What we did this Summer at UVM
PPD Controls Team - 2015
Summer School 😞
goals for my summer.

- Upgrade the Metasys controls.
- Change the network topology for the building controls Systems.

and other assigned duties.
Reasons for needing to make these upgrades.

- **Antiquated** system that are no longer supported.
  - **Support** the growth of the campus.
  - **Better** integration capabilities to other control system on campus.
Benefits of the JCI upgrade

Easier remote access.

Better Graphics.

Better Historical data gathering.

Elimination of hard wired interlocks by using networked solutions.
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Elimination of hard wired interlocks by using networked solutions.
The Hardware replacement
The Hardware replacement
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Network rework project

Existing flat control network with one gateway.

DATA Traffic Flow

**Benefit**
easier to implement devices into network.

**Disadvantage**
Hard to troubleshoot network problems.
New Network Structure

Controls network with multiple vlans and multiple gateways.

**Benefits:**
- Better security
- Easier to troubleshoot network problems.

**Disadvantages:**
- Harder to deploy devices into the network.
How I really like to spend my summers!!

Thank you and hope you had a great summer!

-Chuck Norton
WHAT I DID THIS SUMMER:

Summertime and the livin’ is easy…

June is named for Juno, “Queen of the Gods”…

July is named for Julius Caesar…

August is named after Augustus Caesar.
SUMMER PROJECT:
Gutterson Chiller installation
New Carrier Chiller added to Hockey Rink
New carrier Chiller PFG Rink

Controls and devices installed and wired for 100 ton chiller to supply cold water for ice making operation. Older Chillers at PFG were freezing up during cold weather and causing problems with water flow.
New piping and control valve layout allows for greater flexibility and more options than before with older chillers. 14 degree chilled water is protected with glycol and run in an improved circuit to avoid freezing problems in cold weather.
New Condenser piping and actuators allow for better management of chilled water in colder months. Piping from outdoor condensers was changed and added controls installed.
What I like to do in the Summer
Thank you

-Steve Fox
The Importance of....

PREVENTATIVE MAINTENANCE

WHAT IS PREVENTATIVE MAINTENANCE (PM)
- FILTER CHANGES
- BELT INSPECTION, CHANGES
- COIL CLEANING
- SENSOR CALIBRATIONS
- AIR FLOW STATION CLEANING AND CALIBRATION
- TRAP REPAIR/REPLACEMENT

IMPORTANCE OF PREVENTATIVE MAINTENANCE (PM)
- INCREASES THE LONGEVITY OF EQUIPMENT
- MINIMIZES AFTER HOUR CALLS AND REPAIRS
- SAVES ENERGY $$

-Lynn Johnston
MEDPLEX HSRF AHU-4 Semi-annual PM

OUTDOOR AIR DAMPERS
PRE FILTER
PRE FILTER
HEATING COIL
COOLING COIL
SUPPLY FAN
DISCHARGE AIR DAMPERS

1.0" 1.0" 1.0" 2.1" =5.1"

DIRTY FILTER = less efficient

OUTDOOR AIR DAMPERS
PRE FILTER
PRE FILTER
HEATING COIL
COOLING COIL
SUPPLY FAN
DISCHARGE AIR DAMPERS

.35" .4" .4" 1.35" =2.5"

CLEAN FILTER = more efficient

NET PRESSURE SAVINGS=2.6"
FAN CURVE:
Shows the relationship between fan pressure and fan energy. Fan has to work harder to produce same amount of CFM when filters are dirty.

