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The Millennials have landed.

Session: 092905

Date: Thursday, September 29, 2016

Time: 10:00am – 11:00am

Energy Management:
Creativity, Collaboration, Technology, & Taking Risks

Presented by:

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Learning Objectives:

STEP CHANGE

- Leadership – Empower & support the team
- Creativity – Cultivate and improve the best Ideas
- Collaboration – Collective contribution & shared ownership
- Technology – Anticipate & evolve to meet a new standard
- Taking Risk – Experiment, learn & execute

Why is step change important?

Challenge:

- How will we operate our facilities in the future?

Solutions:

- Embrace new technology, new concepts, new processes

Benefits:

- Improved efficiency
- Reduced cost
- New way of doing business

Step Change: "The Ingredients"

Step Changes: Leadership

Great Leaders:

- Set challenging & transformative goals
- Inspire the team to reach beyond the status quo
- Empower the team to find creative solutions

Step Changes: Creativity

- Understand the stakeholder's process
- Brainstorming
- Open to new ideas
- Explore all possibilities

"All ideas are welcome"

Step Changes: Collaboration

- Who are the stakeholders
- Shared vision and team goals
- Establish trust and open dialogue

"Shared ownership"

Step Changes: Technology

- Dynamic HVAC controls
- Systems integration

"The future is dynamic & integrated"

Step Changes: Taking Risk

- Finding a better way to do business
- Pilot projects for new concepts
- Explore new technology
- Learn from mistakes

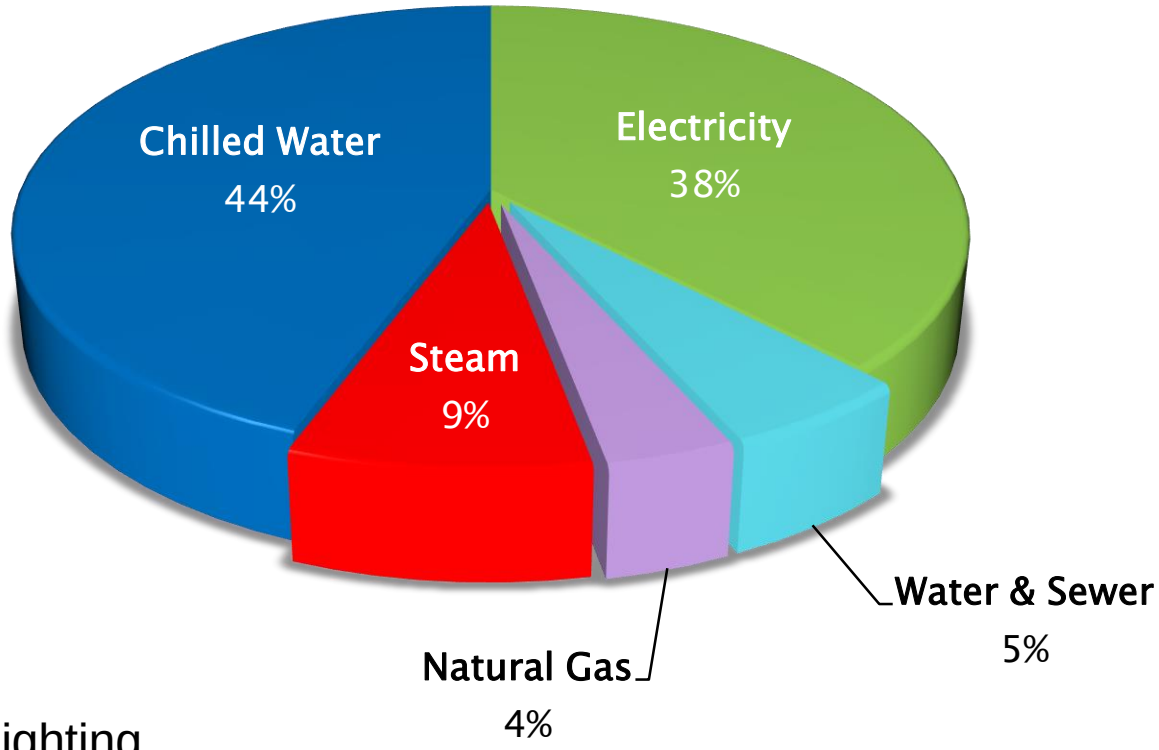
"New technology can be safe & seamless"

Step Change: "Why do it?"

