

Cypress Envirosystems Overview

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Agenda

- Who is Cypress EnviroSystems?
- What problem are we solving?
- What is our solution?
- Product overviews
 - How we save energy and improve productivity
 - How does it compare vs. alternatives
- Cypress EnviroSystems Wireless Infrastructure
- Who are our existing customers?

Who is Cypress Envirosystems?

Heritage

- Subsidiary of Cypress Semiconductor (NASDAQ: CY)
 - Quality-driven processes
 - Deep technology experience: Cypress wireless devices are in 100 million devices all around us
- Sister company of SunPower

Leadership

- CEO: Harry Sim, ex-Honeywell executive (15yrs.)
- Executive staff: Over 100 years of facilities and energy experience

Mission

- Modernize existing facilities
- Develop technologies that cost 60-80% less than existing solutions
- Enable retrofits that install in minutes, avoid disruption, require little or no retraining
- Target payback of less than 18 months



Cutting Edge
Silicon Valley
Technology



Applied to Legacy Facilities



Cypress Envirosystems: Problems We Solve...



*Pneumatic
Thermostats*



Dial Gauges

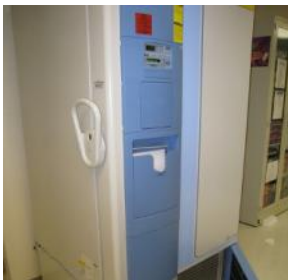
Need to save energy &
improve uptime, but
hindered by outdated
facility?



Steam Traps



*Standalone Transducers,
LED/LCD Displays*



-80C Freezers



*Legacy Fluorescent
Lighting*

***Manual Instrumentation, Not Programmable, No Diagnostics...
Equals: Wasted Energy, Higher Downtime, More Labor Required***

Saving Energy in Older Buildings/Plants

- **Need to save energy and improve productivity?**
- **But facing challenges in older site such as:**
 - Steam traps that leak costly steam without your knowledge?
 - Manual gauges and transducers which you spend valuable skilled labor to monitor?
 - Critical freezers that fail without notice, degrading contents?
 - Trouble justifying new technology because payback is too long, disruption to operations too high?
 - Pneumatic thermostats that have no zone or night setback control, and require lots of manual attention?

We Enable Older Facilities To Save Energy And Improve Productivity

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What is our Solution?



WIRELESS PNEUMATIC THERMOSTAT
"Go from Pneumatic to DDC in minutes"



WIRELESS GAUGE READER
"Remotely Read Gauges in minutes"



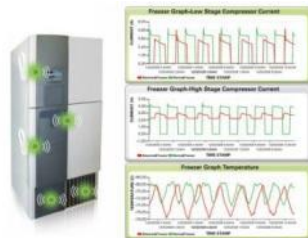
WIRELESS STEAM TRAP MONITOR
"Avoid Expensive Steam Leaks"



BLUE BOX HUB/RECEIVER



WIRELESS TRANSDUCER READER
"Remotely Read Transducers – No Wires"



WIRELESS FREEZER MONITOR
"Predicts and Avoids Costly Freezer Failure"



WIRELESS LIGHT CONTROLLER
"Reduce Electricity Use"

Non-invasive, easy retrofit, energy and labor savings, payback under one year

Wireless Gauge Reader & Wireless Transducer Reader Overview

Wireless Gauge Reader (WGR)



- Non-invasive, clamp-on to existing gauges in minutes
- Enables remote wireless monitoring of gauge
- No downtime
- No leak check
- No audit/requalification (e.g. FDA, OSHA)
- No running wires
- No drawings and approvals
- Minimal retraining of staff
- No new enterprise software
- Battery life of 3 years at typical sample rates
- IP65/NEMA 4 rated for outdoor use
- Optional OPC or BACnet interface to existing building or plant automation system

***Non-Intrusive Reader Mounts On Top of Existing Gauge in Minutes...
Enables Alarming, Trending, Historization for Process/Asset Monitoring and Troubleshooting***

Wireless Transducer Reader (WTR)

- Enables wireless remote monitoring of virtually any analog transducer or instrument with the following outputs: 4-20mA, 0-5V, or 0-10V, RS-232, RS-485, thermocouple, thermistor
- Non-disruptive – no need to change out transducers, break pressure seals, or run wires
- Compatible with most existing flow meters, current meters, particle counters, thermocouples, weigh scales etc.
- Enables data logging to enable trend analysis, notification, or statistical process control
- Optional Class 1 Div 2 and IP65/NEMA 4 enclosures available
- Battery life of 3 yrs under typical sampling rates
- Optional OPC or BACnet interface to existing building or plant automation system



***Non-Intrusive Reader Mounts On Top of Existing Gauge in Minutes...
Enables Alarming, Trending, Historization for Process/Asset Monitoring and Troubleshooting***

How Does This Compare with Alternatives?

Comparison with Alternatives

BENEFITS

- Non-invasive, clamp-on
- No downtime
- No leak check
- No audit/requalification (e.g. FDA, OSHA)
- No running wires
- No drawings and approvals
- Minimal retraining of staff
- No new enterprise software

	Wireless Gauge Reader	Wired Transducer
Transducer/Sensor	\$1,200	\$300
Install/Wiring Labor	\$50	\$1,500
Drawings, Reviews	\$0	\$500
Code Compliance	\$0	\$1,000
I/O Panel/Termination	\$0	\$300
Process Downtime	\$0	\$1,000
Total Cost (per point)	\$1,250	\$4,600

About 65% Lower Cost Compared with Alternative Solutions

WGR/WTR – Reducing Energy Use & Improving Productivity

Energy Savings

- Compressed Air – ramp down compressor
- Exhaust/Venting – ramp down fans, variable speed fans
- Low cost audits for current, steam/water pressure, temp, flow

Reduce labor and consumable costs

- Gas Cylinder monitoring (regulator gauges, e.g. cal gases)
- Domestic water supply

Improved Equipment Uptime via Monitoring

- Filter changeouts (measure delta P)
- Pumps, compressors, fans (measure delta P)
- Air handlers, chillers, scrubbers

Reduced troubleshooting cost

- Fast non-invasive data gathering/logging/alarming

Safety/Compliance

- Avoid manual reading at difficult to reach or hazardous locations
- Monitor exhaust/venting (e.g. Magnehelic gauge)

Better yield/quality

- Upgrade older process units with no data outputs
- Data for statistical process control, or feed to advanced control models

Reduce Energy Consumption

Customer Challenge:

Compressors, pumps and fans often run at settings beyond what is needed e.g. 125psi for Compressed Dry Air instead of 85psi, wasting >20% energy.

Operators lack monitoring so they don't reduce pressure – avoid risk of process upset.

Installing transducers is very time-consuming & disruptive for multiple air branches and can introduce leaks.

WGR Solution:

Typically manual gauges are already installed throughout CDA systems or coolant loop systems.

WGR's can monitor and alarm pressure/flow to ensure process integrity and reduce energy use.

App note available:
"Compressed Dry Air System Energy Savings"



Savings on 500hp Compressed Air System can be up to \$100K per year, with a 8 month payback.

Energy Audits: Reduce Time and Cost to Perform

Customer Challenge:

Many customers have energy savings targets, but lack baseline data.

To obtain a baseline, they must approve drawings changes, install transmitters and potentially disrupt their process... before even 1 Watt of savings!

WGR Solution:

The WGR is quick & non-invasive to install to log temp, flow rates, pressures for steam, hot water, chilled water, air flow.

Takes minutes to install, and may be removed or reused after audit.



**WGR installation takes minutes and cost 70% less than transmitters...
and may be removed and reused at other locations**

Improve Asset Health and Uptime

Customer Challenge:

Older equipment such as packaged heat exchangers, boilers, chillers, air dryers, hydraulic conveyors, water filters, HEPA filters, etc. often have little or no electronic monitoring outputs.

Adding new transducers require modifying the equipment package and may impact existing service/warranty agreements.

WGR Solution:

Typically manual gauges are already installed on older packaged equipment.

The WGR can monitor, trend and alarm parameters for early fault detection and corrective action.

