



# Regional Seminar Series Chicago, IL



## Sustainability—It Is Just Good Business Ted Gorrie - VP Sales, Americas



## OSIsoft Overview

- ❑ Established in 1980
- ❑ Founder - J. Patrick Kennedy
- ❑ Private
- ❑ Headquarters - San Leandro, CA
- ❑ 720 + employees
- ❑ 200 + employees in product development
- ❑ PI System Installed base
  - ❑ 14,000 + systems (excluding OEMs)
  - ❑ 110 + countries
- ❑ Footprint in:
  - ❑ 40% of Fortune 1,000 process & manufacturing companies
  - ❑ 65% of Global 500 process & manufacturing companies



## Mission



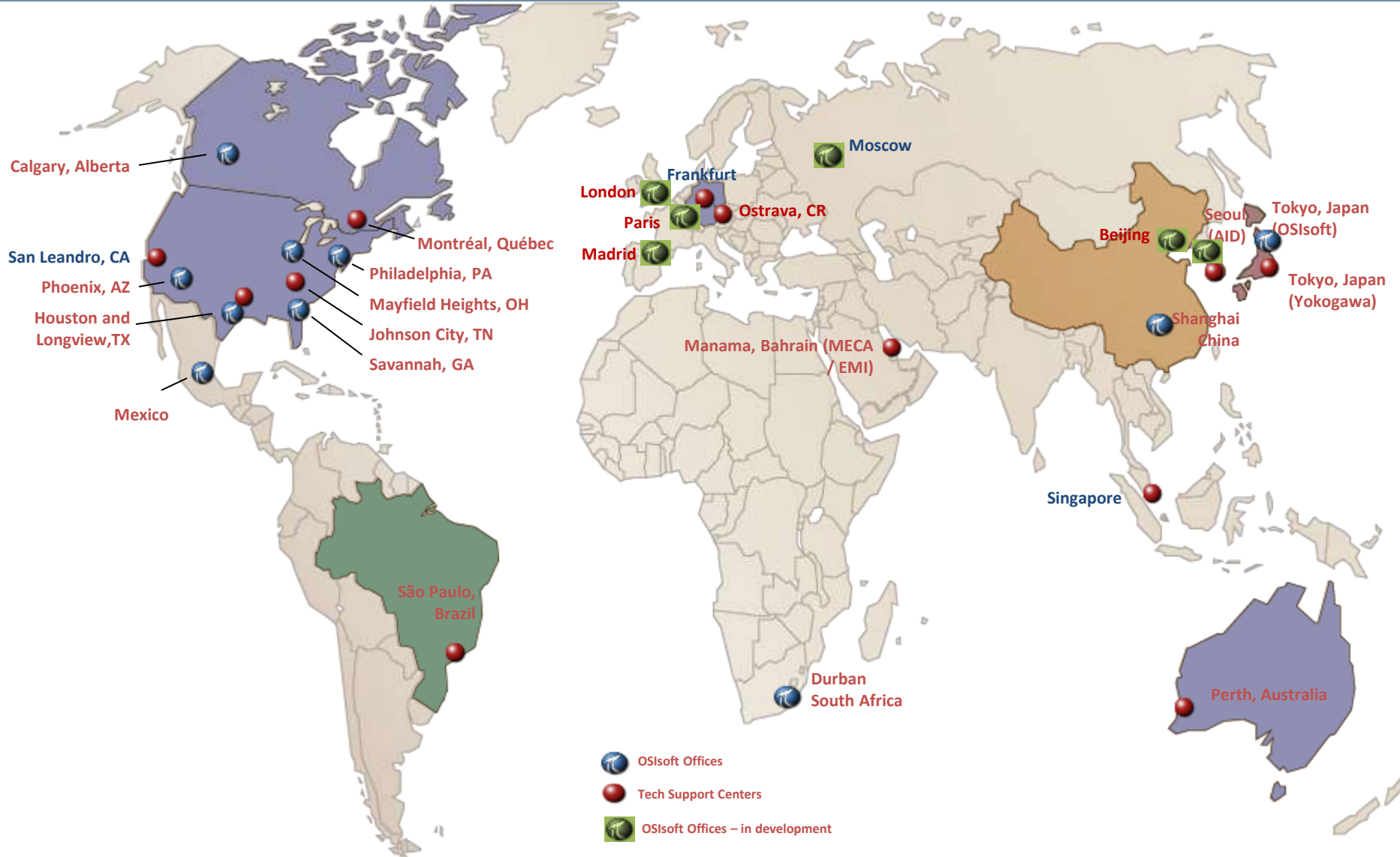
*“We are rewarded when we deliver superior value. This means delivering and implementing an **infrastructure** through which our customers can **continuously improve** their **business performance**”*

*Dr. J. Patrick Kennedy CEO & Founder*

*“OSIsoft has released continuous upgrades for over 20 years and we have never had to repurchase PI software. Even though we have a 20 year old system, we currently run our PI System at its most updated version. I know of no other software company that has this kind of commitment to its products and its customers.”*