- Transforming the organization
- Improving efficiency and reducing cost
- Change is inevitable – "Adapt"

"A new direction for the future"

MDA Purchased Utilities



10% Lighting

75% Heating, Ventilating, and Air Conditioning

15% Plug Load (computer, Medical & Lab equipment, copier)

Step Change: MDA projects

- Operating Room (OR) Suite unoccupied setback
- Heat Recovery Chiller (HRC)

Alkek Hospital

1.2 million sq. ft.
32 OR suites

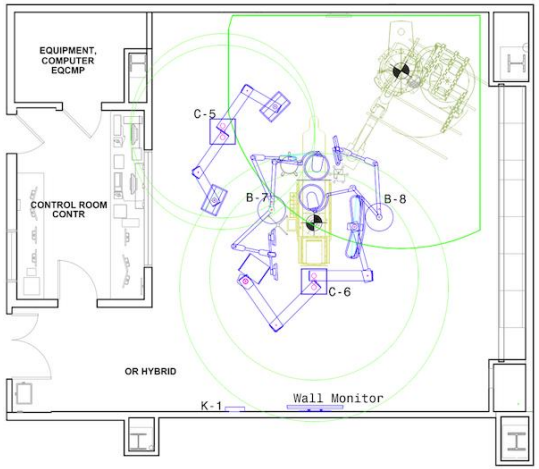
Horizontal expansion

200k sq. ft.
6 OR suites

Alkek: OR Suite setback

Team Challenge:

- Use data from OR scheduler for setback control
- Reduce energy consumption in 32 OR suites – unocc
- Transfer information between two applications
- Select interface protocol (BACnet, OPC, SOAP…)
- Use no additional hardware



OR Suite: Overall Goals

Use New Technology to:

- Reduce air changes
- Reduce simultaneous heating & cooling
- Maintain space humidity & pressurization

OR Suite: Specific Goals

Occupied Suite

25 total Air Changes/Hour

62F to 72F temperature

20% to 60% relative humidity

+0.01" w.c. differential

Unoccupied Suite

6-10 total Air Changes/Hour

68F space temperature

20% to 60% relative humidity

+0.01" w.c. differential

OR Suite: New Process

Build a Diverse Team

- Operations & Maintenance, Infection Control, Surgery, BAS, IT Operations & Engineering

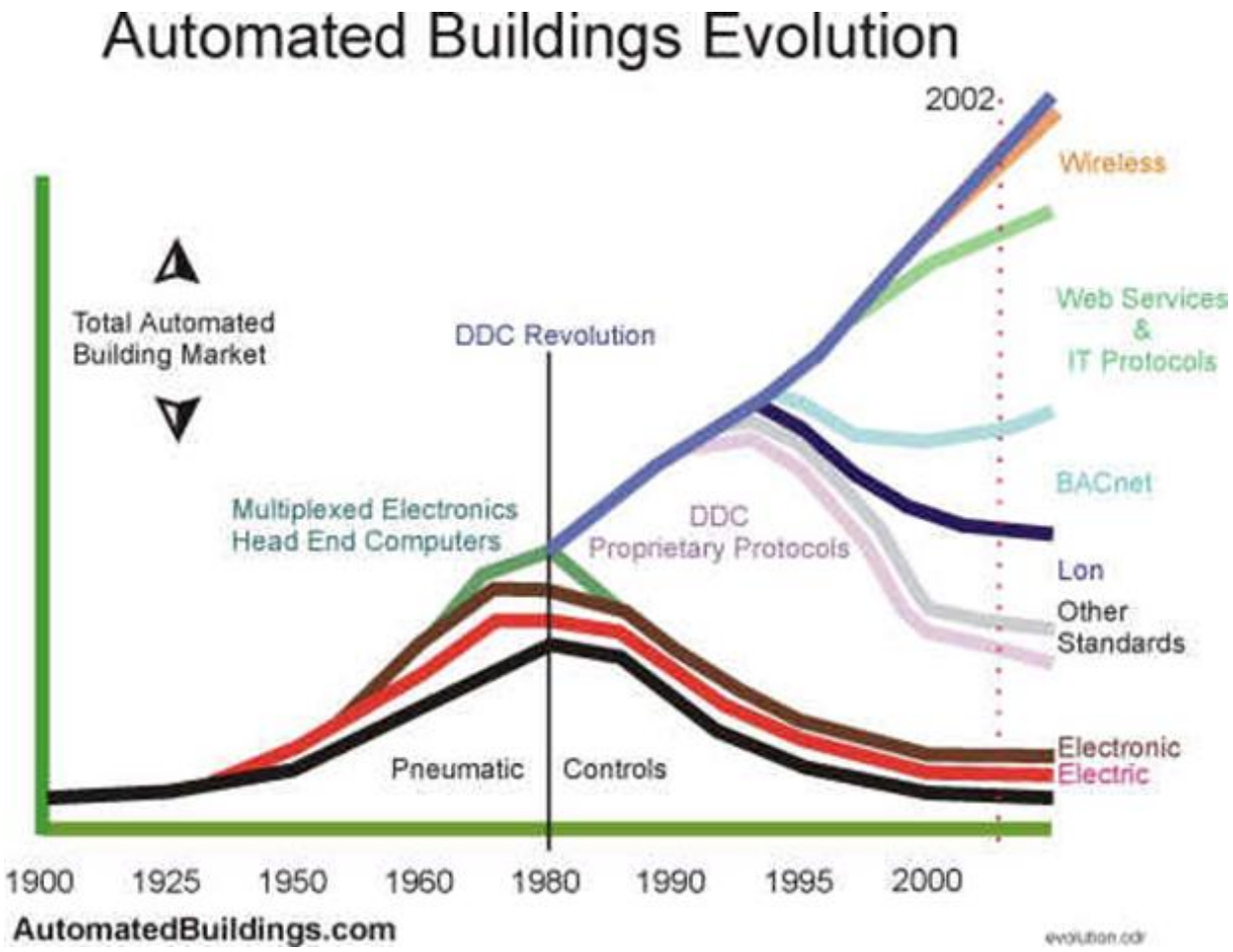
- What's important to the team
  - Intuitive and simple to use
  - Maintain code compliant pressurization, temp, & humidity
  - No change to existing workflow process
  - Failsafe mode is in place to protect our patients and staff
  - Dedicated Emergency OR suites available 24/7