Case Studies Available:
"Facilities Monitoring"

"Tri-State Power Asset Health Monitoring"



"In the first two weeks of using the WGR, we were able to detect and develop corrective measures for a potentially costly issue that we never suspected" – Mike Long, Control System Supervisor, Tri-State Generation and Transmission

Monitoring of Legacy Air Handlers



Typical Air Handler Units



**Wireless Magnehelic Reader
Monitors Filters and Airflow**

- Most older Air Handler Units (AHU's) are not monitored/automated
- Labor intensive to detect problems, check filters
- Proper air flow is the critical parameter - but can only be seen via manual dial gauges (e.g. Magnehelics)
- Solution: Wireless Magnehelic Reader clamps on in minutes and transmits reading wirelessly to BMS/BAS
- No downtime, no wiring, no leak checks
- Alarm notification for filter changeout, low air flow
- Condition-based maintenance, not schedule-based



**Wireless Readers
Mounts Over Existing Gauges**

Enables Monitoring of Legacy Air Handlers for 70% Less Than Traditional Transducers

Tri-State Power: Craig Station, Colorado



1.5 GW Coal Fired Plant



Hydraulic system for conveyors



Hydrogen Dryer Tower Pressure

Tri-State Pilot Project Summary

Plant Sponsor: Mike Long, Tri-State Power

- Gauges Monitored for Pilot Project
- Flight conveyor hydraulic fluid pressure and temp – 2 points
- Generator breaker compressor discharge pressure – 2 points
- Hydrogen Dryer Tower Pressure – 6 points

Bill of Materials

- 10 Wireless Gauge Readers
- 5 Repeaters
- 1 Receiver/Server

Results

- Within first 2 weeks, data collected identified key asset not performing as planned, corrective measures put in place
- If not detected, problem would lead to shorter life and earlier replacement of expensive capital equipment

Improve Yield/Consistency: Six-Sigma Programs

Customer Challenge:

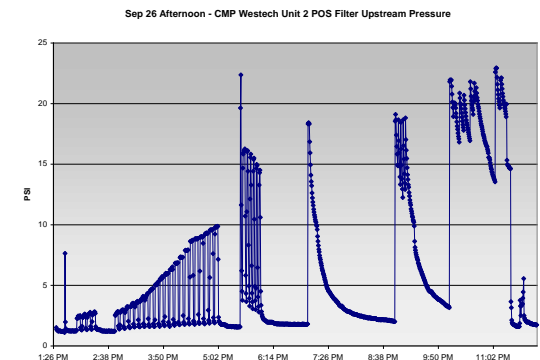
Companies implementing Six-Sigma identify variables, measure them, and keep them within statistical control limits to improve consistency/yield.

But many variables may not be monitored e.g. pressure of city supply water, switching frequency of air dryers etc. To implement statistical methods, much data needs to be collected, but budget is often limited.

WGR Solution:

The WGR makes it easy to gather data cost effectively with no disruption for use in Statistical Process Control models and/or Advanced Control Models.

Non-invasive WGR lets customer monitor variety of data to see which are statistically significant, without costly permanent installation.



“~70% less cost than adding hard wired devices” - Zach Rhyne, Utilities Specialist, Genentech Inc.

Reduce Consumables Usage

Customer Challenge:

Gas cylinders (e.g. cal gases), water filters, HEPA filters are often replaced at scheduled intervals rather than actual usage.

This results in more frequent changes than required, or results in downtime when not replaced in a timely manner.

Installing transducers may introduce leaks and require safety inspection.

WGR Solution:

Gas Cylinder regulators gauges, Magnehelic air flow gauges (for HEPA filters) are great examples of data which can be read and trended to optimize consumables use.

Reduces consumables cost, avoids downtime, and optimizes skilled labor.

Case Studies Available:
"Micrel Gas Management Savings"



**We saved \$215K per year on our 280 Gas Cylinders, a seven month payback.
– Ron Farry, Operations Manager, Micrel Inc.**

Perform Faster Troubleshooting

Customer Challenge:

When excursions occur, technicians inspect many gauges and equipment in the hope of finding the source of the problem...but the relevant data was often not captured and is not available.

Often, data from different subsystems or equipment needs to be compared and time-indexed to identify the root cause.

WGR Solution:

The WGR may be permanently or temporarily installed to log data, and notify on excursions.

The time-indexed historical record helps reduce troubleshooting time and confidence.



**Minimize Troubleshooting Labor and Downtime with
Non-Invasive Data Logging of Historical Data**

Enhance Safety, Reduce Incidents

Customer Challenge:

Many facilities perform manual rounds to inspect equipment and log gauge readings.

Some gauges are in awkward locations or may pose safety risks - high up on column, near heat sources, under floor etc.

Accurately reading gauges “face-on” (without parallax) are sometimes difficult or impossible.

WGR Solution:

Wherever there is a gauge in a hard-to-access location that needs to be read, the WGR is a fast and low cost candidate to do the job.

Reduce likelihood of safety incidents due to reading gauges in hard-to-access locations.



**“I’m not getting more engineers, so I need to have them working smarter...using the WGR”
- Pat Ireland, Operations Manager, Novellus Inc.**

Wireless Steam Trap Monitor Overview

Wireless Steam Trap Monitor (WSTM)

CYPRESS ENVIROSYSTEMS WIRELESS STEAM TRAP MONITOR



- Necessary part of the steam distribution system, usually hundreds of units per site
- 15-20% average failure rate; leaks steam
- Failed traps lose \$5,000 per year (1/8" orifice)
- Manual inspection typically done annually – labor intensive, do not catch problems in timely manner
- Solution: Wireless steam trap monitor detects faults and alarms on error, avoiding expensive leak loss
- Non-invasive installation: no breaking seals, wireless, integrates with BMS
- Battery life of 3 years at typical sample rates
- IP65/NEMA 4 rated for outdoor use
- 18 months payback on investment



Leaking Traps Waste Energy

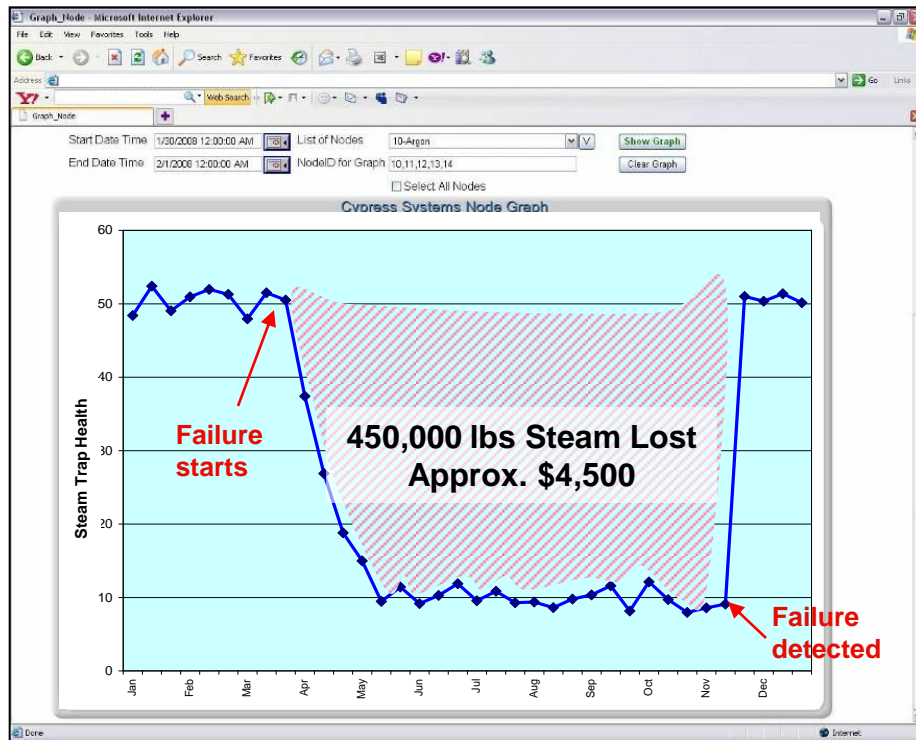


Typical Steam Trap

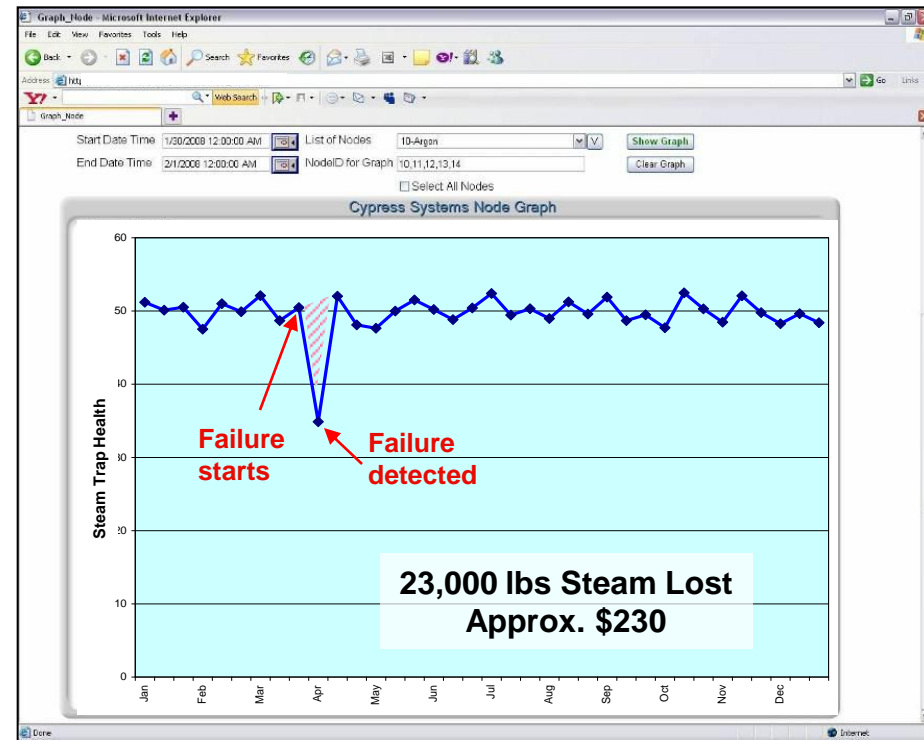
Save Energy and Time Locating Faulty Steam Traps