**WEYERHAEUSER CORPORATION**

# 2010 - Global Presence

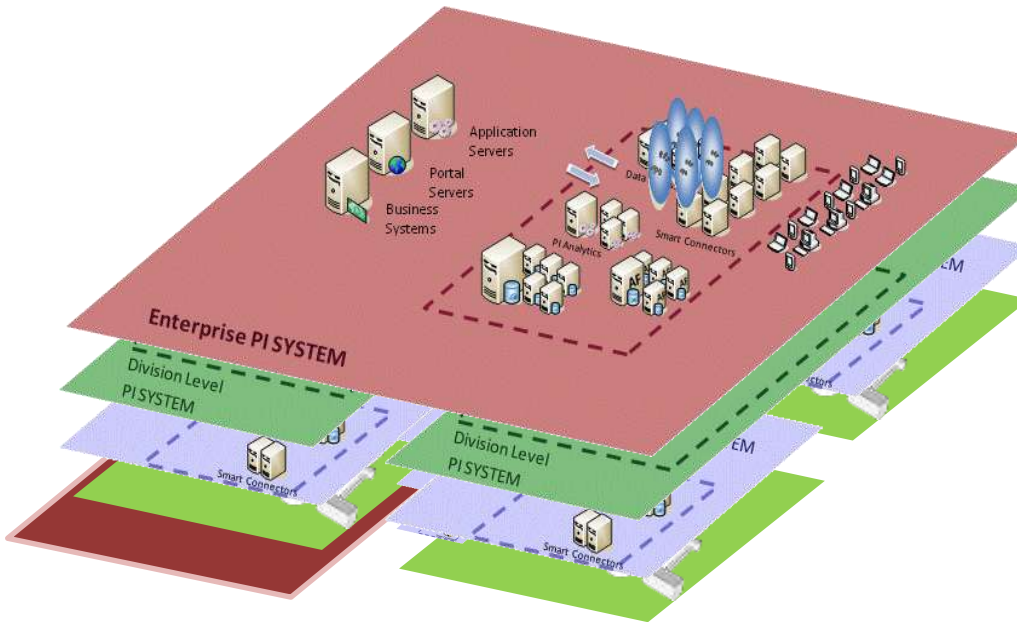




# Diverse Customer Base Across Industries







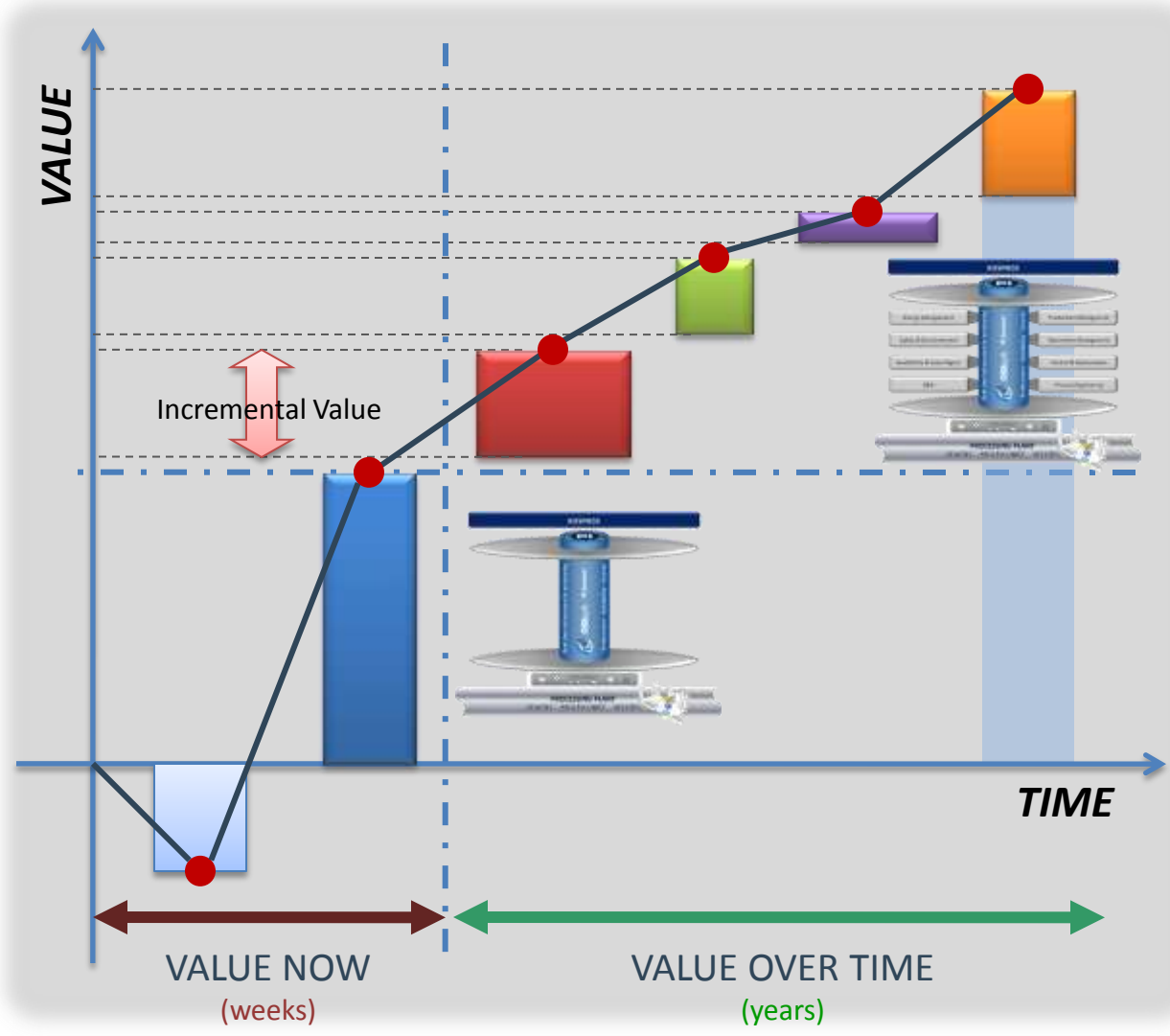
## *Real Time Infrastructure for the Enterprise!*

The OSIsoft PI System is the highly scalable and secure real-time and event infrastructure that connects people with the right operational and manufacturing information at the right time to analyze, collaborate, and act.



# Infrastructure for Continuous Improvement

## Value Now, Value Over Time



### Example Application Benefits

- Availability & Asset Mgmt
- Safety/Regulatory Compliance
- Operations Management
- Energy & Water Mgmt

Infrastructure Value  
 People  $\leftrightarrow$  Assets  
 Eliminate Detachment & Latency  
 Shared Immediate Experience  
 Curiosity  $\approx$  Free

Initial Investment

- ❑ Oil Systems Inc. → OSI Software → OSIsoft
  - ❑ Heritage in Automation and Optimization
- ❑ Core competencies
  - ❑ Strategic Focus - know what you do, know what you don't do - PI
  - ❑ Understanding proper technology to leverage
    - ❑ HP → DEC → Microsoft/Intel
  - ❑ Commitment to our customers
    - ❑ Customer Support!
    - ❑ Agile Product Development
    - ❑ No customer left behind
- ❑ Strong Partner Network
  - ❑ Independent Software Vendors, Service Providers, Technology Partners, OEMs
  - ❑ There is no value to infrastructure unless you use it
  - ❑ Our customers and partners create value with PI
- ❑ OSIsoft's energy and resource efficiency efforts
  - ❑ Majority of meetings using the Internet
  - ❑ Significant move to remote installs—on site is rare today
  - ❑ Less shipment of products—downloads are preferred by customers
  - ❑ Electronic books
  - ❑ This is all just good business
- ❑ OSIsoft is a key Enabler of Sustainability Initiatives

“A sustainable United States will have a growing economy that provides equitable opportunities for satisfying livelihoods and a safe, healthy, high quality of life for current and future generations. Our nation will protect its environment, its natural resource base, and the functions and viability of natural systems on which all life depends.”

*Sustainable America: A New Consensus* (Washington: President’s Council on Sustainable Development, **1996**), p. iv.

(<http://clinton2.nara.gov/PCSD/>)

(<http://clinton2.nara.gov/PCSD/Overview/index.html>)

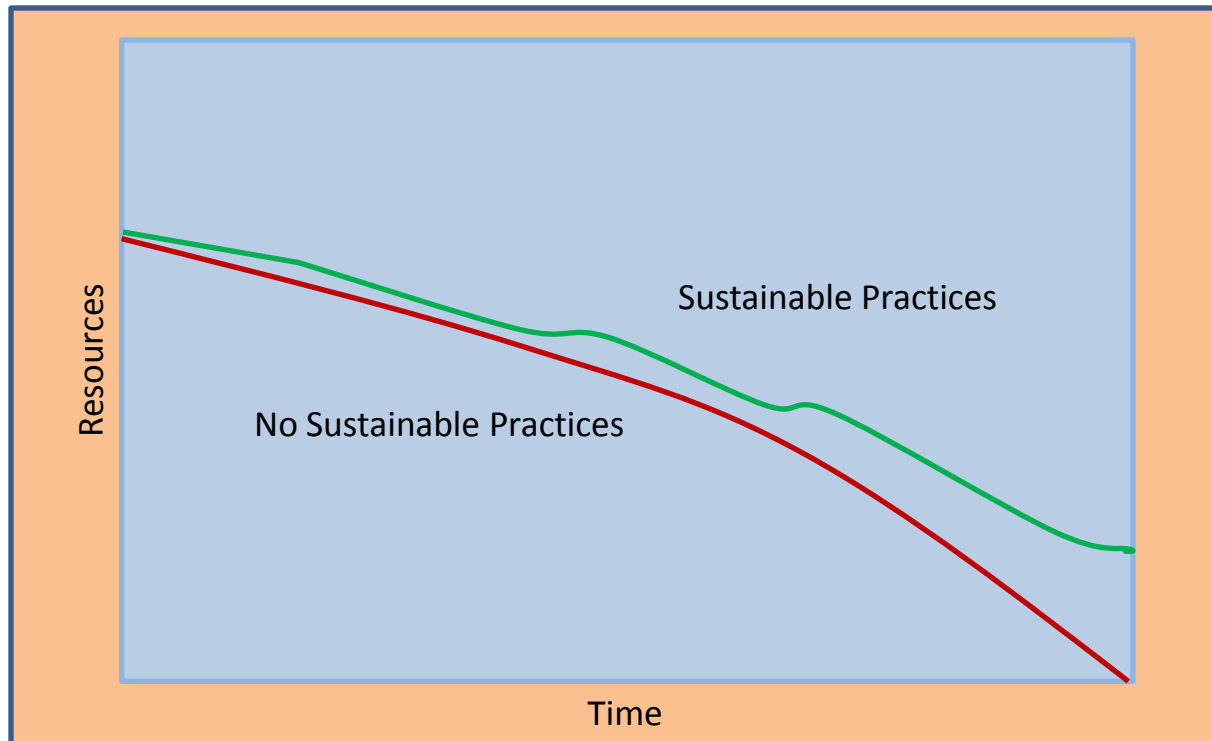
The United Nations’ “World Commission on Environment and Development” definition of *sustainable development*: “...meet the needs of the present without compromising the ability of future generations to meet their own needs.”