Semi-annual PM produces a delta of Approximately 10 BHP
Cost of PM

Labor: $1,000
Filters/Supplies: $750 $1,750/semi-annual

Savings from PM

37 BHP before PM 27 BHP after PM

.................10 BHP SAVINGS

1 hp = 745.699872 W = 0.745699872 kW

= $0.14/kw * 7.5KW * 24HRS/DAY * 365 DAYS/YR

Electrical Savings: $9,198

Approximate Net Savings $5,700
Thank you
-Lynn Johnston
INTRUSION ALARM SYSTEMS

Designing, engineering, getting budgets & estimates together for new intrusion alarm systems.
Completed major overhaul of Southwick’s control systems.
- Ripped out pneumatic controls & old Delta controls
- Replaced with current Honeywell DDC.
• None of the existing wires or devices were labeled!
• Everything had to be traced out.
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• Everything had to be traced out.
We had to start from scratch and reengineer the whole system from the ground up. We made all new engineering diagrams, and made changes to the sequence of operations on how the equipment works to make things more energy efficient.
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We had to replace all the equipment including damper actuators, and Temp & Pressure sensors to make things compatible with the new DDC system we installed.
We had to replace all the equipment including damper actuators, and Temp & Pressure sensors to make things compatible with the new DDC system we installed. We had to run new conduit and wire to some of these devices.
We ended up putting labels on our equipment and wires so we can find them and service them more efficiently.
New labels on our equipment and wires.
On our engineering diagrams, all the parts and pieces are clearly marked on the floorplans.
All the ‘As-Builts’ and Floor plans have been added to the front end. With this, operators can see the live temperatures and locations that each unit takes care of.
The Cage now gets alarms from the system as to when things go wrong, instead of waiting for customer to call in with comfort complaints.
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ALLIGATORS

SWIM WITH CAUTION

Alligators live in most of Florida’s waterways, typically eating fish, turtles, and other small animals. Large alligators, however, occasionally attack larger animals such as deer, and may even attack humans.

* Swim only in the designated swimming area. This area is monitored, but is not fenced.
* Be watchful for alligators, especially if no lifeguards are present.
* Report approaching alligators to a lifeguard or Park Ranger.
* Never feed alligators.
THANK YOU
Controls Team

HOW I SPENT MY SUMMER VACATION

Derek Fersing
UVM Controls Summer projects list:

• Installed NEW O2 Monitor on Boiler #5. Old Monitor Obsolete.
• Rebuilt CHP Boiler #1 Natural Gas Regulator. (Leak)
• Installed Gas Pressure Transmitter on CHP Boiler #5. (Safety)
• Tuned CHP Boiler #5 Drum Level Transmitter.
  Allowed boiler to run in automatic and operate at full capacity.
• Repaired PFG Field Watering Cannons and Bunker Controls.
Installed NEW O2 Monitor on Boiler #5. Old Monitor Obsolete.
Rebuilt CHP Boiler  #1 Natural Gas Regulator (Leak)
Installed Gas Pressure Transmitter on CHP Boiler #5 (Safety)

- Safety Monitoring: Natural gas pressure is important to monitor!

Need to know if gas line pressure exceeds boiler design.

Need to know if main boiler Natural Gas regulator is damaged.

Need to know if you have a Natural gas leak.

Need to know if components in your gas line are starting to fail.
Tuned CHP Boiler #5 Drum Level Transmitter
Repaired PFG Field Watering Cannons and Bunker Controls
Bass Fishing....
THANK YOU
- DEREK FERSING
Aiken High Humidity

- Complaints from Occupants
- Visual Signs (condensation)
- Supply RH Readings as High as 85%
- Comfort Levels are between 35%-55%
Solutions and Outcomes

• Change When Economizer is Enabled Based on Better OA Conditions
• Change Energy Wheel Bypass Damper Operation To Match Economizer Settings
• BONUS- ERU Drives Now Run at a Slower Speed to Maintain VAV Demand...$$$  
• BONUS-Less Air Noise in Building
• Less Occupant Complaints
Other Improvements

• Two Pipe Heating/Cooling Switchover Based on 6 Hour Average OAT
• Reset Heat Exchanger to a Lower Temperature and Shut System Down During Cooling Season
• Continuous Work on the Recycled Water System
• Automated Window Sequence
Thank you

- Robert Boal
Thanks for a great Summer!

Have a Great Fall!

From the PPD Controls Team 2015