How Steam Trap Monitoring Saves Energy

Without Steam Trap Monitoring



With Steam Trap Monitoring



Typical savings for 1/8" orifice steam trap

Timely Detection and Correction of Trap Failures Avoids Prolonged Costly Steam Leaks

WSTM – Reducing Energy Use & Improving Productivity

TYPICAL STEAM TRAP LEAKAGE

- Most sites perform manual steam trap inspections once per year
- On average, 15-20% of steam traps are “failed open” at a given time
- A “failed open” steam trap (1/8” dia pipe) wastes \$5,000 of steam per year

WSTM REDUCING LEAKAGE

- WSTM would detect failures and avoid prolonged leakage year round, without need for manual inspections
- For a 200 steam trap site, WSTM would save about \$75,000 to \$100,000 per year
- WSTM has a 12-18 month payback

Saves \$75,000 to \$100,000 Annually for a 200 Steam Trap Site

WSTM Screenshot



WSTM Executive Summary Report

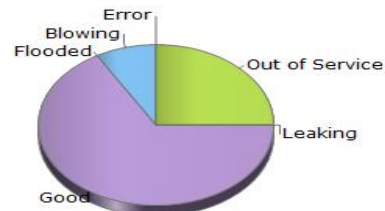
Overview

Total Number of Traps: 12		
Health Status	Count	% of Total
Nodes with low battery	0	0.00
Nodes with poor RF signal strength	0	0.00

Energy Summary

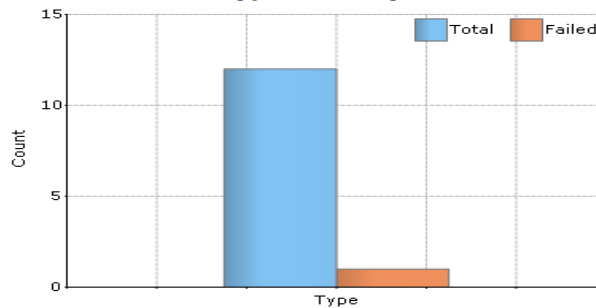
Steam loss (lbs/hr)	35.70
Dollar loss (\$/yr)	4,691.38

Condition Summary



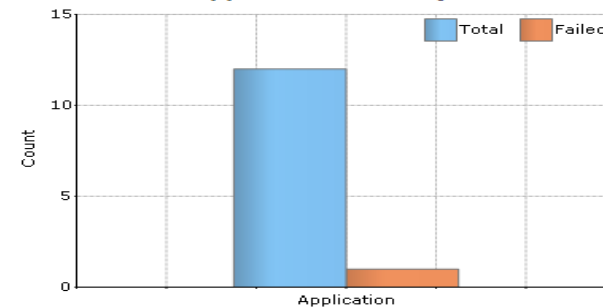
Condition	Count	% of Total
Good	8	66.67
Out of Service	3	25.00
Blowing	1	8.33
Error	0	0.00
Flooded	0	0.00
Leaking	0	0.00

Type Summary



Type	Total Count	% of Total	Failure Count	Out of Service Count	% of In Service Failure
Bucket	12	100.00	1	3	11.11
Totals:	12	100.00	1	3	11.11

Application Summary



Application	Total Count	% of Total	Failure Count	Out of Service Count	% of In Service Failure
Drip	12	100.00	1	3	11.11
Totals:	12	100.00	1	3	11.11

Lilly Indianapolis, IN – Deploying 2,400 WSTM's



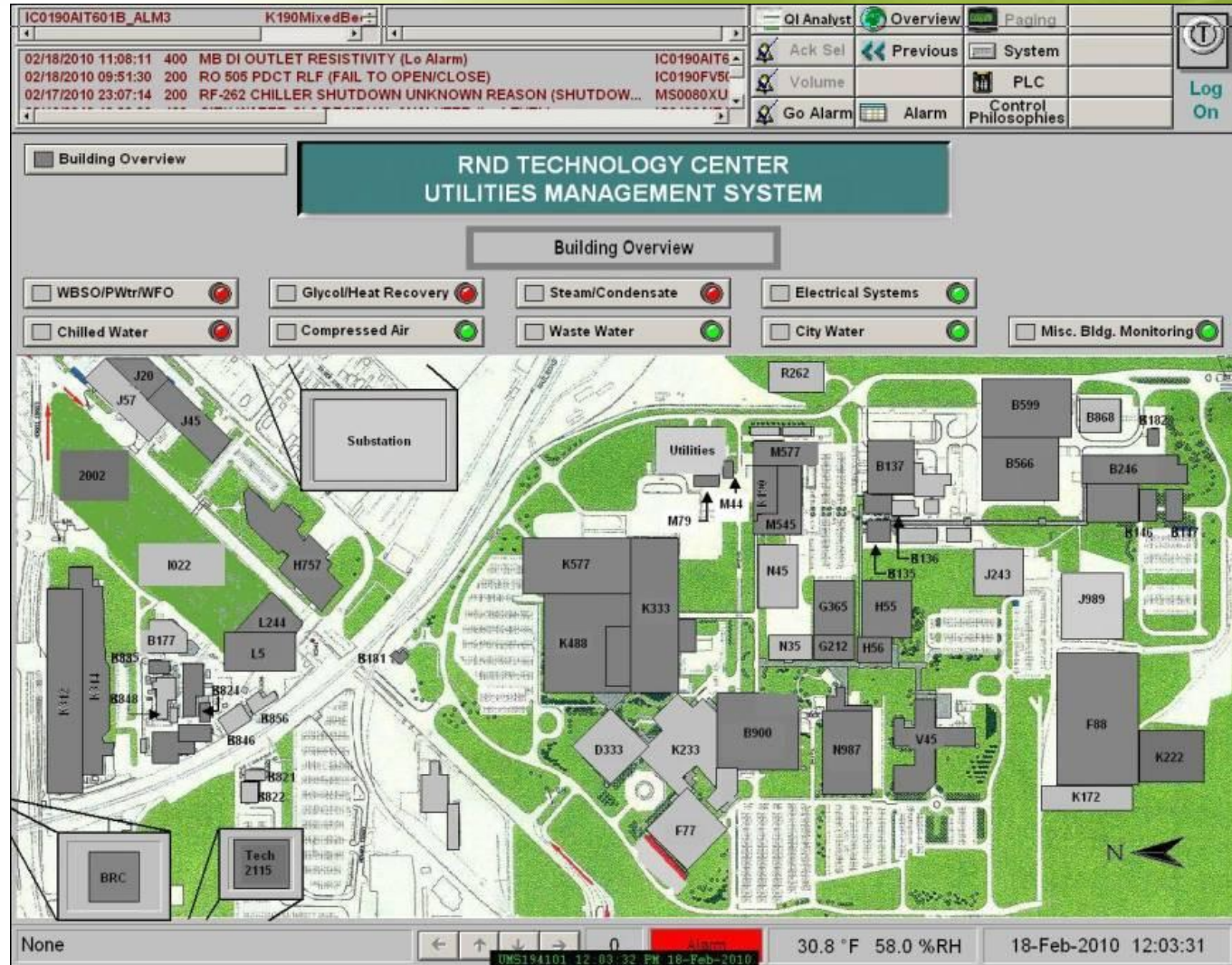
● BBS

● WRE

● WSTM

Traversing Campus Wide Steam Distribution System

- Lilly Technology Center headquarters spans two city blocks
- Robust wireless network blankets large Tech Center complex to connect WSTM and other Cypress wireless devices



“Wireless is outstanding and will be a large competitive advantage to use the same platform for multiple applications” – Manager Steam Plant Operations