*Our Common Future (aka Brundtland Report)* (Oxford: Oxford University Press, **1987**), p. 43.

(23 years old, still heavily referenced in UN documents)

# What is Sustainability?

- ❑ Meet current needs...
- ❑ While growing the Economy...
- ❑ Without compromising the future
  
- ❑ Sustainability cannot exist without a strong, efficient industrial base





## POWER & UTILITIES

Utilities supply the electrical energy and water infrastructure society cannot function without



## OIL & GAS

Oil and Gas supply the energy source for many uses  
Very important in transportation



## CHEMICALS & PETROCHEMICALS

Strong light-weight polymers and fibers required for efficient transportation, renewable generation and many other structures



## PHARMACEUTICALS, FOOD & LIFE SCIENCES

Extremely important for quality of life  
Natural resources saved through disease prevention and cure



## MATERIALS, MINES, METALS & METALLURGY

Fundamental to the modern infrastructure. Mechanical structures, electrical conductors, catalysts.



## PULP & PAPER

True renewable resource. Very important to packaging and communication.



## DATACENTERS, IT & TELECOM

Data and transactions for the information driven economy



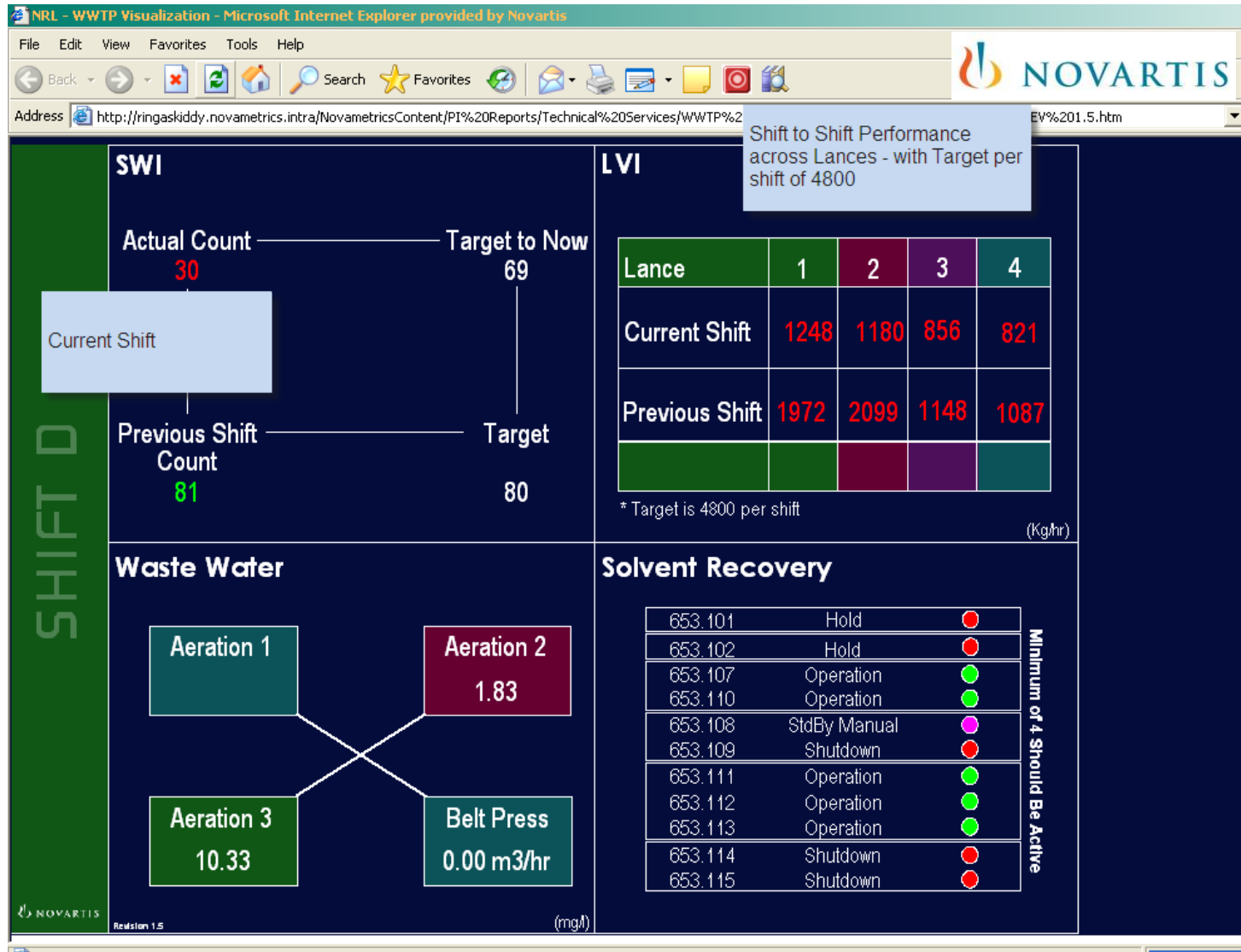
- ❑ Definition: “meet the current without sacrificing the future”
  - ❑ The future starts tomorrow and continues...
- ❑ Sustainability is not a project
- ❑ Must be in the DNA of any organization that wants to sustain
- ❑ Strong companies already have the required genes to sustain
  - ❑ Manage external disruptions
    - ❑ Natural
    - ❑ Economic
    - ❑ Political
    - ❑ Technology
  - ❑ Innovate
  - ❑ Continuously improve

- ❑ Context is internal:
  - ❑ Energy efficiency
  - ❑ Resource efficiency
  - ❑ Capital efficiency, avoidance or delay
  - ❑ Employee well being
- ❑ Context is external:
  - ❑ Environmentally responsible
  - ❑ Socially responsible
  - ❑ Society well being
  - ❑ Trust

