most instances. Assumed to be adequate for the most demanding of sensitive systems including long path, laser-based, small target systems and other systems requiring extraordinary dynamic stability.</td>
</tr>
</tbody>
</table>
Automation and Robotics
According to Market Intelligence, the Global Lab Automation Market was valued at USD 3.14 billion in 2017 and is projected to reach USD 4.64 billion by 2025, growing at a CAGR of 5.0% from 2018 to 2025.
Automation and Robotics

1. Triple Bottom Line
2. Ergonomics
3. Data Integrity and Traceability
4. Process Uniformity
5. Throughput
Visioning - Polling

Use this number for your text message

22333

Add this content to the message.

paskanik
Questions?

Mark Paskanik, AIA, CDT, NCARB, LEED AP BD+C
Mark.Paskanik@crbusa.com