Extreme Environment

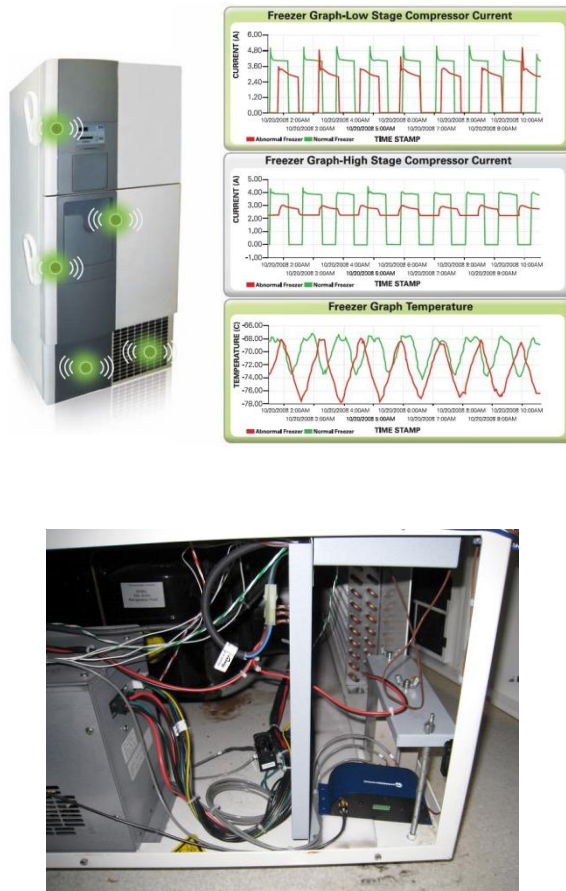


Cement bunker over 25 ft deep
Inaccessible "hot vault" traps at temperature up to 500 deg F
No hindrance in getting wireless signal back to the Blue Box
and report condition data of the steam trap



Wireless Freezer Monitor Overview

Wireless Freezer Monitor (WFM)

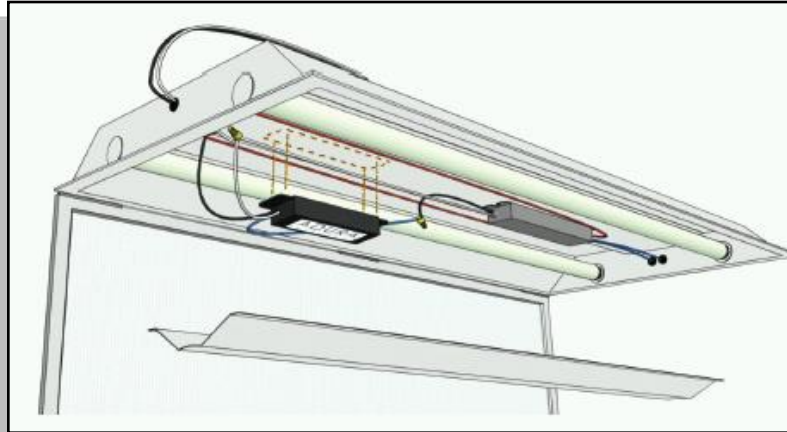


- Monitors health of -80C freezers holding critical material or samples
- Provides early warning of freezer failure
- Measures critical parameters including high-stage and low-state compressor current, door open/close status, and internal temperature
- Retrofit installation on existing freezers
- No running wires – battery life of 3 years
- Includes user interface for history trending, alarming, cell phone notification
- No new software to install – simple web browser interface enables multi-user visibility
- Optional connectivity to existing building or plant automation systems via OPC or BACnet

***Wireless Health Monitoring of Existing Freezers for Predictive Maintenance.
Early Detection Enables Proactive Measures to Avoid Content/Sample Degradation***

Lighting Controls Retrofit

Easy Retrofit of Existing Fixtures



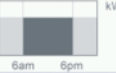


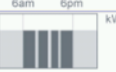
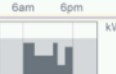
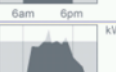
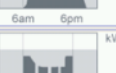
Lighting Controller



Occupancy or Light
Sensor Interface



Wall Control
Interface

Strategy Employed	Savings Expected	
Smart Scheduling	10-40%	 kW
Daylight Harvesting	5-15%	 kW
Task Tuning	5-20%	 kW
Presence Detection	25-50%	 kW
Personal Control	5-15%	 kW
Demand Management	5%	 kW
Total	50-75% (Blended)	 kW

“Plus....sophisticated Enterprise Energy Management software designed to work with your lighting system to save energy”

Wireless Pneumatic Thermostat Overview

70% of Commercial Buildings Still Pneumatic

- **Waste energy, more maintenance, unhappy tenants...**
 - No Night Setback, No Zone Control, No Optimal Start/Stop, No Occupancy Override, No Demand Response...
- **High Cost to Retrofit**
 - Market rate of \$2,000 - \$3,000 per zone for traditional DDC retrofit
- **Disruptive to Tenants**
 - Open Walls, Ceiling, Exposure to Asbestos

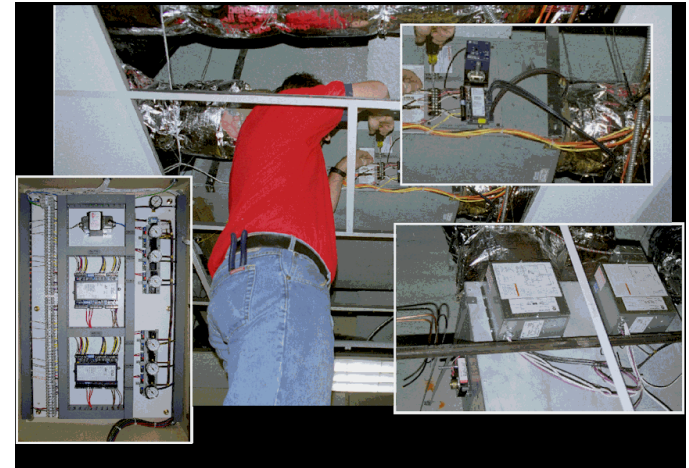


Retrofitting Existing Buildings is a PAIN IN THE NECK!!

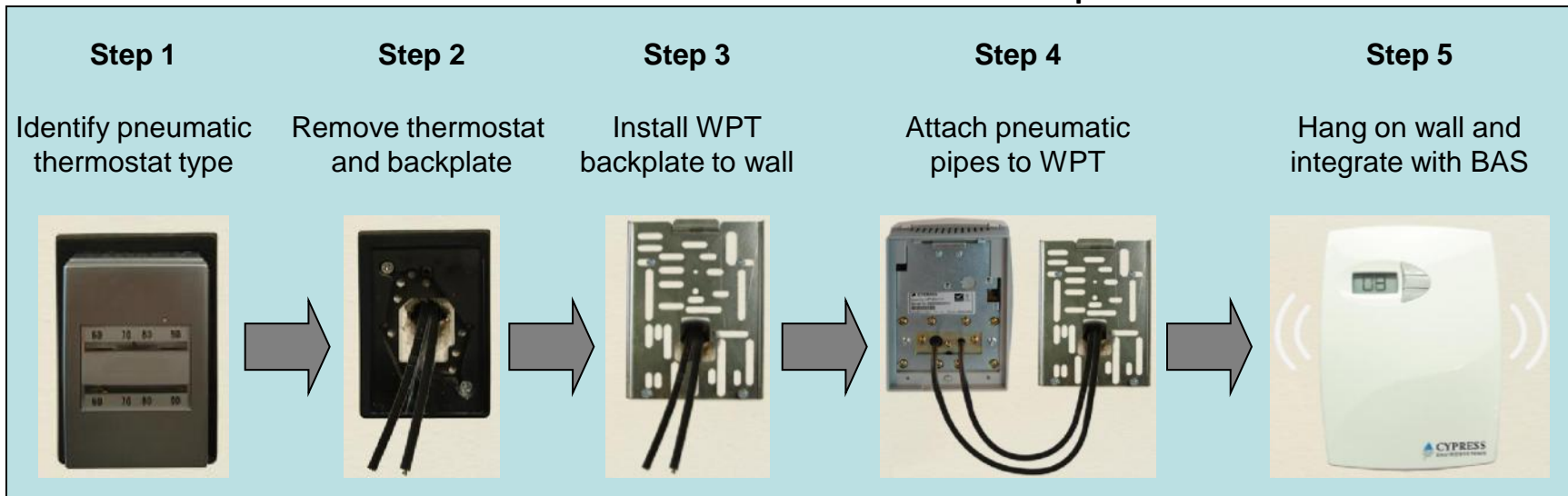
The WPT enables zone control without disrupting occupants

