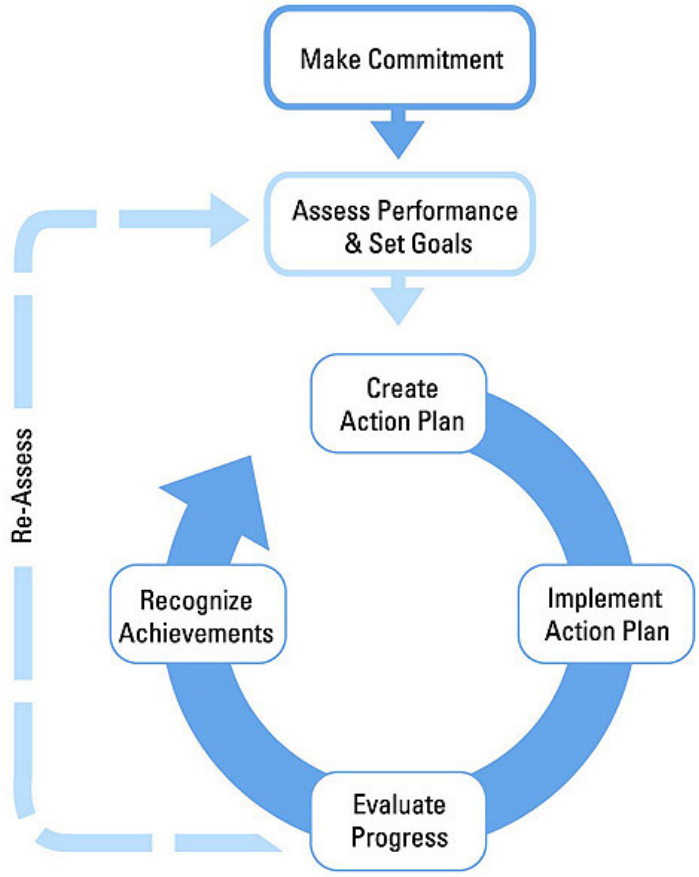
Our Top Three Energy Projects

June 25, 2008

Call-in Number: 1-866-299-3188
Conference Code: 202 343 9965

About The Web Conferences

- Monthly
- Topics are structured on a strategic approach to energy management
- Opportunity to share ideas with others
- Slides are a starting point for discussion
- Open & Interactive



Web Conference Tips

- Mute – To improve sound quality, all phones but the presenters will be muted.
- Use # 6 to un-mute and * 6 – to mute
- Presentation slides will be sent by email to all participants following the web conference.

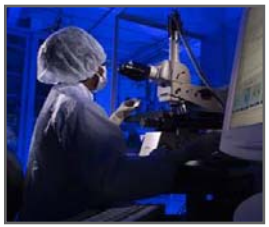
Today's Web Conference

Our Top Three Energy Projects:

How Kodak eliminated the need for a 70 megawatt power plant.

Presenter: Jim Breeze, Eastman Kodak

Kodak

ENERGY STAR Presentation

June 25, 2008

Jim Breeze

Who We Are: Today’s Kodak

Kodak is the world's foremost imaging innovator.

We’re committed to helping people make, manage and move images and information – in their life and in their work.

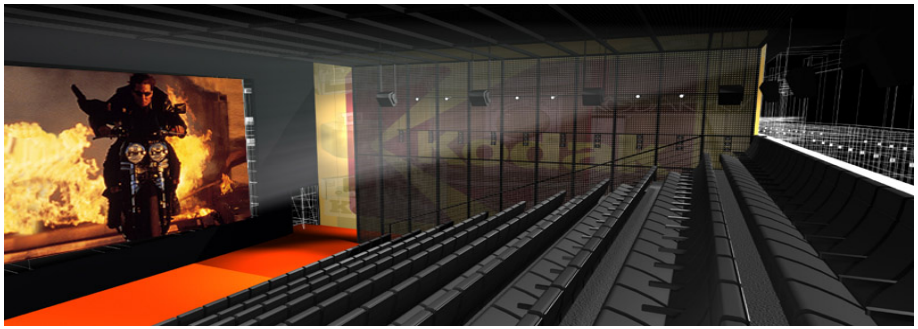
World's Foremost Imaging Innovator

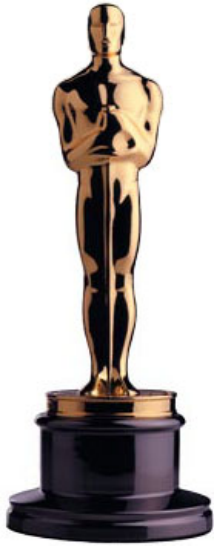
for consumers and professional photographers