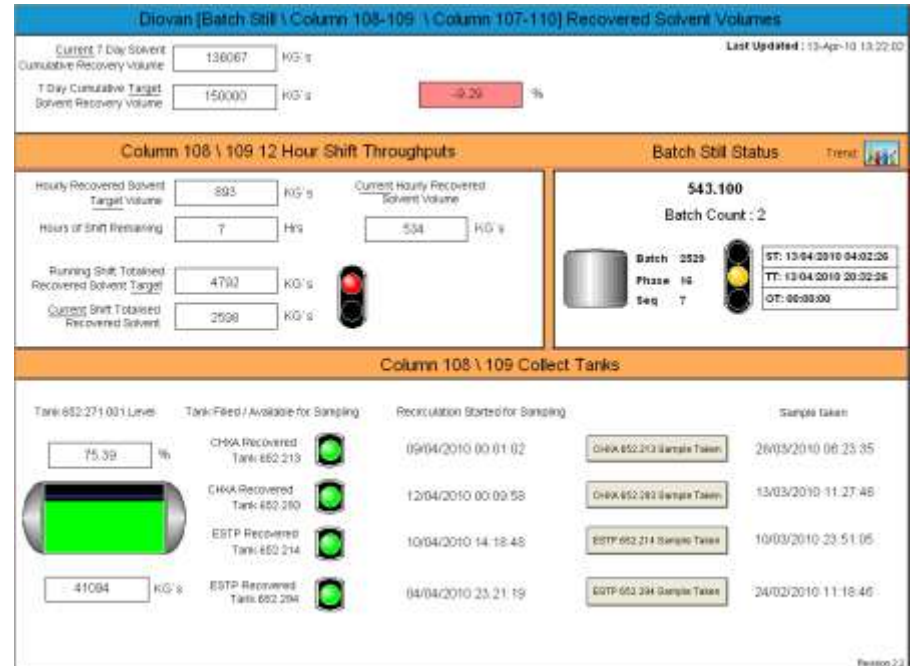
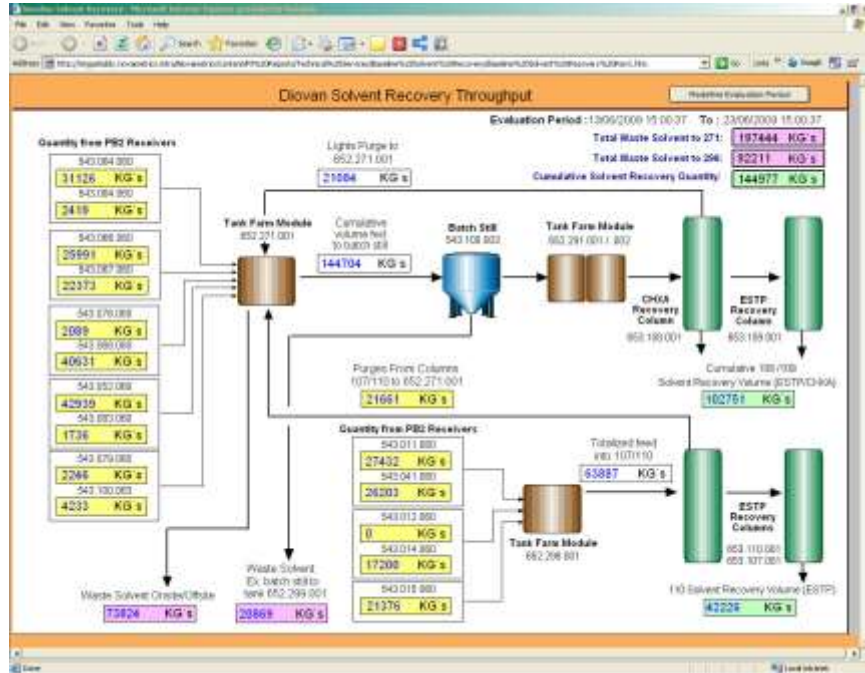
- ❑ Four core phases:
  - ❑ Measure
  - ❑ Analyze
  - ❑ Improve
  - ❑ Control
- ❑ What to measure and control?
  - ❑ Disruptions force change
  - ❑ Infrastructure is only approach that can deal with change

“By far, the greatest benefit to IP was Environmental Monitoring, and this requirement wasn’t even on the radar screen when we justified the Enterprise roll-out. This came up very immediately after the deployment, and we were able to quickly respond to this operational challenge because we had a common infrastructure to integrate with. We had disguised many disparate systems under a common real-time layer, so our programs had enterprise applicability.”

International Paper Company

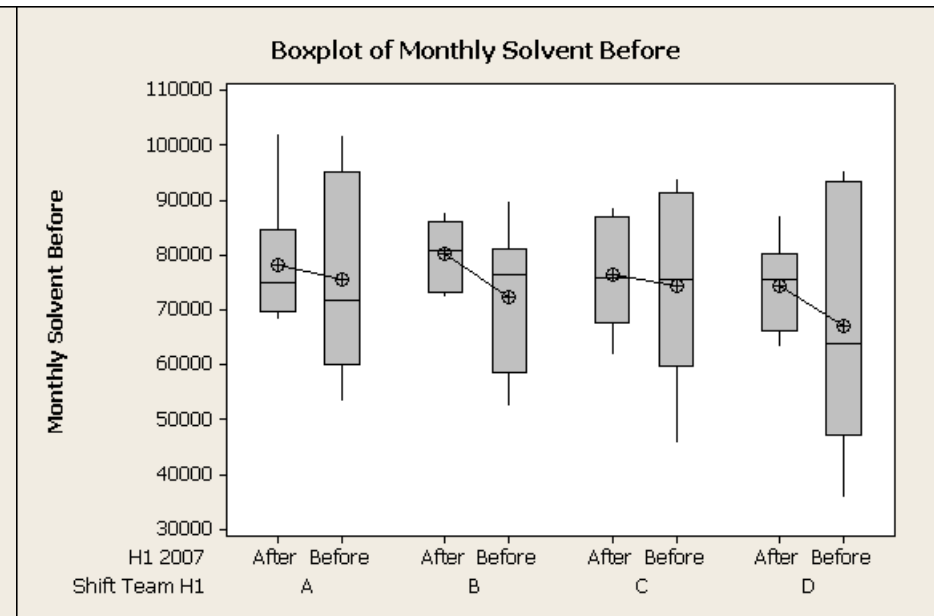
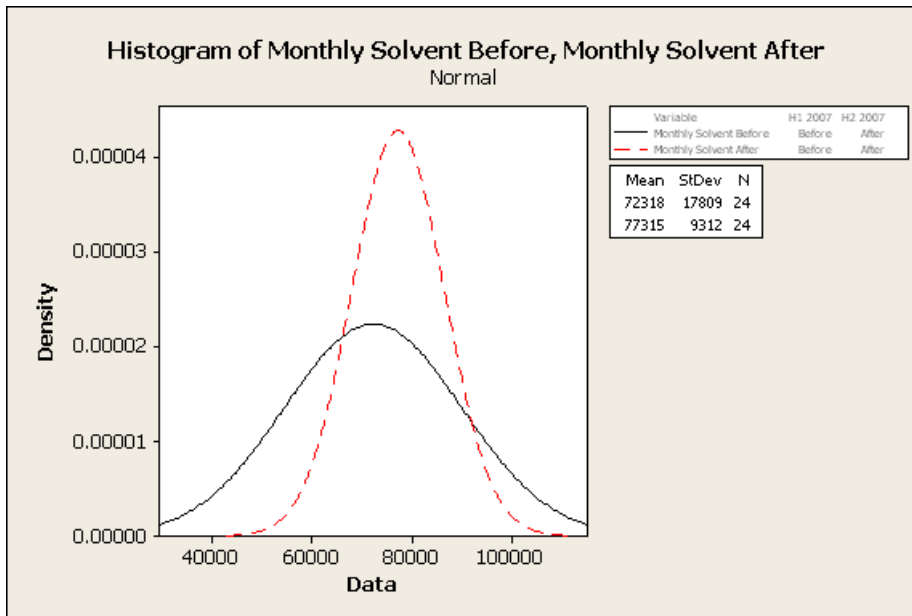