- Opening walls and running wire drive up traditional DDC retrofit costs
- Occupants do not want to be disrupted by projects
- The WPT provides benefits of DDC zone control
 - ✓ 20-minute retrofit
 - ✓ 80% lower cost
 - ✓ Minimal disruption

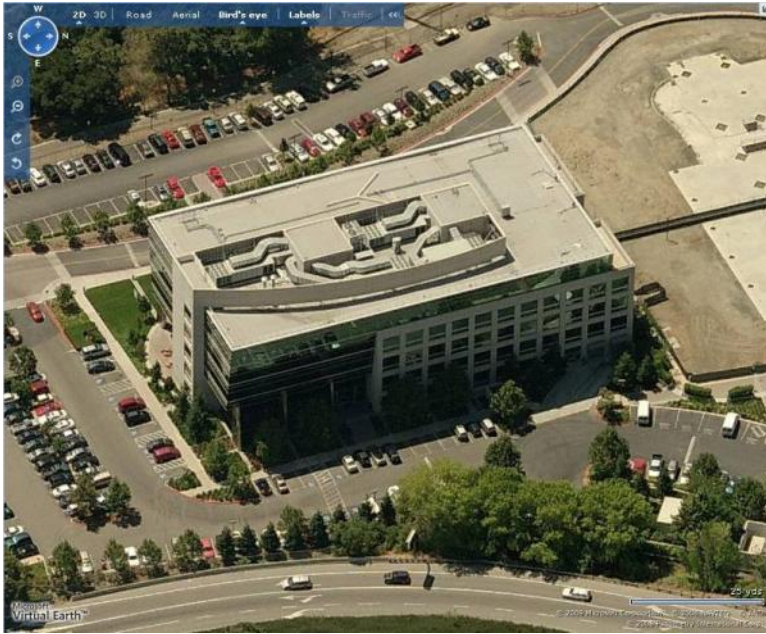
Traditional DDC Retrofit is Invasive



WPT Provides DDC Zone Control without Disruption



Enabling Smart Grid – Auto Demand Response



- County of Santa Clara, Social Services Administration
- 2 Buildings, each 5 story, built 2000
- Total 300,000 sq-ft
- 350 Pneumatic Thermostats, non-communicating
- Estimated Demand Response load shed: 200kW
- Would like to participate in PG&E Auto-DR program, but challenging with pneumatic thermostats

15 Minute Replacement of Thermostat



80% Lower Cost, 5% of the Time vs. Conventional DDC

Santa Clara County Government Project



	Cypress EnviroSystems Wireless Pneumatic Thermostats Retrofit	Conventional Direct Digital Control Retrofit
Installed Price	350 x \$500 = \$175,000	350 x \$2,500 = \$875,000
Time Required	8 days	6 months
Disruption to Operations	Minimal	Significant
Potential Exposure to Toxic Substances in Walls	None	Unknown
Paid for by PG&E Auto DR Incentive	100% covered	31% covered

“Installation took only eight days and was one of the easiest, fast and most cost effective energy efficiency improvements we have ever made in our buildings”
- Jeff Draper, Manager of Building Operations

Quantified Savings for Santa Clara County

300,000 sq-ft facility, \$175,000 cost to retrofit (before utility incentives)

- **Energy Savings:** \$42,000 per year
 - 350,000 kWh per year base load reduction, at \$0.12 per kWh
 - Derived from enforcing Temperature Setpoint Policy and Retrocommissioning
- **Demand Response Savings:** \$7,500 per year
 - 10,700 kWh curtailed at peak rates \$0.70 per kWh
 - Based on 12 events per year, 4 hours each, 0.6kW shed per thermostat
- **Maintenance Cost Savings:** \$156,000 per year
 - Continuous commissioning data helped prioritize maintenance and reduced troubleshooting time
- **Payback Period:** 16 months *BEFORE* UTILITY INCENTIVES
 - Some savings kick in partially in first year, fully in subsequent years.

Wireless Pneumatic Thermostat Savings

Estimated Savings Potential

\$635/year (per 1000 sq-ft)
Upfront Retrofit Cost: \$600 (per 1000 sq-ft)
Payback Period: 11 months

Note: All calculations based on 300,000 sq-ft retrofit project, \$0.10 per kWh electricity rate, and \$80 per hour maintenance labor rate.

Energy Savings

18-30% reduction in HVAC use
2500 kWh per year / 1000 sq-ft
\$235/year @ \$0.10/kWh

Maintenance Savings

3-6 hours/year per 1000 sq-ft
\$400/year @ \$80/hour

Temp
Setpoint
Policy

Retro
Commis-
sioning

Night/
Weekend
Setback &
Occupancy
Override

Duct Static
Pressure &
Supply Air
Temp
Reset

Deadband
Temp
Policy

Automatic
Calibration

Faster Trouble-
Shooting/
On-going
Commissioning

Reduced
Tenant
Complaints/
Calls

10-15%
1200 kWh/yr
\$115/yr

5-10%
600 kWh
\$60/yr

2-4%
300 kWh
\$30/yr

3-5%
400 kWh
\$30/yr

5 hours/yr
\$400/yr

Source:
Case Study

Source:
DOE2
eQUEST
Modeling

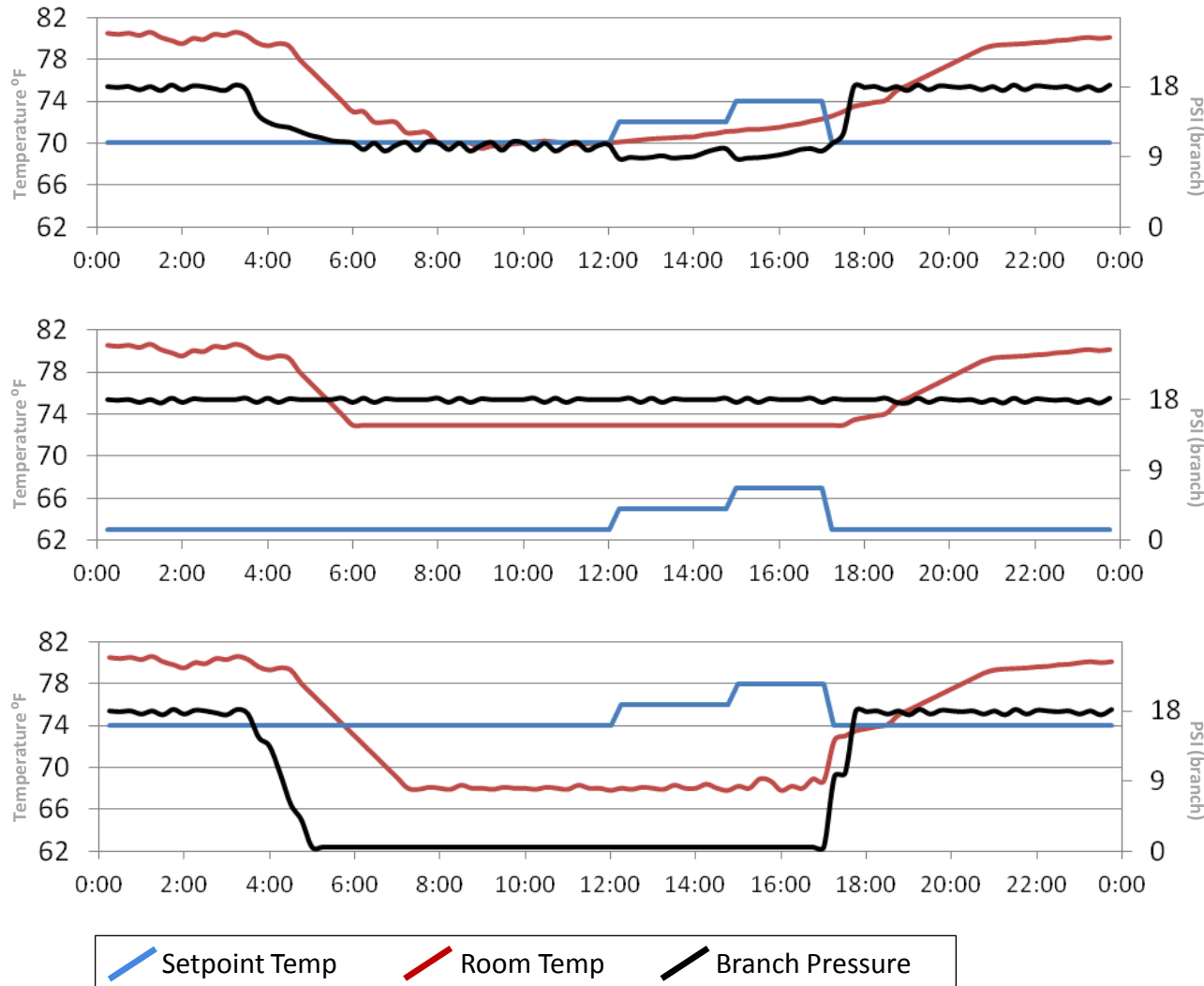
Source:
Trane
Application
Note




Source:
Cypress
Modeling

Source:
Case Study

The WPT's Diagnostic Data Enable Retro and Ongoing Commissioning to Improve Maintenance Costs and Save Energy