Kodak

World's Foremost Imaging Innovator

for the entertainment industry





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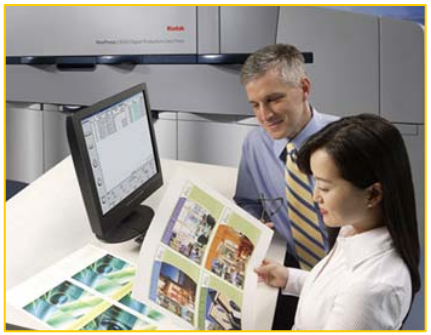
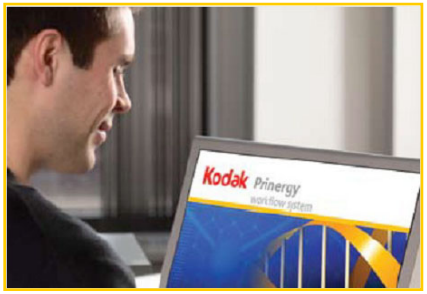
World's Foremost Imaging Innovator

for the graphic communications market





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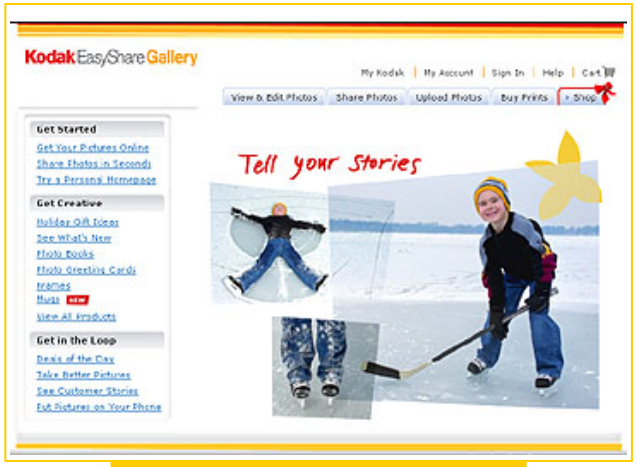
Among the World's Most Respected Brands

Each day Kodak touches the lives of more than a half-billion people.

90,000+
Sold Worldwide

70 million pictures per day



60 million members

40% commercially printed pages

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Kodak Park Facts

- The Largest of Eastman Kodak's Worldwide Manufacturing Sites
- Located in Rochester, New York
- Referred to as a "City Within a City"
- Operates Its Own Fire Department
- Operates Its Own Railroad
- Operates Its Own Water and Waste Water Treatment Plants
- Operates Its Own Power Plant

The Vision:
"One Powerhouse for Kodak Park"

- To Achieve This Goal
  - Upgrade B-321 Power Plant
  - Electrical Distribution Upgrades
  - New Purchase Power Contract
  - New O&M Contract
  - Execution of Footprint Reduction Program
  - An Additional 10% Energy Reduction from "On-Going" Operations

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Energy Information System

Goals of the Kodak Energy Information System (EIS)

- Reduce utility usage at Kodak through improved demand side management as well as improved optimization of our generating assets.
- Consolidation of the utilities data from many different legacy systems into a common historian and make it accessible to all employees through a web browser in real time.

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Energy Information System

- Utilizes OSIsoft and SAP Netweaver Software
- 100,000 Data Points
- 30 Separate Systems Being Monitored
- 200+ Web Pages to Enable Drill Down of Data
- Data is Available to >9,000 People
- Presentations Given at SAPPHIRE/ASUG and OSI User Conferences

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KODAK *Workforce Portal*

Welcome JAMES BREEZE

Welcome | myHR | myGCG | KP Energy Admin | Access Management | Content Administration | KP Energy

Utilities Home | Utilities Generation and Fire | Building Usage | Eastman Gelatine | Ad-Hoc Trend

- Steam Scorecard
- Electric Scorecard
- Chilled Water Scorecard
- Kodak Water Scorecard
- Compressed Air Scorecard

Link to "The Energy Times"

Total KP Plant Steam Flow	1224 KPPH (Goal < 1350)
KPE Steam Flow to MFG & Refrigeration	260 KPPH (Goal < 400)
KPW,X&M Steam Flow to MFG & Refrigeration	425 KPPH
KPS Steam Flow	84 KPPH
Exhaust Steam to Atmosphere	163 KPPH
Total Boiler Build-Up	293 KPPH
260# Steam - Tie Line Flow from B-321 to B-31	269 KPPH
Total Megawatts	84 Megawatts (Goal < 95)
Purchased Power	20.1 MWATTS