# Novartis Case Study - Solvent Recovery





- ❑ Improvement by highlighting a target and sharing performance results
- ❑ Liquid and Vapour Incinerator performance varied widely across shifts
- ❑ 17% capacity lost in performance across the shifts
  - ❑ All Equipment and Procedures the same for the shifts
- ❑ Before and After Histogram shows the slight change in the mean and the reduction in the variation



# Novartis Case Study - Site Safety Visualization



http://ingaskiddy.novartis.com/.../Results/Unloaded.../SafetyOverview.htm

File Edit View Favorites Tools Help

Address http://ingaskiddy.novartis.com/ingaskiddyContent/p1%20Reports/hr/safetyovw/SafetyOverview.htm

Utilities PB1 PB1A PB2 SSF WWTP Tank Farm

### Tank Farm Page 1

Page 1 Page 2

#### Bund 1

Description	Tank Number	Level	Units
POLAR WASH SOLV WEIGHT	652.227	16118	KGS
Methyl Piperazine Weight	652.220	4104	KGS
DIST FEED WEIGHT	652.230	310	KGS
DIST FEED WEIGHT	652.231	1526	KGS
THFU_BHT added) WEIGHT	652.232	16501	KGS
DIST FEED WEIGHT	652.233	24132	KGS
DIST FEED WEIGHT	652.234	3524	KGS
DIST FEED WEIGHT	652.235	8492	KGS

#### Bund 2

Description	Tank Number	Level	Units
DIST COLLECTION WEIGHT	652.236	287	KGS
DIST COLLECTION WEIGHT	652.237	1090	KGS
DIST COLLECTION WEIGHT	652.238	310	KGS
DIST COLLECTION WEIGHT	652.239	4087	KGS
DIST COLLECTION WEIGHT	652.240	206	KGS
DIST COLLECTION WEIGHT	652.241	353	KGS
HPTN WEIGHT	652.261	17571	KGS
HPTN WEIGHT	652.262	10365	KGS
Aqueous Waste	652.290	17136	KGS
Polar Waste	652.299	11716	KGS

#### Solvent Recovery

653.101	Done
653.102	Done
653.107	Operation
653.110	Operation
653.108	Operation
653.109	Stably Auto
653.111	Maintenance
653.112	Maintenance
653.113	Maintenance
653.114	Maintenance
653.115	Maintenance

#### Bund 3

Description	Tank Number	Level	Units
R-TOLUENE WEIGHT	652.242	9056	KGS
R-TBM ETHER WEIGHT	652.243	16515	KGS
BM	652.200	12224	KGS
TO	652.210	24010	KGS
ALABD	652.207	21052	KGS
CHVA	652.205	2084	KGS
R-CYCLOHEXANE WEIGHT	652.220	16476	KGS
R-HEPTANE WEIGHT	652.222	7557	KGS

#### Bund 4

Description	Tank Number	Level	Units
ACBL	652.226	16237	KGS
IPK	652.209	8395	KGS
EE	652.201	24728	KGS
AU	652.211	14210	KGS
TAA	652.203	23007	KGS
R-ACETONITRILE WEIGHT	652.248	530	KGS
R-ISOPROPYL ALC WEIGHT	652.223	13410	KGS
Di-Methyl Formamide Weight	652.217	15315	KGS
R-ETHANOL WEIGHT	652.229	19730	KGS
Tetrahydrofuran Weight	652.245	23521	KGS

#### Tank Farm Fire Valves

652221HV-423	OPEN	652260HV-410	OPEN	652201HV-421	OPEN	HV652248.424	OPEN	HV652209.410	OPEN
652277HV-410	OPEN	652203HV-410	OPEN	652207HV-410	OPEN	HV652202.410	OPEN	HV652242.423	OPEN
652279HV-410	OPEN	652202HV-410	OPEN	652257HV-410	OPEN	HV652204.410	OPEN	HV652224.410	OPEN
652283HV-410	OPEN	652205HV-410	OPEN	652273HV-410	OPEN	HV652261.410	OPEN	652271HV-410	OPEN
652200HV-410	OPEN	652299HV-410	OPEN	HV652212.424	OPEN	HV652206.410	OPEN	652292HV-410	OPEN

**Wind Speed**  
Speed: 2.27 m/s.  
Temp: 9.3 degC


Time:  
14/04/2010 17:23:56

Print

- ❑ Fuel and purchased power are significant cost at Kodak Park (Rochester, NY, USA)
  - ❑ Engaged everyone in conservation efforts
  - ❑ PI system: 100K tags, 150 Webpart users, 250+ SAP iView pages, 30 interfaces
  - ❑ Now correlate production volume to energy
- ❑ “There was no ‘Big Bang.’” Rather, there were 1,000 little bangs
  - ❑ Established a culture of continuous process improvement
  - ❑ Everyone can see the data via browser


[http://videostar.osisoft.com/uc2010/Sustainable\\_Seminar/video/SSS\\_UC2010\\_Opening\\_Kodak\\_Breeze.wmv](http://videostar.osisoft.com/uc2010/Sustainable_Seminar/video/SSS_UC2010_Opening_Kodak_Breeze.wmv)






## KODAK OPERATING SYSTEM

*Make Lean a Way of Life*



Click on a puzzle piece to learn more about a KOS topic.

- About This Website
- What's New
- Success Stories
- Reference Material
- KOS University
- KOS Contacts
- iPDP
- ISO 9001-2000
- Feedback



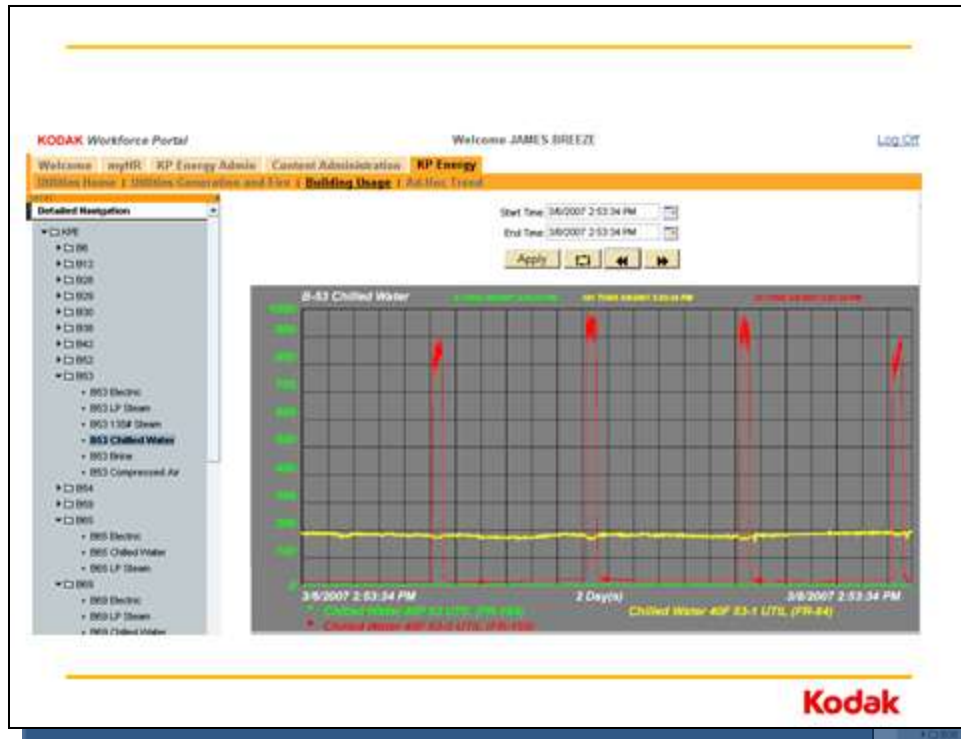
Tools do not work if applied one at a time, must be a philosophy that sustains multiple initiatives.