OR Suite: New Concept

Implement Dynamic HVAC Control

- To establish confidence:
  - Pilot project in one OR suite
  - Trend the OR suite environment
  - Update operational procedures
  - Train staff and users on the new Procedures
  - Solicited feedback from the stakeholders

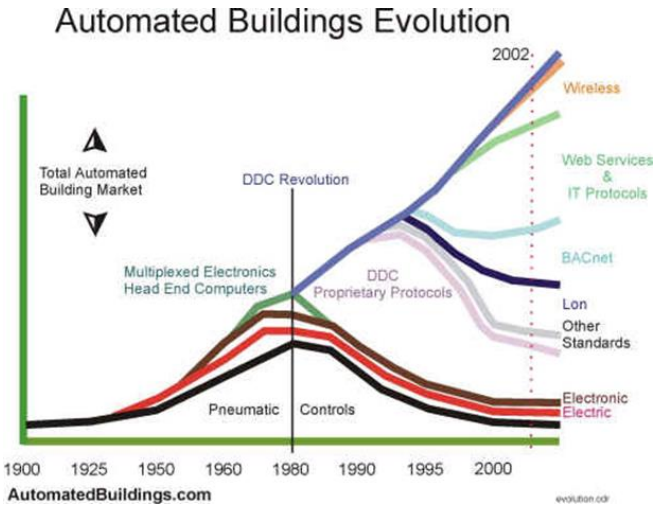
OR Suite: New Technology



OR Suite: New Technology

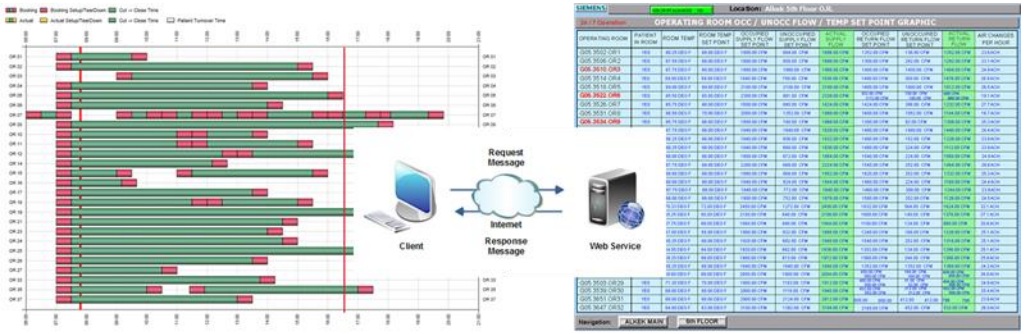
Simple Object Access Protocol
(SOAP/Web Services)