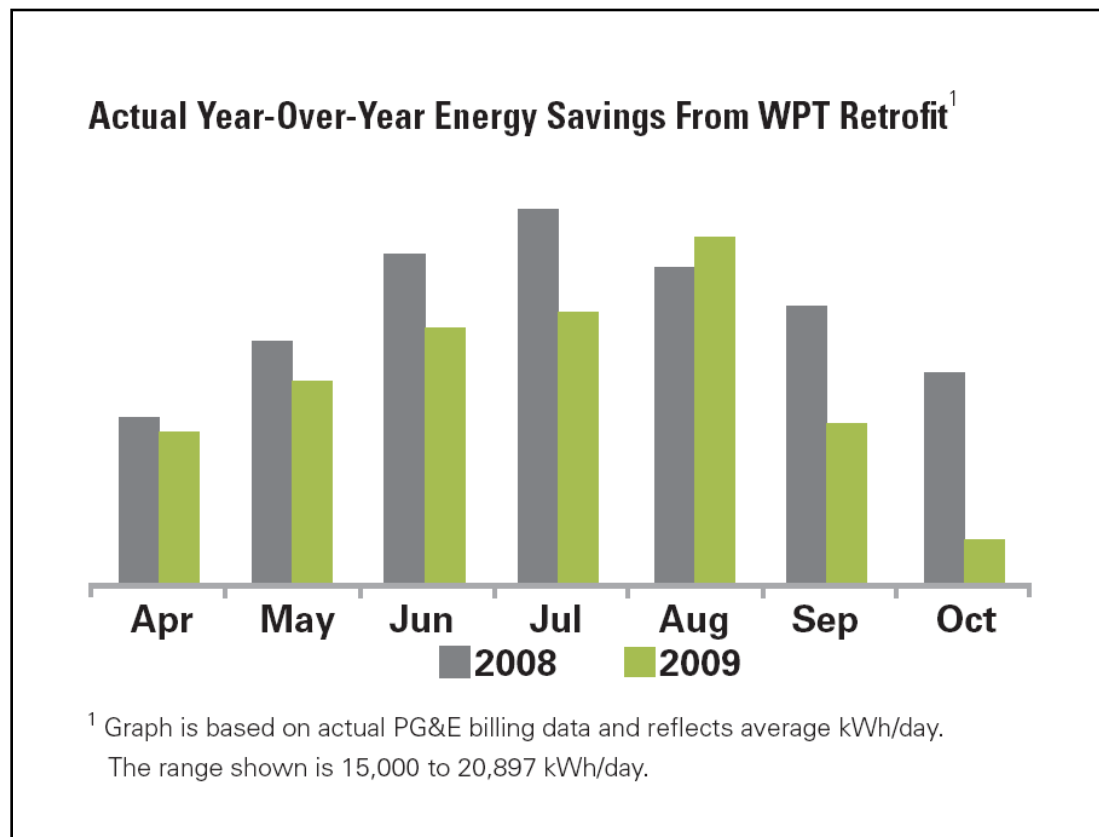
Diagnostic Data



Alarm	Possible Faults
	<ul style="list-style-type: none"> • None
	<ul style="list-style-type: none"> • Faulty Reset Velocity Controller • Stuck damper • Broken spring • Undersized cooling capacity design
	<ul style="list-style-type: none"> • Faulty Reset Velocity Controller • Electric reheat and AC on • VAV Box Fault • Adjacent Zone Overcooling

Actual Case Study Results: 15% Savings

- Santa Clara County Government Buildings – 300,000 sq-ft retrofit completed in March 2009.
- Actual Post-retrofit energy use compared with same period in prior year, adjusted for deg-days.
- Reduction in HVAC energy use of 15% due to temperature setpoint policy and retrocommissioning.



Full case study available at: http://www.cypressenvirosystems.com/files/pdf/CountyofSantaClara_EnergySavings_Final.pdf

Documented 15% Reduction on HVAC Energy Use vs. Prior Year Due to Retrocommissioning and Temperature Setpoint Policy Enforcement

LEED Credits











LEED for Existing Buildings: Operations & Maintenance Registered Project Checklist

			Energy & Atmosphere, continued			
			Existing Building Commissioning			
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Credit 2.1	Investigation and Analysis	✓	2
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Credit 2.2	Implementation	✓	2
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Credit 2.3	Ongoing Commissioning	✓	2
			Performance Measurement			
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Credit 3.1	Building Automation System	✓	1
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Credit 3.2-3.3	System Level Metering		1 to 2
			Credit 3.2	40% Metered		1
			Credit 3.3	80% Metered		2

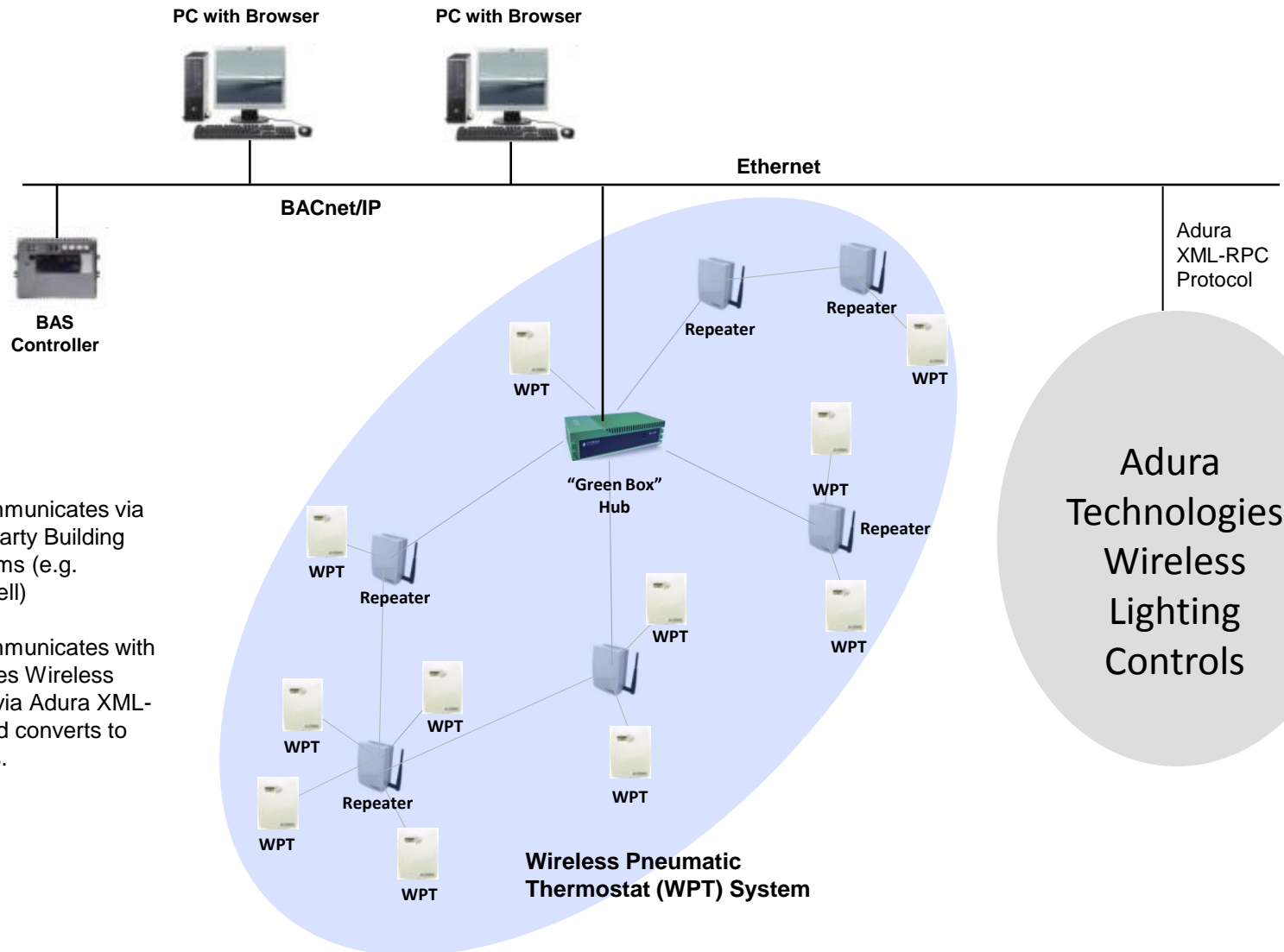
***Tenant Comfort and Satisfaction, Ability to Attract Top Tier Tenants,
and Lower Lease Churn Rates Are Incremental to Energy Savings Benefits***