# Kodak

Energy Kaizen: 3-5 days, 6-8 people, action rather than analysis

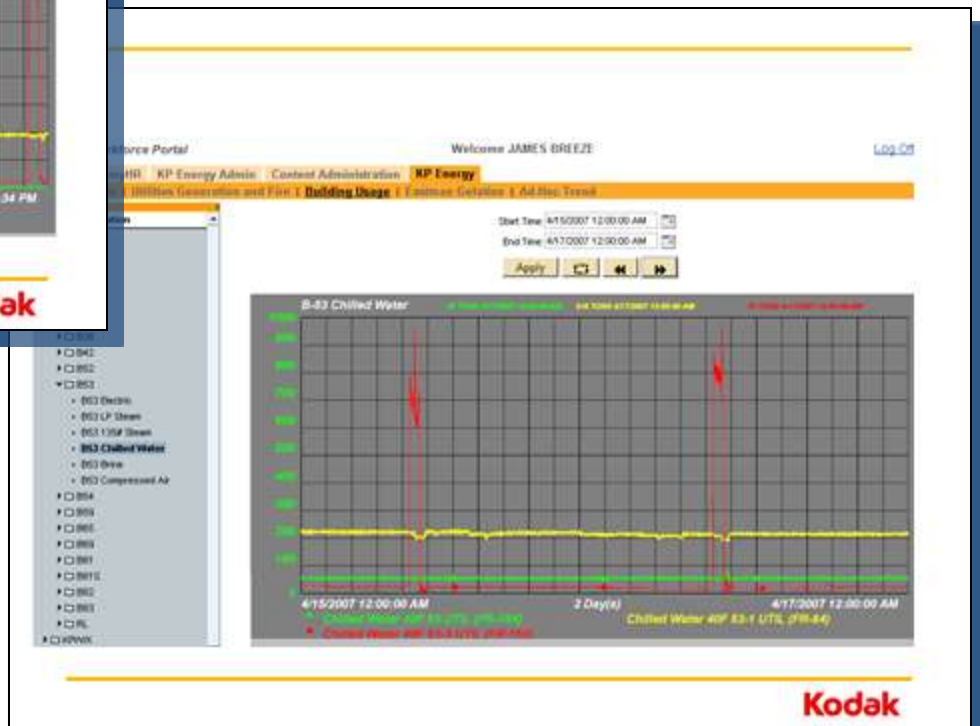
Energy Gemba: shorter focused Kaizen; observe abnormality take immediate action





## Carbon recovery regeneration

- Load on steam and chilled water system
- Awareness allowed optimization and move to off peak times





- ❑ Reduced utility costs with improved

**Kodak**

“

## Summary of Results

Generation side findings

- Plant loading optimization
- Boilerfan optimization
- Exhaust head improvements
- Better management of self generation vs. purchased power

The Energy Information System (EIS) has been an essential tool to help us reach our Goal of:

### “One Powerhouse for Eastman Business Park”

(10:41:53 March 28, 2007)

- Collectively the “annual” savings rate in 2007 was \$27 Million
- Today the “annual” savings has grown to more than \$30 Million
- The cumulative savings is now in excess of \$100 Million  
(>50% Savings From Ongoing Operations)

**Kodak**

ized water

- ❑ Kaizen and Gemba applied to water conservation

**Kodak**



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## Water Reduction Results

- 2009 Kodak Water Reduction was 16.5%
- 1,087,000,000 Gallons (or 1,087,000 K Gallons) saved in 2009
- 1<sup>st</sup> Quarter of 2010 – an additional savings of 450 Million gallons from the 2008 Baseline
- Roughly 1.5 Billion Gallons saved in the last 15 Months
- This is enough water to fill approximately 250 average backyard swimming pools each and every day !!!
- \$0.00 In Capital Spent
- These Water Savings are calculated for only the last 15 months and are totally independent of the site's energy reductions

sts

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**Kodak**

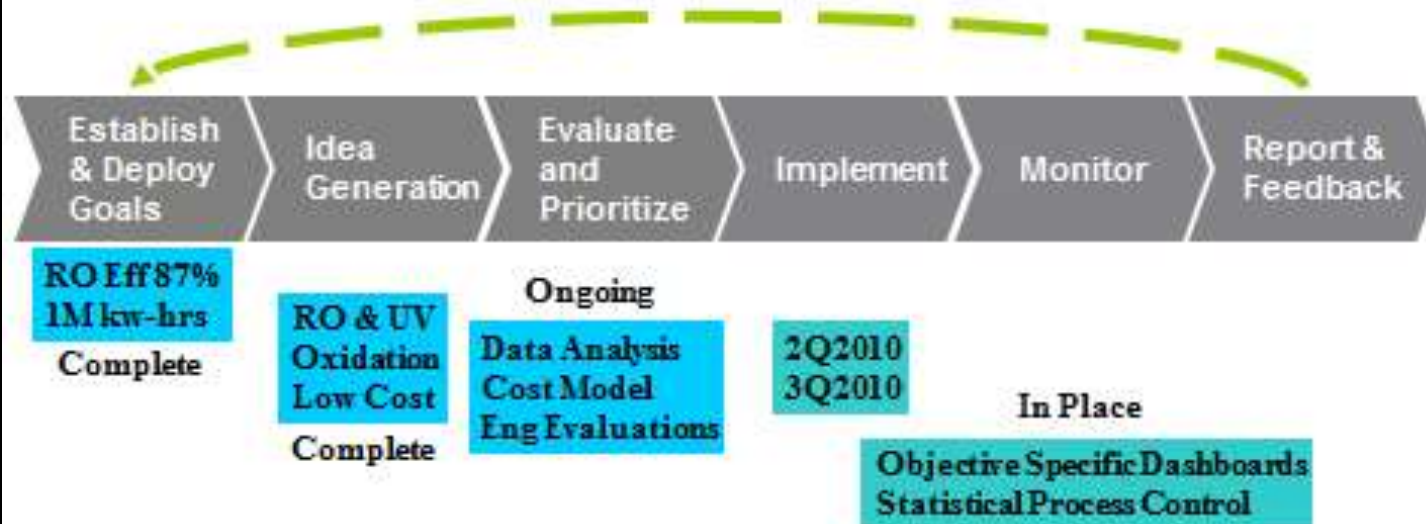
- ❑ IBM Burlington (Vermont, USA) is a large semiconductor manufacturing site
  - ❑ consumes 3.2 million gallons per day of water and 446 million kilowatt hrs of electricity annually
  - ❑ 3.5 million square feet of manufacturing space
  - ❑ Largest employer in Vermont → 7,000 employees + 4,000 contractors
- ❑ Challenge
  - ❑ Reduce water consumption to reduce cost
  - ❑ Less water means less energy, chemicals, maintenance and labor
  - ❑ Will also minimize environmental impacts
  - ❑ Leverage data acquisition, storage and visualization tools to monitor water usage and improve efficiency