- Integrate OR scheduling application & BAS
  - Upgrade Web Services on BAS application
  - Program interface between OR Surgery and BAS applications
  - Provide compliance reports and control the variances
  - Release overrides automatically

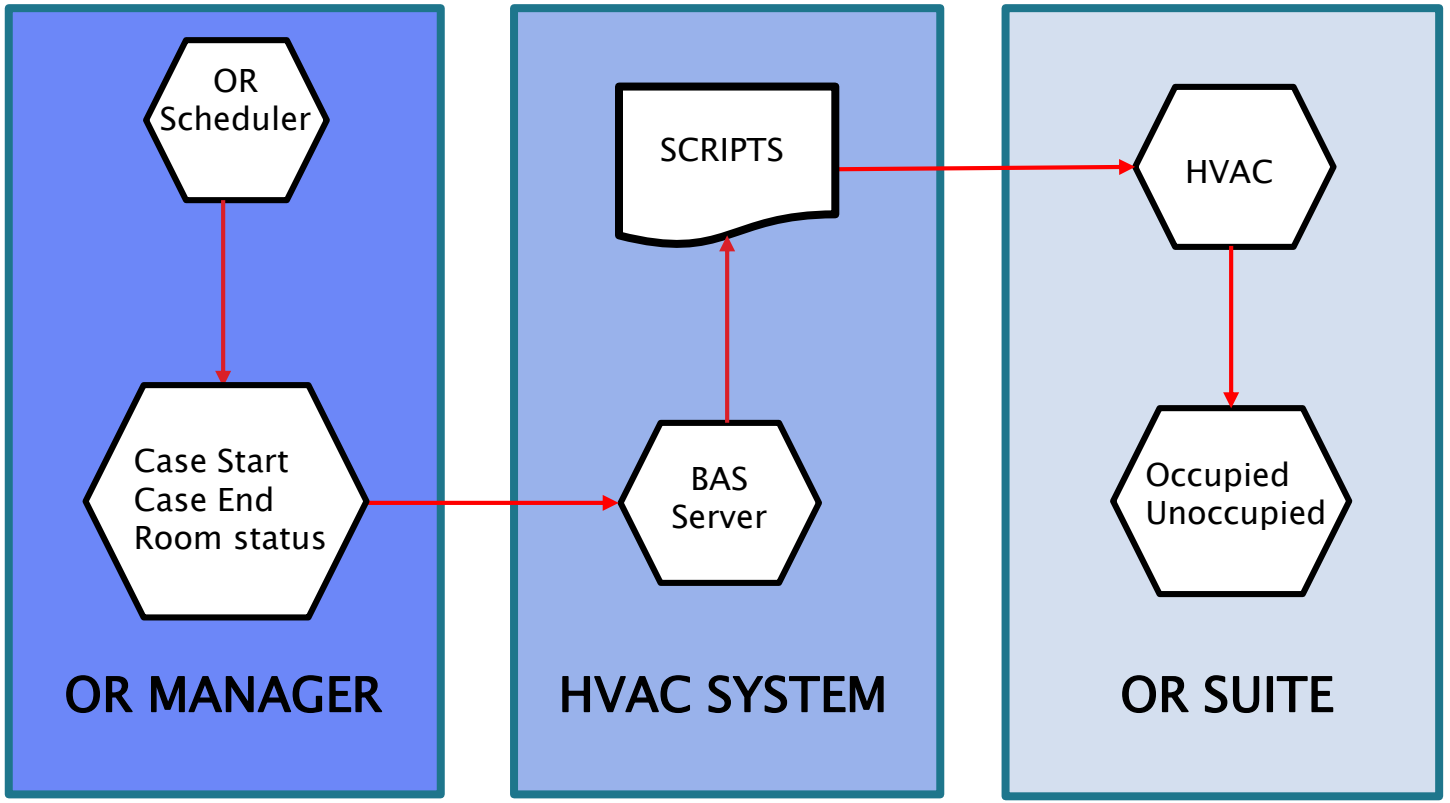


OR Suite: How is it integrated?

