Technologies You Can't Afford to Miss!

Ten technologies with huge potential for utility energy efficiency and demand response programs.

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E SOURCE

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Gas Tankless Condensing Water Heater

‘Navien 98%’

Bosch GWH C 800ES

Gas Condensing Tankless Water Heaters

What is it?

- Tank smaller than two gallons
- Captures and reuses condensate to save energy and capital costs
- Retrofits or new construction
- Available in multiple sizes ranging from 150,000 to 199,000 Btu per hour
- Flow rates up to 11 gallons per minute

Benefits

- Improved efficiency
- Inexpensive venting installation
- No cold water ‘sandwich’

Programs

- April 2008: Southern California Gas began offering $200 rebates to residential customers

Condensing Tankless Economics

Condensing Tankless Heater

- Equipment costs $1,300 to $2,100
- Venting to exterior done with PVC ($1 to $2/foot)
- Potential savings of slightly less than $40 per year in natural gas costs (assuming natural gas rates at $1.17/therm)

Traditional Tankless Heater

- Equipment costs $1,000 to $2,000
- Venting to exterior done with stainless steel piping ($25 to $30/foot)

Heat Pump Add On Water Heater

Nyle International: Nyletherm

Applied Energy Recovery Systems: E-Tech

Add On Heat Pump Water Heaters

General Design considerations

- Performance depends on situation: up to 55-70% savings!
- Existing heating element remains as a backup
- Provides space cooling while heating water
- Needs about 1000 ft3 of surrounding airspace (40º–90ºF)
- Combination systems can change heat source

Manufacturers

- Nyle International: Nyletherm
- Applied Energy Recovery Systems: E-Tech
- And…

Airtap: Cost Effective Heat Pump Add on Water Heater

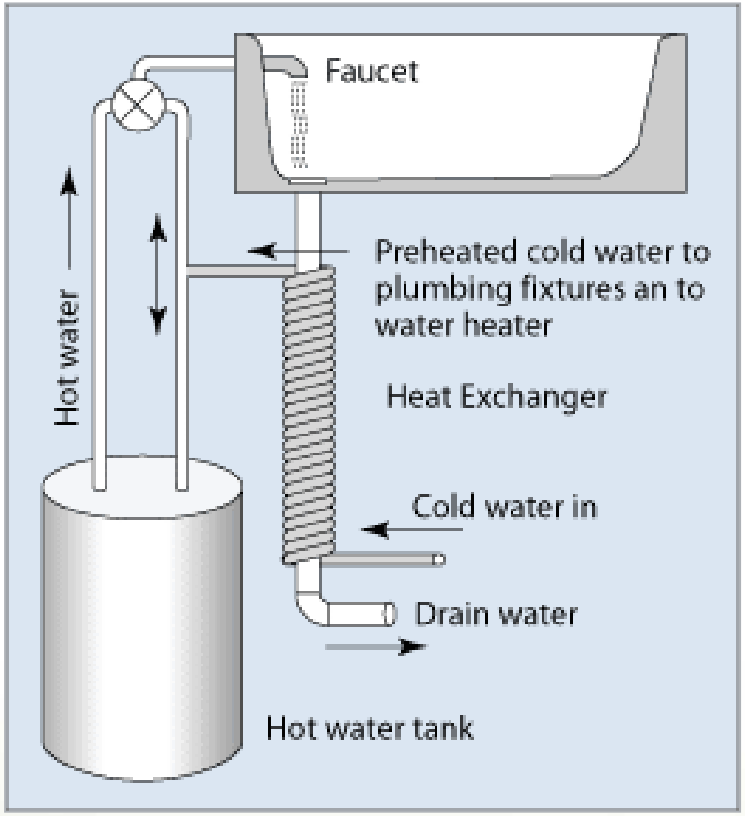
- Produced by AirGenerate
- Half the cost of other Add-on HPWH
- Relatively simple to install
  - Attaches to a tank up to 80 Gallons
  - Costs about $500
  - 1-2hrs installation for a plumber