- ❑ Approach
  - ❑ Used PI to collect/store data from sensors, IT network and servers
  - ❑ Statistical process control techniques used to continually analyze operational data
  - ❑ Identifies process improvements that reduce water consumption, electrical consumption, and cooling load
- ❑ Results
  - ❑ IBM achieved over \$3.6M in annual savings
  - ❑ Reduced water usage 27% while increasing manufacturing capability 30% in last 10 years
- ❑ Case study available on OSIsoft website:  
<http://osisoft.fullviewmedia.com/uc2010/12-IBM.html>

## Key to Success: Consistent Process

### Ultra Pure Water 2010 Objectives

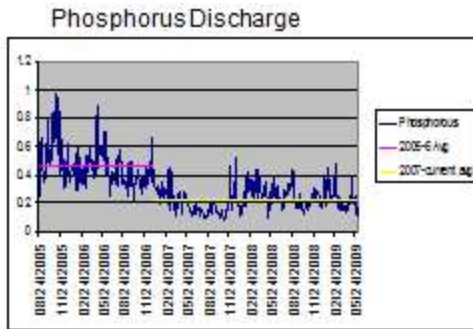


**Use Structured Problem Solving Techniques for the more challenging ideas**

## Center of Excellence for Enterprise Operations SMART Waste Water Results

### Burlington Waste Water Management Goals

- **Quality:** Meet or exceed regulatory requirements
- **Reliability:** Zero manufacturing down time
- **Cost:** \$450K/year reduction in annual cost



Units mg/l  
NPDES limit 1.2 mg/l

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#### NPDES Discharges



Phosphorus: - 48%  
Fluoride: - 44%  
TDS: - 54%

#### Waste Water Sludge



Disposal Cost: - \$45K/yr  
Generation: - 600K lbs/yr

#### Water & Waste Water Chemical Usage



Annual Costs: - \$401K/yr  
Reduction: - 2,162K lbs/yr

#### Manufacturing Capability



Up 30% since 2000  
(excluding 2005)

## Smart Water Project

Phosphorous discharge well below compliance

## Center of Excellence for Enterprise Operations SMART Water Results

### Burlington Water Management Goals

- Quality:** 6 Sigma conformance to Specification  
No impact to product yields
- Reliability:** Zero manufacturing down time
- Cost:** \$3.6M/year reduction in annual cost



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#### Water Usage



Rates: + 66% since 2000  
Usage: - 29% since 2000  
Purchases: - \$742K/yr

#### Water Treatment Costs



Annual Costs: - \$588K/yr

#### Water Related Energy Costs



Annual Costs: - \$2,278K/yr

#### Manufacturing Capability



Up 30% since 2000  
(excluding 2005)

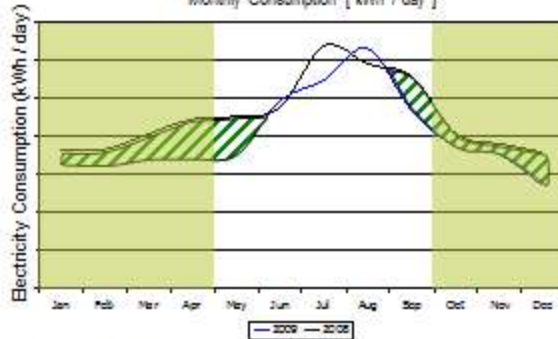


## B963 / B971 Central Utility Plant Reporting Results

### Reporting Results:

- Energy Savings: 4,800,000 kWh
- Money Savings: \$390,000
- Annual Energy Savings equal to 650 homes electricity consumption [ Vermont ]

2008 vs. 2009 Central Utility Plant Electricity Curve  
Monthly Consumption [ kWh / day ]



### Results Exceeded Expectations

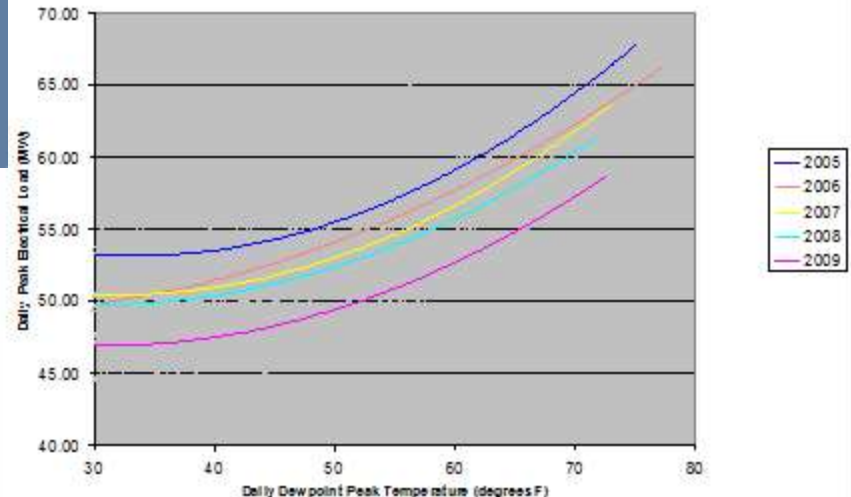
- Central Utility Plant personnel clearly recognized and understood goals
- Energy Savings exceeded Goal by \$40,000
- Winter Free-Cooling Utilization exceeded expectations by 60 days

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## Free Cooling Project

Leverage cold ambient temperatures of Vermont

## Average Peak Electrical Loads at IBM VT 2005-09



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- ❑ Faced recent hardships
  - ❑ Price collapse
  - ❑ Demand destruction
  - ❑ Credit crunch
- ❑ Extremely important part of sustainability value chain
  - ❑ Supplier of light-weight, strong materials

“Throughout 2009, our industry and company experienced the most challenging economic environment that many of us can recall. Faced with a triple threat—aluminum prices crashing, broad demand destruction within our customer base, and a credit crunch that crippled our ability to initiate growth—we quickly executed our Cash Sustainability Program to strengthen our balance sheet, restore liquidity, and make Alcoa free-cash-flow neutral by the end of 2009.”

“I see an amazing future for Alcoa. Strong, lightweight, energy-saving and infinitely recyclable, our miracle metal will continue to contribute to the sustainable life and health of our planet and its people.”