- OR scheduling application provides the occupancy status of the ORs
- SOAP Interface translates and routes the data from OR scheduling to the BAS
- BAS then resets the OR supply and return air terminals to occupied/unoccupied mode



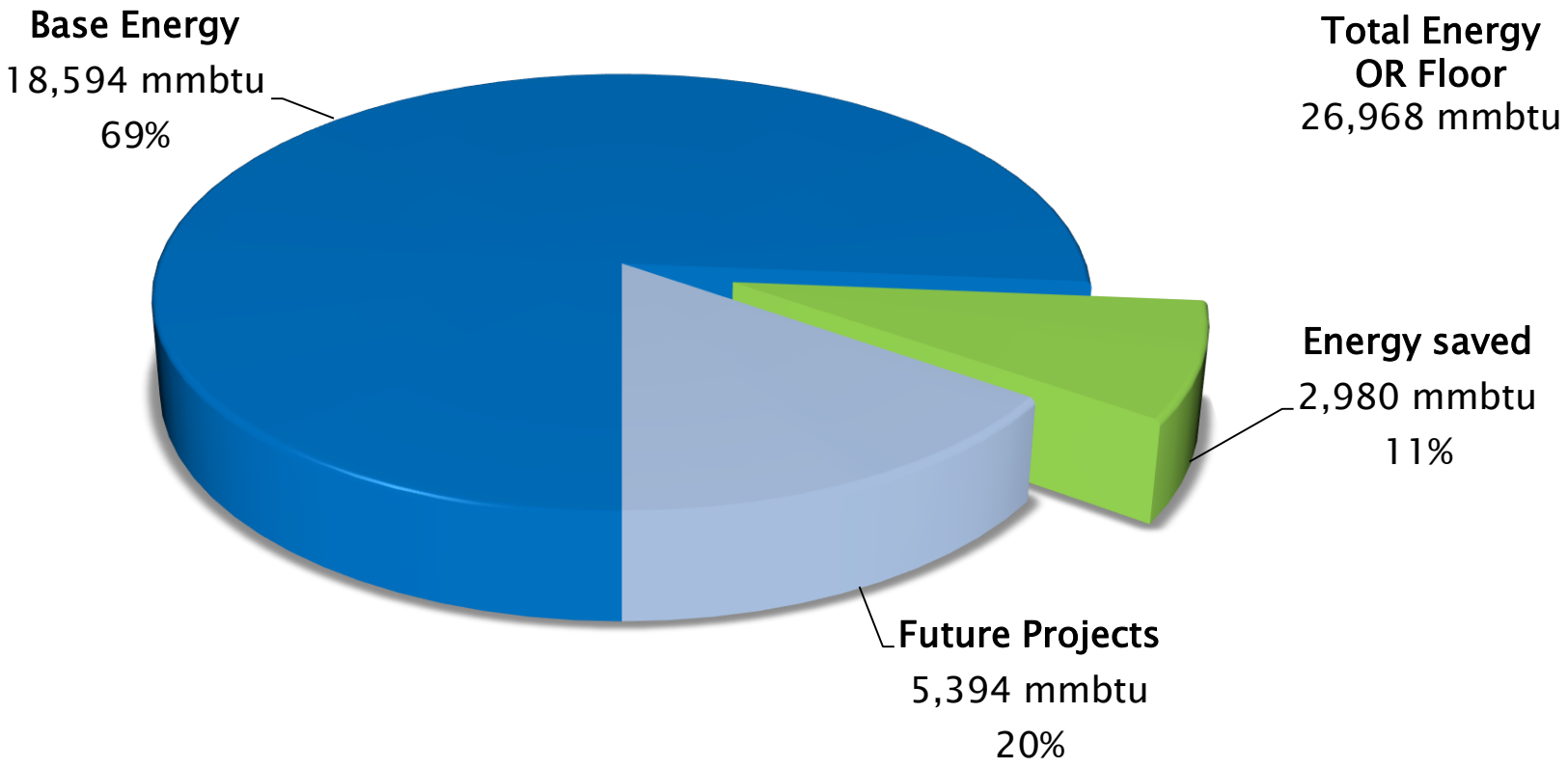
OR Suite: Systems Integration



OR Suite: Managing Risks

- Network interruptions
  - Heartbeat between applications
- Unscheduled surgery
  - Six 24/7 OR suites
- HIPAA compliance
  - Governance Risk & Compliance assessments
- Scheduled outages
  - Update notification system