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Kodak Workforce Portal

Welcome JAMES BREEZE

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Utilities Home | Utilities Generation and Fire | **Building Usage** | Eastman Gelatine | Kodak Office | KCD | Ad-Hoc Trend

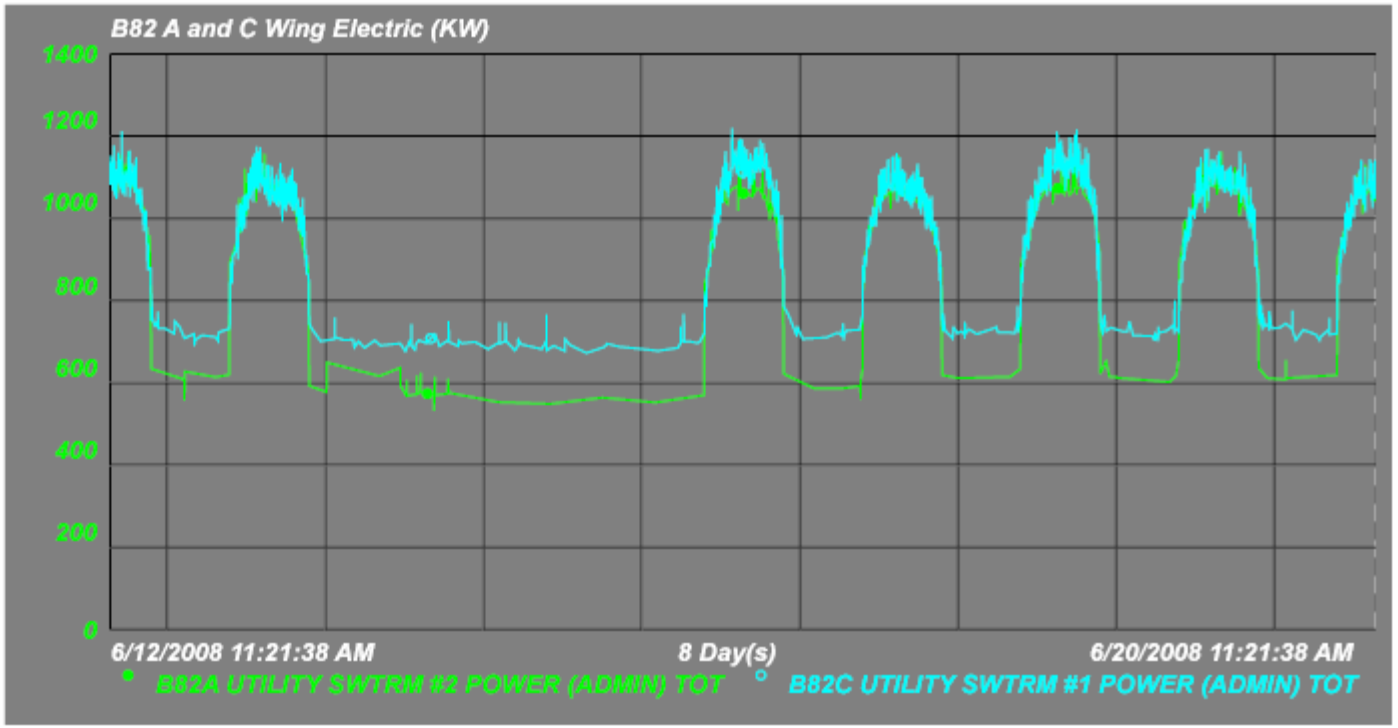
Detailed Navigation

- KPE
  - B6
  - B12
  - B28
  - B29
  - B30
  - B38
  - B42
  - B53
  - B54
  - B59
  - B65
  - B69
  - B81
  - B81S
  - B82
    - **B82 Electric**
    - B82 LP Steam
    - B82 HP Steam
    - B82 Chilled Water
  - B83
  - RL
- KPWX