Drain-Water Heat Recovery

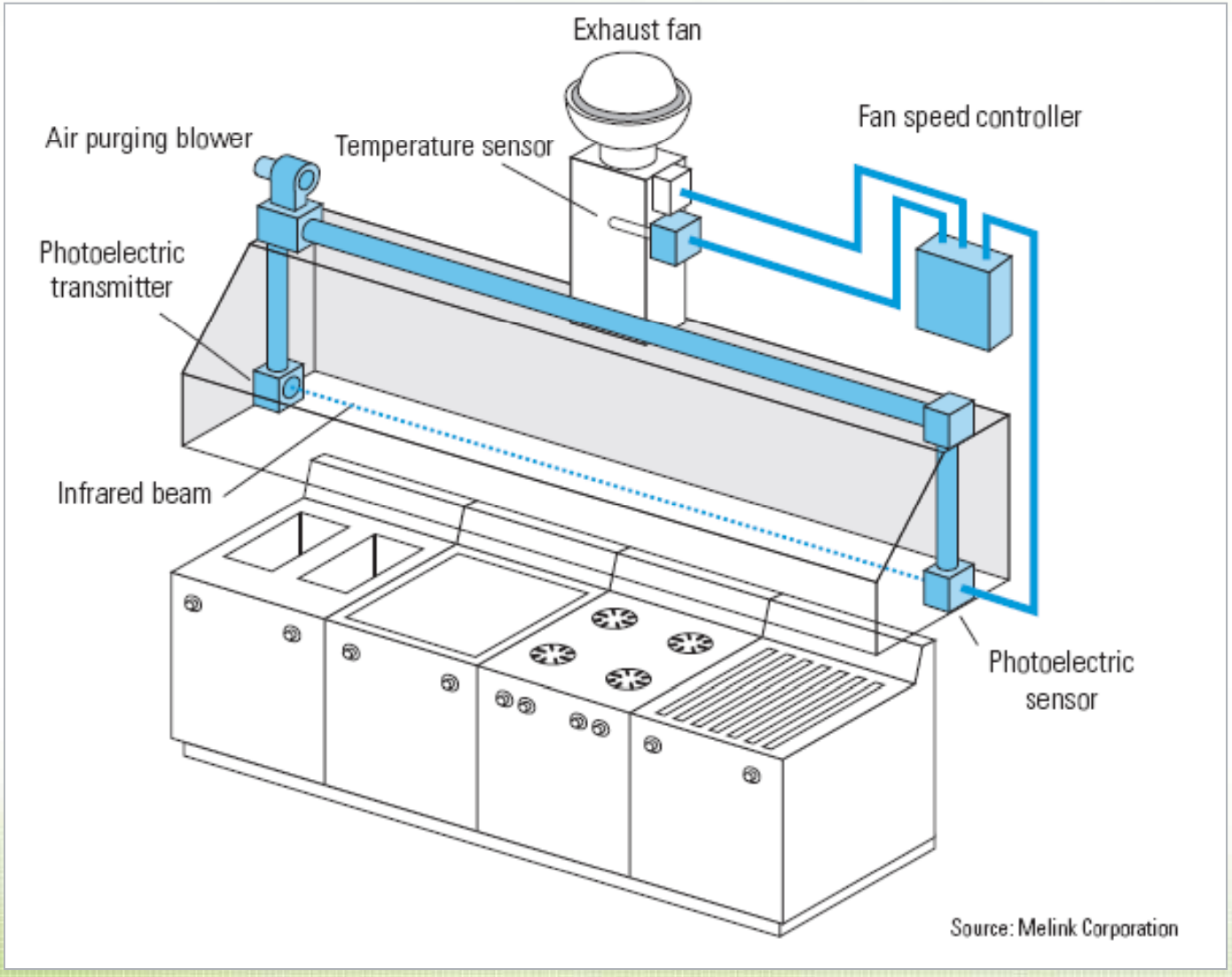
- Great for high hot water loads (gyms, motels, dormitories)
- Increase heating capacity of heater
- Energy savings per shower 30% to 50%
- $300-$500 for a typical retrofit installation

Drain-Water Heat Recovery

- Doubles the first-hour rating of water heater
- Use in homes, motels/hotels, dormitories, health clubs
- Payback: 2 to 6.5 years in new homes
- Oregon Dept Of Energy offers incentives
- Why don't we see more?