OR Suite: HVAC Energy saved



Alkek OR floor ≈ 11% Energy Saved (equivalent to 44 homes)

ENERGY SAVING

OR Suite: The Step Changes

Summary:

- Dynamic HVAC system
- Integration of the clinical application & BAS
- Collaborating with new teams
- New ways of doing business

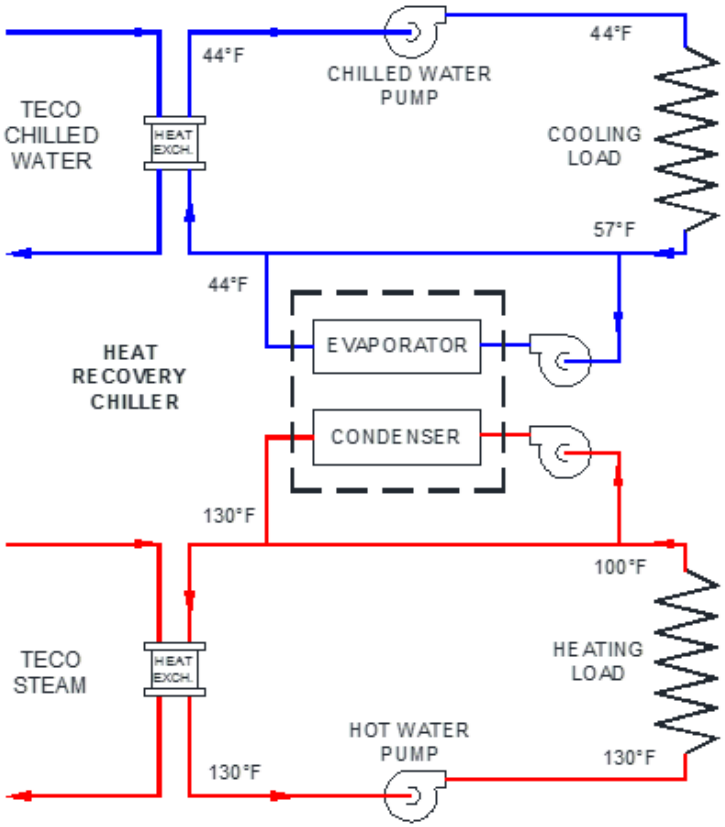
Alkek: Heat Recovery Chiller

The Team Challenge:

- Significantly reduce energy cost
- Significantly reduce energy consumption

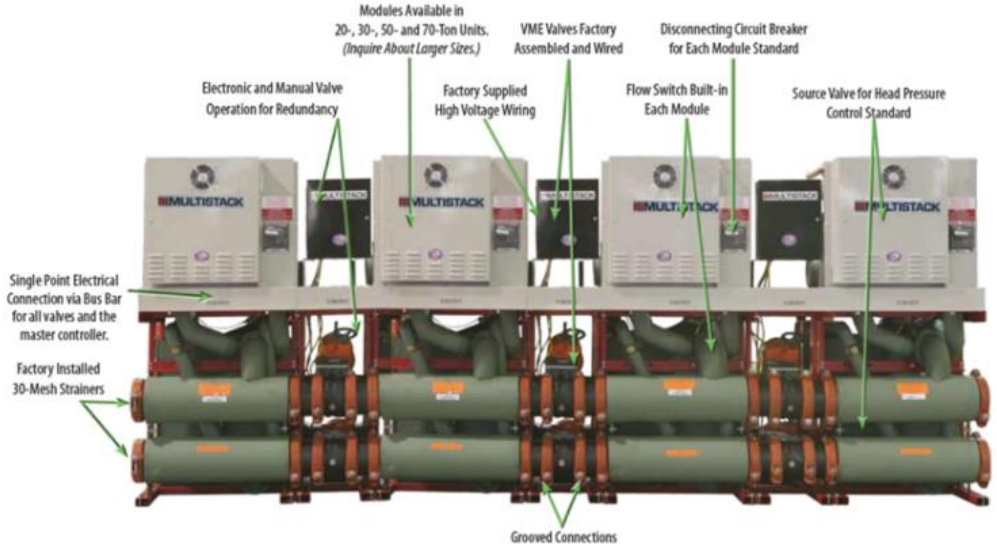
HRC: New Technology

Heat Recovery chiller



HRC: New Technology

- Produce chilled water & hot water
- Waste heat recovered for heating hot water
- Modular and small footprint
- Standard off the shelf components
- BACnet

