The Operator’s Perspective: Gaining Control of Building Operations

Mark Menzer, Director of Public Affairs, Danfoss
ZNE BUILDINGS WILL GREATLY INCREASE IF...
Globally, we are still going in the wrong direction…

World’s Total Primary Energy 1971-2014

Source: EIA Key World Energy Statistics Report
...although we have **turned a corner** in the developed world

OECD Total Primary Energy 1971-2014
Climate change remains the #1 global issue of our time

- It will require a re-think of how we design, build, and control our buildings.
ASHRAE 90.1 has **driven down** energy use in **new commercial buildings**

Source: Richard Lord, UTC
But can it get us to zero in new buildings?

Source: Richard Lord, UTC
Deep Energy Retrofits

...believe that as the energy efficiency retrofit market develops, architects can position themselves to seize a robust business opportunity by offering deep energy retrofits—retrofits that aim to deliver greater energy savings by taking a whole-building approach to energy efficiency—as a new line of service.
The **private sector** can **learn** from government **experience**

**SEPTEMBER 16, 2016**

Recent energy intensity decline in government buildings exceeds commercial sector average

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**Average energy consumption per square foot (2003 and 2012)**

- **U.S. commercial buildings**: 2003 (80), 2012 (70), -12%
- **Government buildings**: 2003 (100), 2012 (75), -23%

**Source:** U.S. Energy Information Administration, Commercial Buildings Energy Consumption Survey (CBECS)
The **private sector** can **learn** from government **experience**
64 story office building, Opened in 1970
VFDs applied on all Air Handling Units
Demand Savings 1260 Kw
Energy Savings 6,729,000 Kwh

Simple payback of 7 months

US Steel Tower
Pittsburgh, PA
Water Production Energy reduced by 20-45%  
Water Distribution energy reduced by 20-40%  
Waste water pumping energy reduced by 5-25%  
Wastewater treatment energy reduced by 25-60%  

Energy Production increased by 20-60%  

Aarhus, DK
BEMS revenue forecasted to grow in the next eight years...
...but pales when compared to what we **pay** for energy in **U.S. commercial buildings**

![Graph showing comparison of 2016 Revenues, 2024 Revenues, and Commercial Buildings Energy Bills.](image-url)
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