Variable-Speed Kitchen Hoods



Variable-Speed Kitchen Hoods

Applications

- New construction
- Retrofit

Manufacturers

- Melink
- Halton
- Captive Aire

Benefits

- Saves 40 to 70 percent on hood fan energy
- Saves an additional 15 to 40 percent in building HVAC losses
- Unobtrusive design
- Less fan noise
- Decreased fire risk

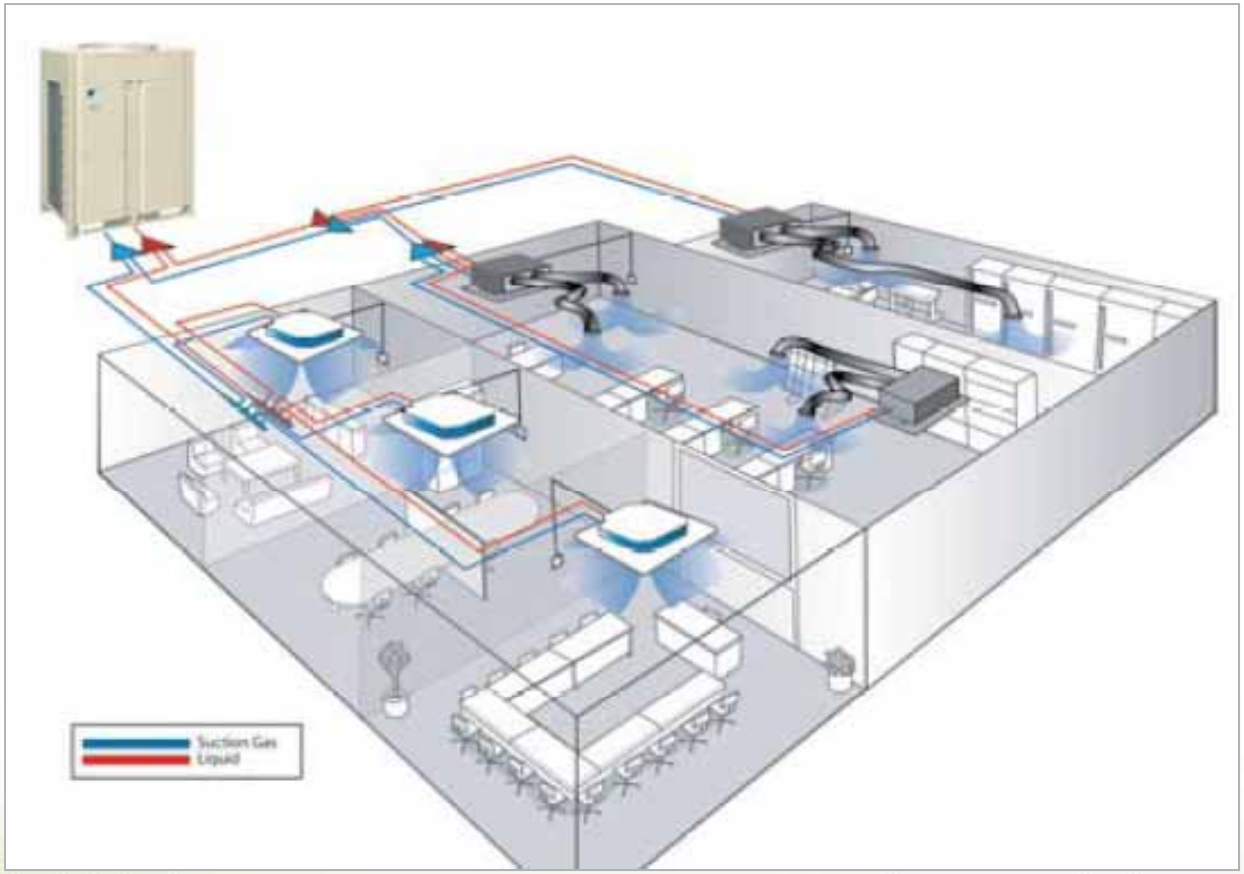
Simple Payback
Less than Two Years!