Compatible with Existing Systems

VENDOR	BAS	TEST PARTNER	LOCATION
	BACtalk	Syserco	Fremont, CA
	ALC	ACCO Engineered Systems	San Leandro, CA
	Excel, Tridium	Honeywell Corp.	Golden Valley, MN Wixom, MI
	Metasys	RSD-Total Control JCI Sensor Products	San Jose, CA Milwaukee, WI
	Apogee	Siemens Building Technologies	Hayward, CA
	Andover Continuum StruxureWare	EMCOR Integrated Solutions	Pleasanton, CA
	Trane Tracer Summit BCU	Trane	Calgary, Alberta - Canada
	ORCA	Cypress Semiconductor	San Jose, CA

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Current Wireless Pneumatic Thermostat (WPT) Architecture



Notes:

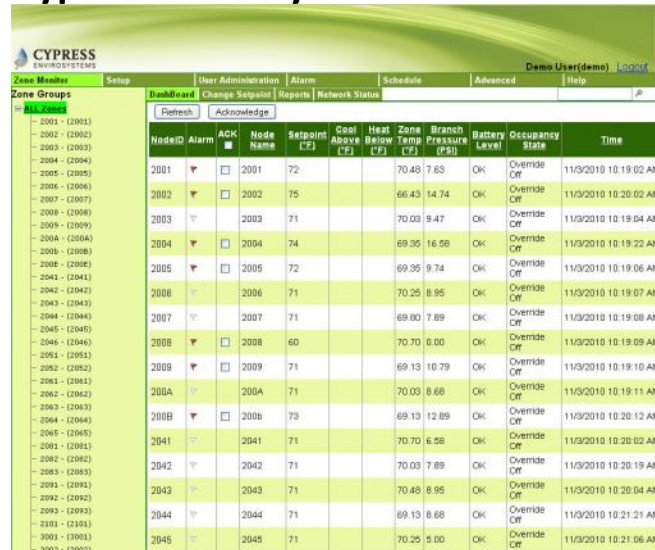
WPT System Communicates via BACnet/IP to 3rd party Building Automation Systems (e.g. Johnson, Honeywell)

WPT System Communicates with Adura Technologies Wireless Lighting Controls via Adura XML-RPC interface, and converts to BACnet/IP objects.

Adura
Technologies
Wireless
Lighting
Controls

Examples of how the WPT Provides Zone Visibility and Control through the GBC and other Building Automations Systems

Cypress Envirosystems GBC Interface



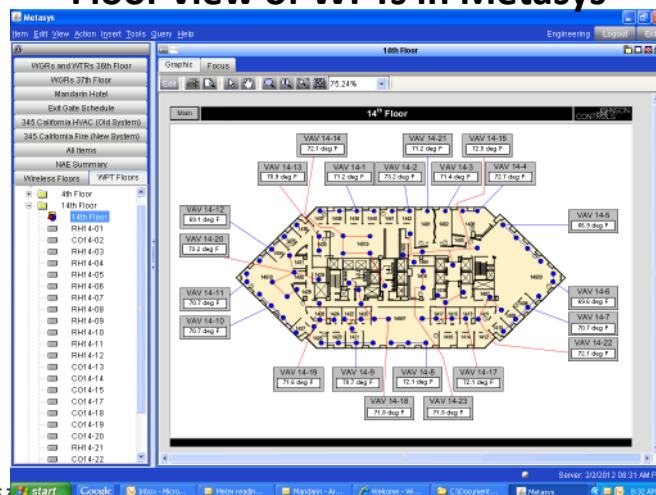
The screenshot shows the Cypress Envirosystems GBC interface with a table of zone data. The table has columns for NodeID, Alarm, ACK, Node Name, Setpoint (°F), Cool Above (°F), Heat Below (°F), Zone Pressure (PSI), Branch Level, Occupancy State, and Time. The data is organized by zone groups, with a list of zone IDs on the left and a detailed table of zone parameters on the right.

NodeID	Alarm	ACK	Node Name	Setpoint (°F)	Cool Above (°F)	Heat Below (°F)	Zone Pressure (PSI)	Branch Level	Occupancy State	Time
2001			2001	72		70.48	7.63	OK	Override Off	11/3/2010 10:19:02 AM
2002			2002	75		66.43	14.74	OK	Override Off	11/3/2010 10:20:02 AM
2003			2003	71		70.03	9.47	OK	Override Off	11/3/2010 10:19:04 AM
2004			2004	74		69.35	16.56	OK	Override Off	11/3/2010 10:19:22 AM
2005			2005	72		69.95	9.74	OK	Override Off	11/3/2010 10:19:06 AM
2006			2006	71		70.25	8.95	OK	Override Off	11/3/2010 10:19:07 AM
2007			2007	71		69.80	7.89	OK	Override Off	11/3/2010 10:19:08 AM
2008			2008	60		70.70	0.00	OK	Override Off	11/3/2010 10:19:09 AM
2009			2009	71		69.13	10.79	OK	Override Off	11/3/2010 10:19:10 AM
200A			200A	71		70.03	8.66	OK	Override Off	11/3/2010 10:19:11 AM
200B			200B	73		69.13	12.89	OK	Override Off	11/3/2010 10:20:12 AM
2041			2041	71		70.70	6.58	OK	Override Off	11/3/2010 10:20:02 AM
2042			2042	71		70.03	7.89	OK	Override Off	11/3/2010 10:20:19 AM
2043			2043	71		70.48	8.95	OK	Override Off	11/3/2010 10:20:04 AM
2044			2044	71		69.13	8.66	OK	Override Off	11/3/2010 10:21:21 AM
2045			2045	71		70.25	5.00	OK	Override Off	11/3/2010 10:21:06 AM

