Building the Future of Building Products

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OVERVIEW

“The best way to predict the future is to invent it.”

Alan Kay

1. Why are we looking at products?
2. How did we find them?
3. What can we do?
WHAT’S MISSING?

Manufacturers and Vendors → Supply → Designers and Owners

Poor feedback
WHERE TO LOOK

NYC Large Building End Use Breakdown

Proportion of annual source energy city-wide [LL87]

Heating

Hot Water

Process / Other

Cooling / Ventilation

Plug / Lighting

0% 25% 50% 75% 100%
PRODUCT DISCOVERY PROCESS

1. Ask design crowd for needs
2. Focus on what is feasible
3. Analyze the impact
KEY PRODUCTS - SURVEY

Feasible

Non-invasive Spray Foam

Efficient PTAC Replacement

Super Efficient Modular Cooling

Low Conductivity Shelf Angle

ASHP for Residential DHW

Building Reskin Panel

Final Focus Group Survey

Functional
KEY PRODUCTS - FINALISTS

**Envelope**
1. Curtain Wall of the Future
2. Low Conductivity Shelf Angle for Masonry

**HVAC**
1. Replacement for PTACs
2. Super-efficient Modular Cooling Unit
Curtainwall of the Future

- Demand growing - 95% designers needed
- Triple pane - 30 to 50% cost premium
- Cut site energy 13%
  - UF 0.24 curtainwall
Split heat pump to replace PTACs

- Over 120,000 units in NYC big buildings
  - 5% of multifamily, 13% of hotels
- Useful openings – let’s put efficient equipment in them with ventilation
- Lowered site energy by 4%,
  - Source energy by 14%
High-efficiency modular cooling

- Almost 30% of large NYC offices served by DX AHUs
- Low-efficiency compressors often fail, break fix replace
- Cut site energy by 3.5%
  - Cooling cut in half
Low Conductivity Shelf Angle

• Thermal breaks
  • Wider insulation - more torsion
  • Bracket alignment difficult
• Interchangeable, strong and low conductivity best solution
• Reduces site energy 3%
BARRIERS

• Existing buildings:
  • Majority of demand comes from unplanned replacement
• New Construction
  • Energy efficiency gets cut first

SOLUTIONS

○ Educate owners on new products and lifecycles

○ Offset costs with incentives and bulk orders
CONCLUSIONS

1. Designer to manufacturer feedback loop is messy
2. HVAC products need training
3. Envelope products need demonstrations
4. Manufacturers need guaranteed markets