HVAC Testing, Adjusting, Balancing

Healthcare
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Associated Air Balance Council

• INDEPENDENT
• Cannot be affiliated with engineers, mechanical contractors or manufacturers
• Typically specified by owners and engineers to avoid conflict of interest

National Environmental Balancing Bureau

• NOT required to be independent
• Can be mechanical contractors
• May test their own equipment
WHAT IS TESTING, ADJUSTING, AND BALANCING?

• Test HVAC Systems’ Performance
• Adjust Systems to Design Parameters
• Balance Systems for Optimum Performance
• Optimize Cost and Energy Usage
• Indoor Air Quality (IAQ)
• Required Air Changes per Hour (ACH)
• Volumetric Flow- Cubic Feet per Minute (CFM)
WHEN TO PERFORM A TOTAL SYSTEM BALANCE

- New Construction
- Renovation/Remodel
- Equipment Changes
- Comfort Issues
- Pressure Issues
1. Drawing Review/ Mark-Up
2. Pre-Engineering
3. Document Review
4. Scheduling
5. Quality Assurance Inspection
6. Field Testing
7. Report Review
8. Final Report
UMMMM YEAH

IM GOING TO NEED YOU TO PUT THAT PATIENT IN ISOLATION
DESIGN AND SURVEY CRITERIA

EC. 02. 05. 01
Risk Associated with Utility Systems

STANDARD 170
Ventilation of Health Care Facilities

FGI Guidelines
2014 Edition
CRITICAL ROOM PRESSURIZATION VERIFICATION (CRPV)

**POSITIVE**
- Operating Rooms
- Procedure Rooms
- Clean Workroom
- Sterile Cleaning

**NEGATIVE**
- Isolation Rooms
- Morgue
- Decontam
- Soiled Linen
JOINT COMMISSION SURVEY

1. STANDARD EC.02.05.01
   • Risk Associated with Utility Systems
   • EP 15- Air Pressure, Filtration, and Air Changes in Critical Areas
   • Third Highest Cited in 2017
   • 58% Non-Compliant

2. Critical Room Pressurization is on Day 1, immediately following Documentation Review

3. Deficiencies must be corrected within 45 days

4. Documentation is key
IF YOU COULD GO AHEAD AND SCHEDULE PREVENTATIVE MAINTENANCE

THAT'D BE GREAT
WHAT CAUSES A BUILDING TO BECOME UNBALANCED?

1. LACK OF PROPER PREVENTATIVE MAINTENANCE
   - Dirty Filters
   - Dirty RTU Blower Fans
   - Worn or Broken Belts
   - Dirty or Closed Evaporator Coils

2. NOT ADDRESSING THE AHU SETUP DURING RENOVATIONS AND ADDITIONS

3. DUCT LEAKAGE
WHAT IS BUILDING PRESSURE?

STAY POSITIVE

Calculated by the amount of fresh air/makeup air being introduced to the building through the HVAC system verses the amount of exhaust air being exhausted from the building through the HVAC system. The difference in these two measurements will determine your building pressure. The fresh air/makeup air being introduced to the building should be higher than the airflow being exhausted from the building. This will help achieve a slight positive building pressure.

Building Pressure is a large factor in Customer Comfort, Smoke Capture, Condensation Issues, Energy Efficiency, Door Pull Issues, Insect Issues, and more...
SYMPTOMS OF NEGATIVE BUILDING PRESSURE

- Condensation Dripping from Diffusers
- Mold Growth
- Hot and Cold Spots
- Patient Complaints
- Drafts - “Wind Tunnel Effect”
# EXAMPLE OF COST SAVINGS

## THE COST OF IMPROPERLY BALANCED BUILDINGS

STUDY PUBLISHED IN CONSULTING-SPECIFYING ENGINEER MAGAZINE

- 100,000 sq. ft. building
- Design Airflow: 110,000 CFM
- Design Motor Load: 110 Horsepower
- Actual Airflow: 130,000 CFM
- Actual Motor Load: 180 Horsepower
- Operates: 16 hr/day, 5 day/week
- Energy cost: $0.08/kWh

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<tr>
<th>Issue</th>
<th>Yearly Cost Savings</th>
<th>20-Yr Cost Savings</th>
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<tr>
<td>Excessive fan air flow</td>
<td>$17,400</td>
<td>$350,000</td>
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<tr>
<td>Excessive reheat requirements</td>
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<tr>
<td>Excessive fan static pressure</td>
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<td>Excessive exhaust makeup air costs</td>
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<td>Excessive pump static pressure</td>
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<td>Leaky reheat valves causing a 3 F air temp rise</td>
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<td>$300,000</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>$90,700</strong></td>
<td><strong>$1,820,000</strong></td>
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NOT DOING ANYTHING ABOUT INDOOR AIR QUALITY?

HOW'S THAT WORKING FOR YOU?
What is **MOST VALUABLE** To You When Selecting a TAB Agency??

- **KNOWLEDGE OF THE HEALTHCARE INDUSTRY**
- **EXPERIENCE**
- **PUBLIC BIDS**
- **INFECTION PREVENTION EXPERT**
- **LOCATION**
- **REPORTS DEFICIENCIES OR HIDES THEM**
- **CUTS CORNERS TO SAVE MONEY**
- **PRICE**
- **PROFESSIONAL DOCUMENTATION**
THANK YOU FOR LISTENING!

ANY QUESTIONS?