Business Opportunities for Energy Efficiency
Whole Building Solutions to Energy Efficiency
Overview of Daikin Business Structure in the U.S.

US Sales FY17: $5B
US Employees: 15,000

Daikin Industries, Ltd

Daikin U.S. Corporation (DUS)
- New York
- Washington, DC
- Silicon Valley

Air Conditioning
- Daikin Applied Americas
  - Goodman Global
    - Goodman
    - Daikin

Air Filter
- AAF Flanders

Fluoro Chemical
- Daikin America

Oil Hydraulics
- All World Machinery

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## Evolving Approaches to Energy Efficiency

<table>
<thead>
<tr>
<th>Old Approach</th>
<th>New Approach</th>
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<tbody>
<tr>
<td><strong>OEMs</strong></td>
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<tr>
<td>- Make and sell HVAC equipment</td>
<td>- Design and engineer equipment for specific buildings</td>
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<tr>
<td>- Service; repair; parts sales</td>
<td>- Drive higher efficiencies</td>
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<tr>
<td>- Focus only on HVAC or industry strength</td>
<td>- Integrate systems</td>
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<td>-</td>
<td>- Promote incentives through sales force</td>
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<td>-</td>
<td>- Develop systems that integrate Demand Response, building energy use, and mobile interface</td>
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<td><strong>Building Owners</strong></td>
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<tr>
<td>- Minimize cost and downtime</td>
<td>- Longer term thinking – payback period</td>
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<td>- Rarely consider payback of premium product</td>
<td>- Control energy costs</td>
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<td>- If space is leased, pass along costs to tenants</td>
<td>- Consider GHG impact and emissions</td>
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<td>-</td>
<td>- Develop long term relationship with OEM</td>
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What’s Driving the Change?

• Equipment standards nearly maxed out on performance
• Controls have become more sophisticated and precise, but also mobile and user friendly
• Greater savings possible with HVAC equipment alone
• Address other energy uses and integrate IAQ considerations
• New generation of companies are driving solar, Smart Grid, Demand Response, CHP, and other associated innovations

• Interest in lowering GHG emissions
What’s Holding Back the Change?

- Code adoption
- Appliance standards
- Building owner cost attitudes slow to change
- Need to educate the workforce
- Tax treatment of commercial buildings and building assets
- Low energy costs
Business Opportunities

HVAC now offers:
• Greater energy savings
• IoT/Cloud based analysis
• Deeper insights with performance
• Streamlined repair process
  – Remote diagnostics
  – Fewer truck rolls, eliminate labor costs, commissioning
• Integrated security protections
• Affordability, connectability, simple user interface
On the Horizon

• New tax treatment of commercial HVACR equipment
  – Allows building owner to use Section 179d to expense equipment
  – Allows “bonus depreciation” for improvements to retail, restaurant, and leaseheld properties

• Modification & extension of Section 179D Commercial Building Tax Deduction
  – Restores a tax deduction for qualified improvements
On the Horizon... continued

• Systems approach to equipment standards
  – Time is ripe to think outside the “box”
  – Controls and Demand Response are viable solutions

• Competition to improve energy use analysis and data
  – OEMs are partnering with IoT developers, architects, designers
  – Looking to be proactive to environmental conditions
  – Address multiple uses in a single building
On the Horizon... continued

• New wave of incentives created by local governments (not utilities) aimed at reducing GHG emissions
  – Electrification or decarbonization opportunities
    • Tighten the building envelope
    • Install heat pumps (Inverters)
    • Solar PV

• Increased interest in IAQ or IEQ
  – How does humidity relate to workplace performance?
  – Improving air-exchange in buildings
  – Reducing sources of VOCs emissions
  – Improving filtration and monitoring devices
Unresolved Questions/Opportunities

• Domestic Hot Water Heating
  – Go to heat pump, stand alone, or hybrid?
  – Location concerns

• Ventilation
  – Central or dedicated?

• Air Distribution Losses
  – Ductless products can resolve
Discussion Points