	Energy savings	Cost savings ($)
Direct energy	31,370 kWh	3,770
Peak demand	6.2 kW	550
Additional building heating	3,800 therms	3,800
Additional building cooling	9,900 kwh	1,190
Total savings		**9,310**

Initial cost	$18,000
Simple payback period	**1.9 years**

Note: Assumes $0.12/kWh, $8.00/kW monthly demand, $1.00/therm.
Source: Food Service Technology Center

Variable Refrigerant Volume Systems



Variable Refrigerant Volume Systems

Applications

- Large commercial buildings
- Manufacturers include
- Mitsubishi
- Daiken-Trane
- Toshiba-Carrier

Benefits

- High part-load efficiency
- Eliminating duct losses
- Improved zone control
- Reduced installation size
- Simultaneous heating and cooling

Vari-interesting…

Energy savings estimates range from 5-15% compared to conventional unitary equipment

But…

- There have been only a limited number of field tests
- Energy simulations ability to accurately model is unverified
- There is no current ARI rating

Low Cost Dimming Ballasts

- Dimmable ballasts currently have <2% market share
- Lumenergi's NLighten to retail for $30
- Family of products to include control and communications software

Low-Cost Dimming Ballasts

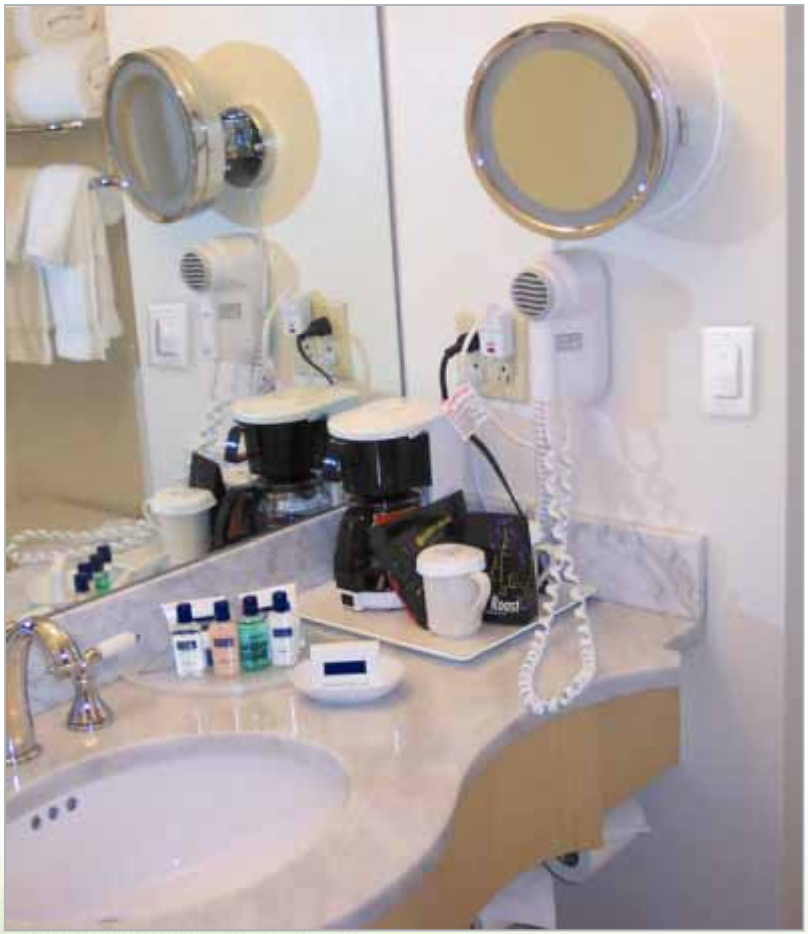
What's new

- Cost
- Electronics replaced with microprocessor
- Claims to be as efficient at full power as standard ballast
- Plc communications

Lighting Control

- Daylight harvesting
- Tuning light levels
- Scheduling
- Lumen depreciation
- Demand Response

Better Bathroom Lights



Courtesy: California Energy Commission

Better Bathroom Lights

Problem: lights left on

- 75% of bathroom lighting energy use from lights on > 1 hour
- Occupancy sensors give false offs

2 new products

- WattStopper WN-100—LED nightlight and wall switch based on occupancy
- Speclight Smart Vanity Light—LED nightlight into fixture

Results

- Reduces energy use 50%
- Extends lamp life 33%
- Payback 2.5 years

In-Home Displays

- 13+ utility pilots
- Savings 3-15% on energy use
- Increase load shifting by 50% for customers on TOU rates
- Increased customer satisfaction

In-Home Displays

- Retrofit

- Integrated with AMI

- New construction

Stop by our booth to learn what is new about the above, or get the bibliography of our content on all of these technologies!

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