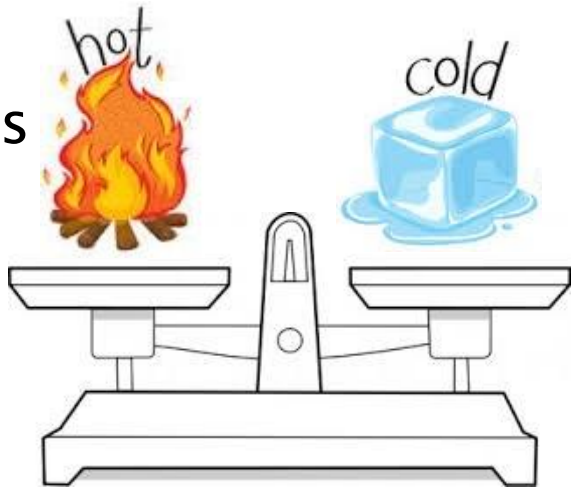


HRC: New Process

- Retro-commission before sizing chiller
- Know your utility rates for heating & cooling
- Understand HW use vs CHW use
- Verify building can operate with 140F HW

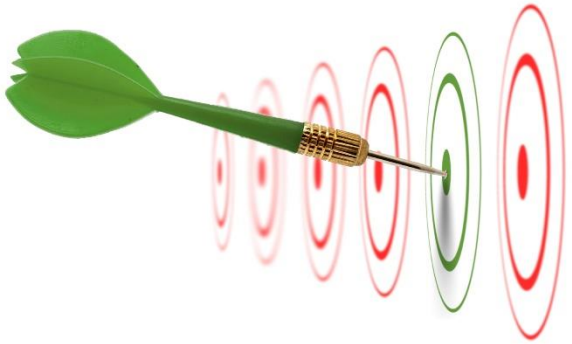
HRC: New Concept

- Chiller ON = save energy
- Chiller Fully loaded = save money
- Install a chiller in a facility served by district plant
- Balance the CHW & HW load
  - Evaporator connected to 1 building
  - Condenser connected to 2 buildings



HRC: Energy Conservation Goals

- MDA Strategic goals: 7% by 2020 (baseline 2012)
- UT System goals: 25% by 2021 (Baseline 2001)
- Energy Code: Ashrae 90.1



HRC: Savings

- Energy saved:
  - 55,000 MMBTU/yr
    - Effectively provides “free” heating HW
- Energy Cost savings:
  - $1.2 million/yr
    - 2% of energy cost

ENERGY SAVING

HRC: Managing risk

- HRC outages
  - Redundant Chilled water service
- Maintainability
  - Continue to operate while repairing one module
- System Reliability
  - UPS on building pump control panels
- Noise
  - Sound enclosure

HRC: The Step Changes

- Significantly reduce energy cost
- Reduce energy consumption
- Improved operational flexibility
- New way of doing business

The Future

Dynamic HVAC Systems in all Spaces

- Conference spaces
- Outpatient clinics
- Lab spaces
- Offices

The Future

Integrating Enterprise Applications with BAS

- Conference management systems
- Guest management system
- Computer maintenance mgmt. system (CMMS)
- Fault detection and diagnostics

The Future

The Changing Workforce

Boomers: 1946 to 1964

How Do They Adapt?

- Open to different working options like telecommuting and flex schedules
- Remain open to fresh ideas from younger staff
- Take on mentoring role
- Work on a succession plan

Gen X: 1965-1980

How Do They Adapt?

- Take on More Leadership Responsibilities
- Provide encouragement to Millennials
- Help bridge the generation gap
- Define expectations
- Collaborate with others

Millennials: 1981-1997

How Do They Adapt?

- Seek the wisdom and experience from senior employees
- Being flexible requires a level of trust that goes both ways
- Be patient

Managers: We all need to adapt

- Train all staff on generational differences
- Trust your staff to do the right thing
- Start the Knowledge Transfer Process
- Develop your staff
- Be flexible

Millennials

How do we attract them to our industry?

- A meaningful social contribution
- Innovative & empowered culture
- Ambitious and interesting projects
- Flexible schedules and work-life balance
- Pay to match the skills needed for the future

Thank You

Questions?

Seminar Evaluation

We hope you enjoyed this session…

Please take a moment to complete the evaluation form.

Thank you!