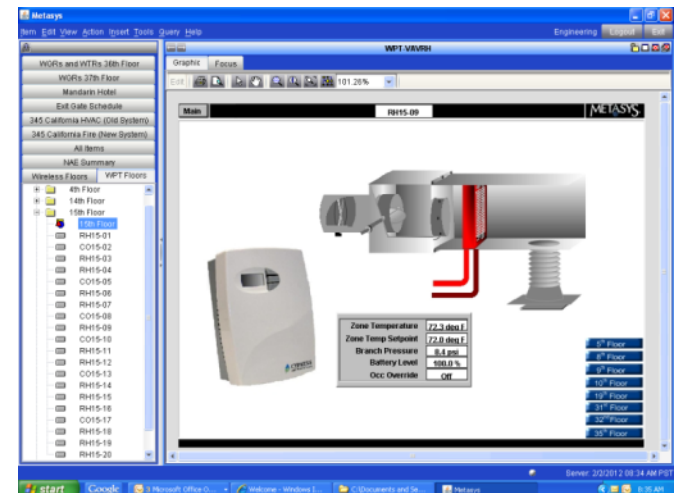
Floor view of WPTs in StruxureWare



Floor view of WPTs in Metasys



Detailed zone view of WPTs in Metasys



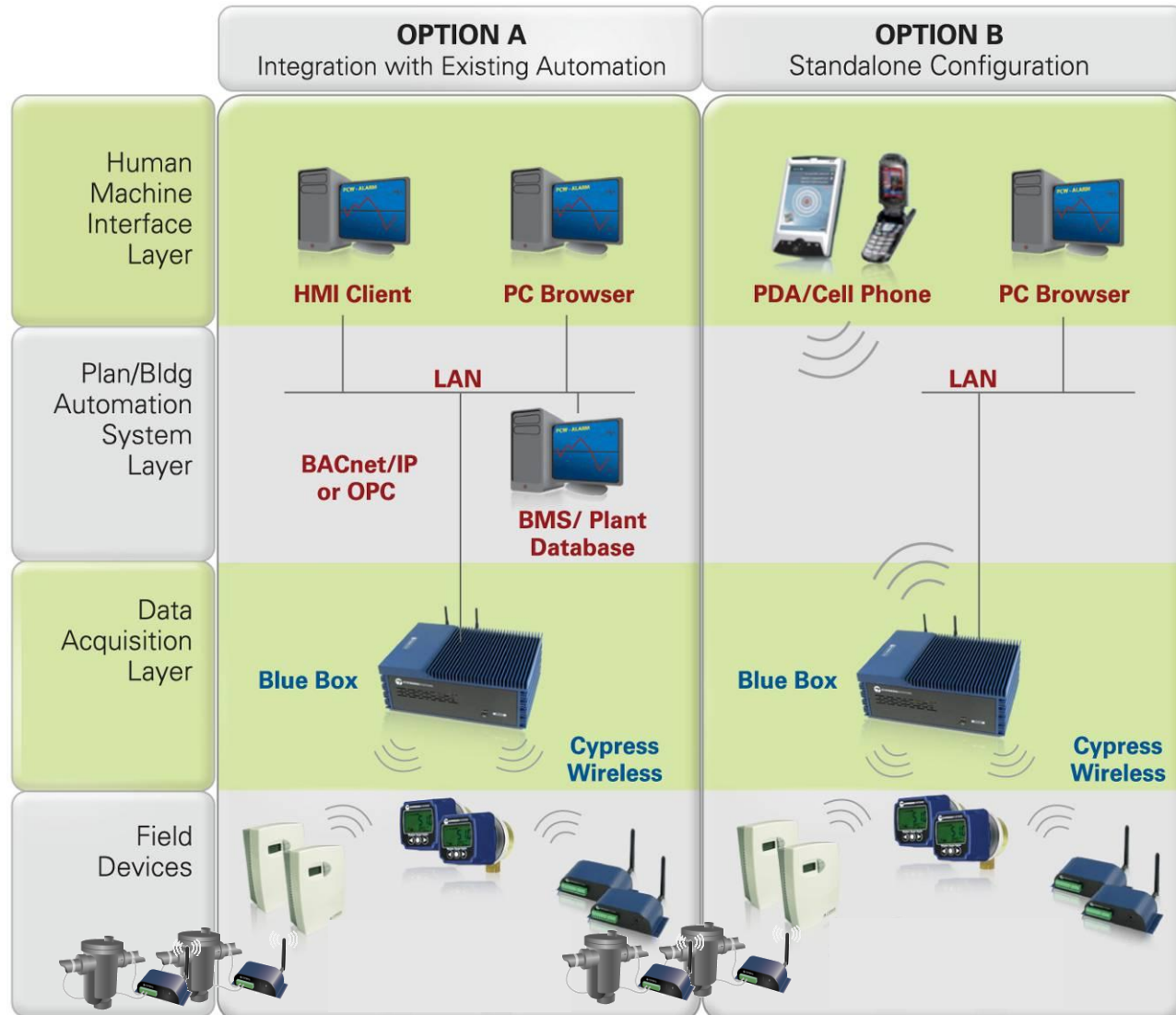
Agenda


- Who is Cypress EnviroSystems?
- What problem are we solving?
- What is our solution?
- Product overviews
 - How we save energy and improve productivity
 - How does it compare vs. alternatives
- Cypress EnviroSystems Wireless Infrastructure
- Who are our existing customers?


Key Components



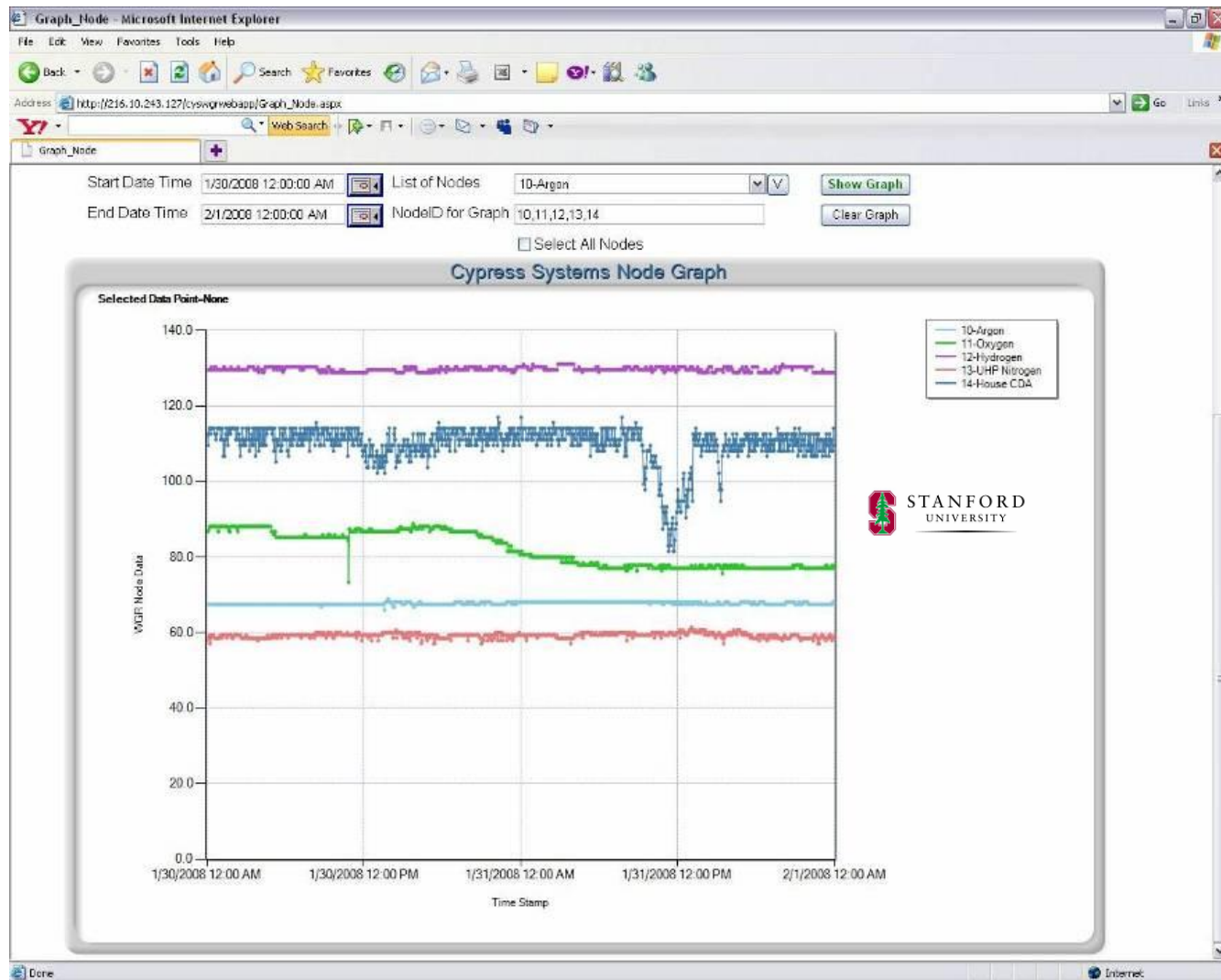
Wireless System Architecture Options



 Equipment supplied by Cypress EnviroSystems

 Existing equipment supplied by customer

Built-in “Zero-Footprint” Web-Based HMI



Web Interface Allows History Trending, Graphs, Alarming/Notification, Remote Commands

Agenda

- Who is Cypress EnviroSystems?
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Selected Customers



Customer Feedback

“In the first two weeks of using the WGR, we were able to detect and develop corrective measures for a potentially costly issue that we never suspected” *Mike Long, Control System Supervisor, Tri-State Generation and Transmission*

“This is a no-brainer way to save money” *Dan Hutcheson – CEO, VLSI Research*

“Micrel saves time, money and effort. We are very happy with our purchase.”
Guy Gandenberger – VP Global Operations, Micrel

“We’ve already discovered a major problem we would have never seen without your equipment” - *Rick Pasquini, Operations Manager, Linear Technology*

“~70% less cost than adding hard wired devices” - *Zach Rhyne, Utilities Specialist, Genentech Inc.*

“Almost certainly the most compelling argument in favour of the Cypress solution compared with possible alternatives is cost” – *Andrew Bond, Industrial Automation Insider*

“The impact of dynamically reading many of these hidden gauges, previously thought too difficult, has uncovered significant cost, resource savings & yield improvement opportunities.” – *Dick Deininger, Taylor Deininger Partners Inc.*

“Workforce reductions are motivating organizations to increasingly adopt online Plant Asset Management (PAM) solutions. Using the Cypress Wireless Gauge Reader allows real-time distribution of critical asset information to PAM systems enabling the workforce to take proactive action.” – *Wil Chen, ARC Advisory Group*

“This is the coolest thing I have seen in the past couple of years”
Walt Boyes – Editor-in-Chief, Control Magazine

“This is a big step toward wireless sensor network implementations in manufacturing”
Gary Mintchell – Editor in Chief, AutomationWorld