Klaus Kleinfeld, Chairman & CEO

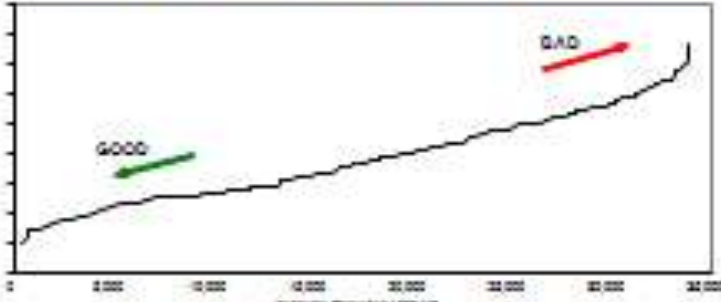
- ❑ Aggressive, transparent Sustainability Program
- ❑ Some key concepts
  - ❑ Life cycle assessment
  - ❑ Product design
  - ❑ Economic value of products
- ❑ Industrial Demand Response
  - ❑ Provide reliability to the grid
  - ❑ Reduce energy costs



- ❑ Commodity business
- ❑ Competitive advantage comes from production efficiency

## Aluminum Smelting Economics

**Energy is 30-40% of Aluminum Production Costs....**

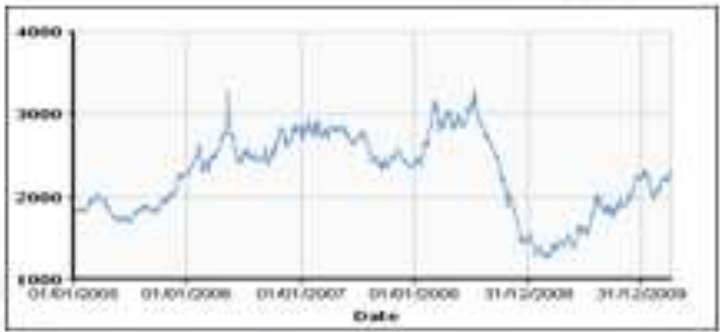


Worldwide Smelter Cash Production Costs

**Warrick Operations is Alcoa's Largest Operating U.S. Smelter**

- 330,000 MT capacity/year

**Competition in a Worldwide Commodities Market....**




Real Time Information — Currency of the New Decade

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OSIsoft UC 2010

- ❑ 780 MW Generation
- ❑ FERC License—participate in markets as a generator

## Warrick Power Plant



**Generation Assets:**

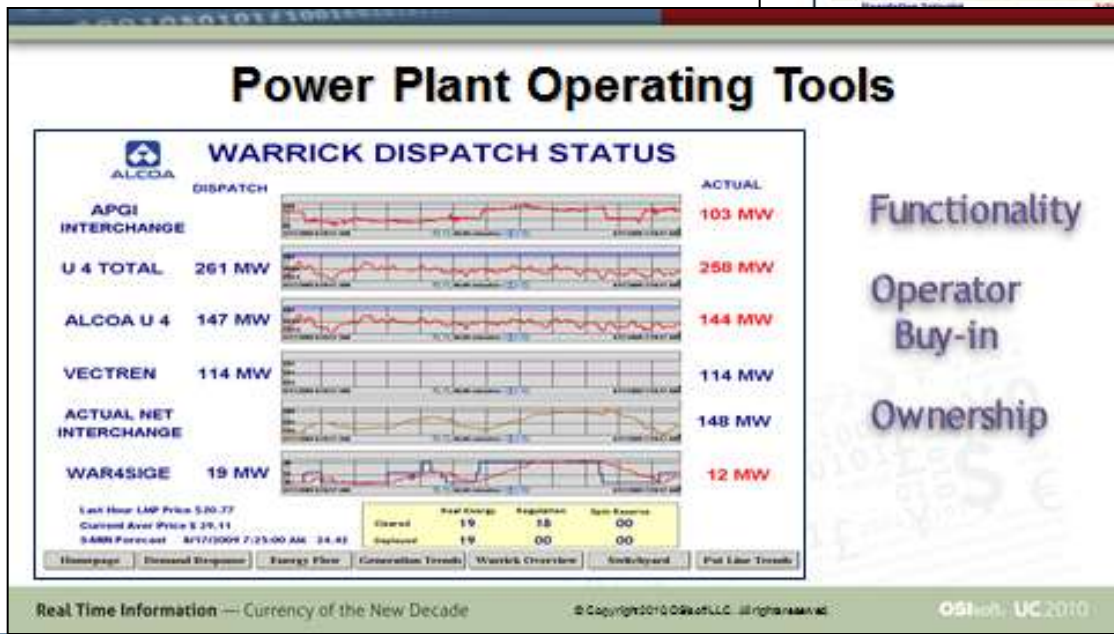
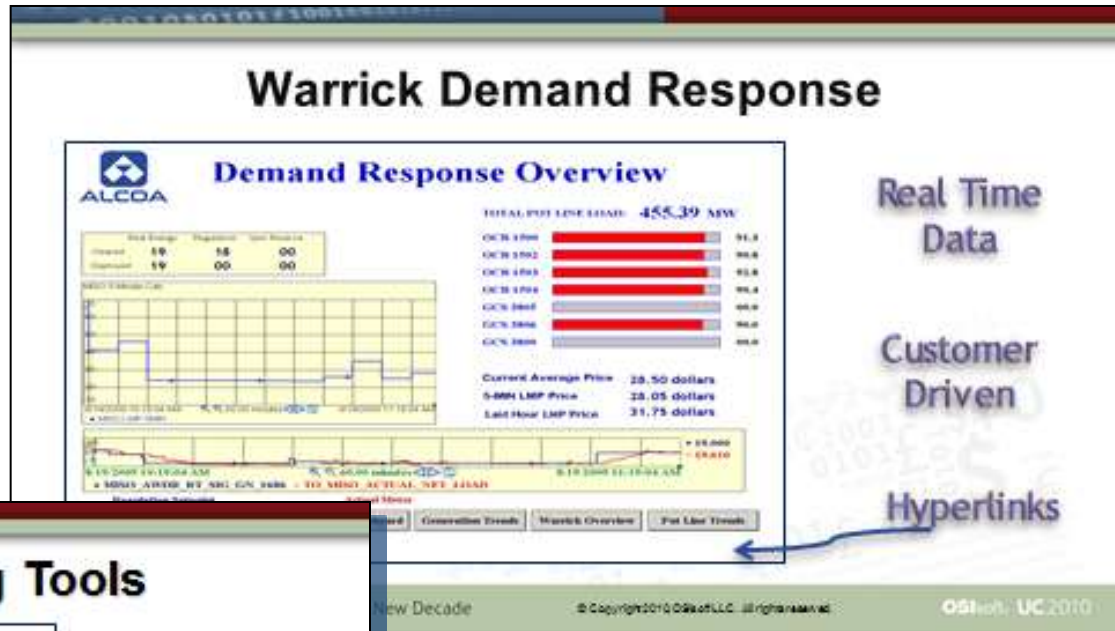
- 780 MW's Coal Generation
- (4) B&W Wall-Fired Boilers
- Vintage 1960's
- 2.8 mm tons coal/annual
- Illinois basin with Low NOx burners/SCR
- FGD Scrubbers

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- ❑ MISO (Grid operator)
  - ❑ Reliability
  - ❑ Generation capacity
  - ❑ Congestion mitigation
- ❑ Alcoa
  - ❑ Sell power
  - ❑ Purchase



Functionality  
 Operator Buy-in  
 Ownership



- ❑ They studied the performance of sustainability-focused companies during financial crisis of 2008/2009
  - ❑ Some continued to focus on long-term health vs. just short term survival
  - ❑ Difficult to have this discipline
- ❑ Results
  - ❑ Stock market performance was 15% higher for these companies vs. their peers

“Create value for shareholders and society”

- ❑ Sustainability is about your company's long term survival
  - ❑ Not just carbon, Green House Gas (GHG) or other “green” initiatives
- ❑ Corporate initiative
  - ❑ engage in a culture of continuous improvement
  - ❑ improve compliance, public perception, and profitability
- ❑ Increase profits
  - ❑ Manage economic, social and environmental risks and opportunities
- ❑ Gain and Sustain the Trust of the general public
- ❑ Sustainability needs your company to sustain, to thrive
- ❑ This is just good business



Thank you

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