Start Time: *-8d

End Time: *

Apply



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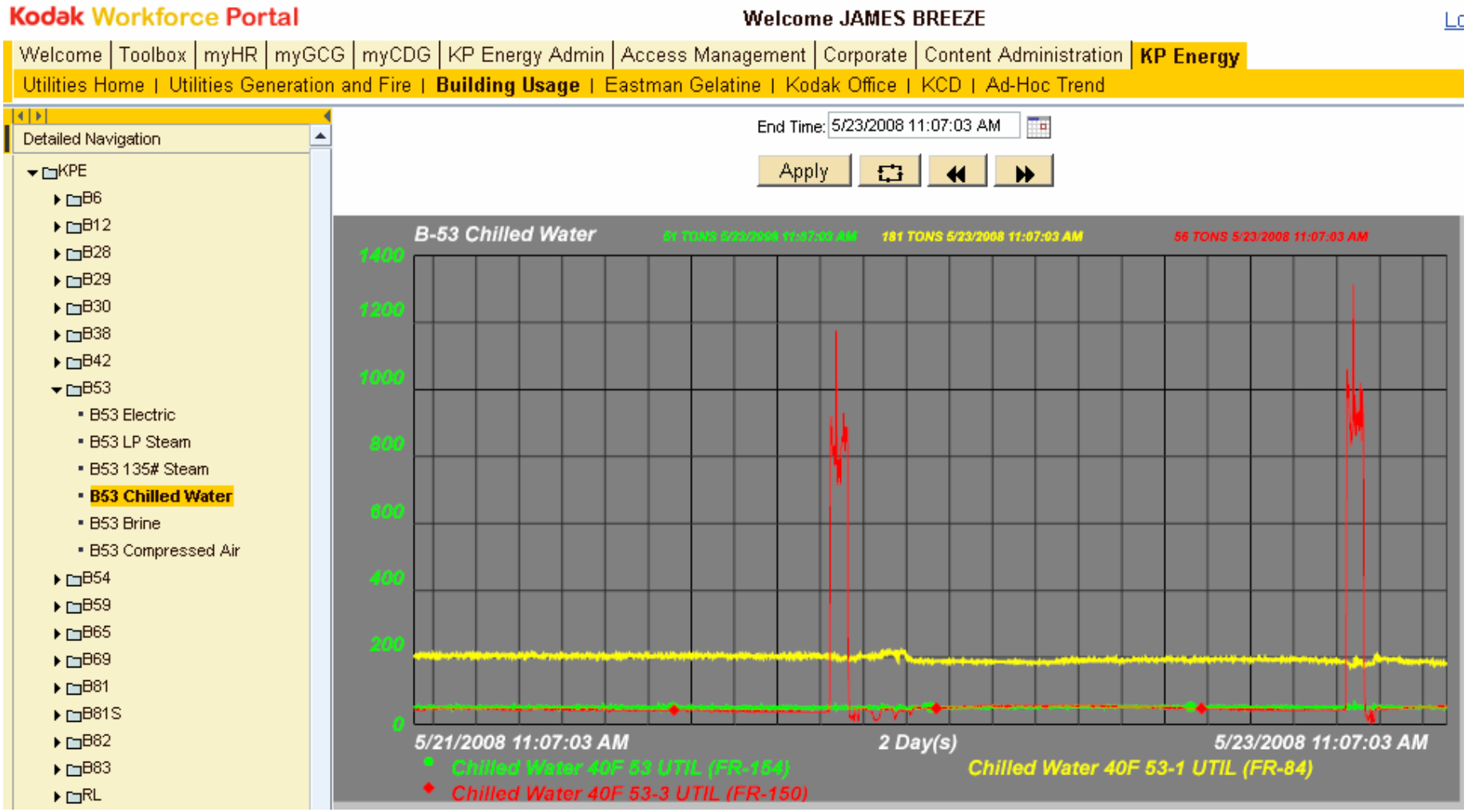
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KPE
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B53 Electric
B53 LP Steam
B53 135# Steam
B53 Chilled Water
B53 Brine
B53 Compressed Air
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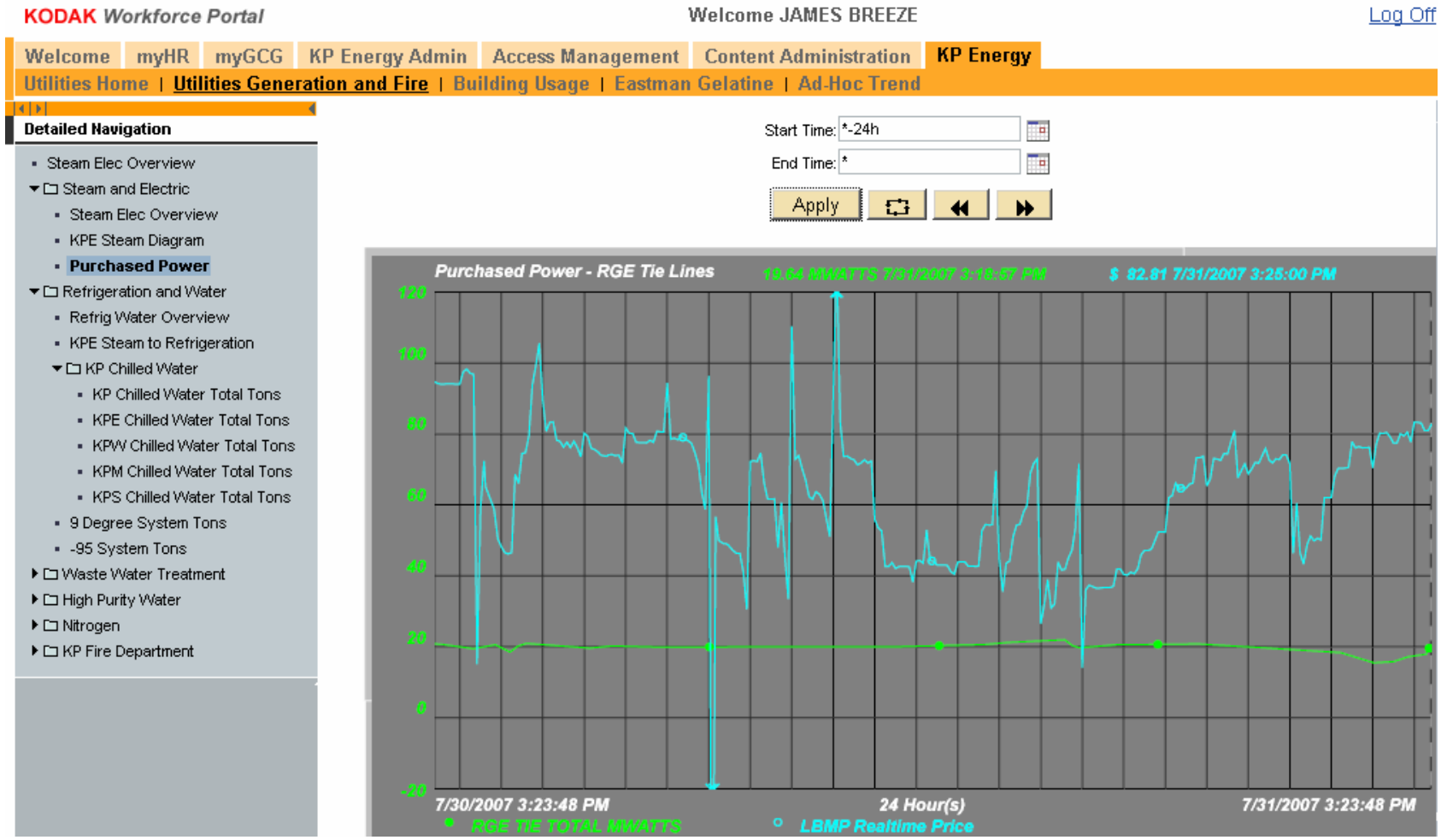
B82
B83
RL
End Time: 5/23/2008 11:07:03 AM
Apply
B-53 Chilled Water
181 TONS 5/23/2008 11:07:03 AM
56 TONS 5/23/2008 11:07:03 AM
1400
1200
1000
800
600
400
200
0
5/21/2008 11:07:03 AM
2 Day(s)
5/23/2008 11:07:03 AM
Chilled Water 40F 53 UTIL (FR-154)
Chilled Water 40F 53-1 UTIL (FR-84)
Chilled Water 40F 53-3 UTIL (FR-150)


KODAK Workforce Portal
Welcome JAMES BREEZE
Log Off
Welcome
myHR
myGCG
KP Energy Admin
Access Management
Content Administration
KP Energy
Utilities Home | Utilities Generation and Fire | Building Usage | Eastman Gelatine | Ad-Hoc Trend
Detailed Navigation
Steam Elec Overview
Steam and Electric
Steam Elec Overview
KPE Steam Diagram
Purchased Power
Refrigeration and Water
Refrig Water Overview
KPE Steam to Refrigeration
KP Chilled Water
KP Chilled Water Total Tons
KPE Chilled Water Total Tons
KPW Chilled Water Total Tons
KPM Chilled Water Total Tons
KPS Chilled Water Total Tons
9 Degree System Tons
-95 System Tons
Waste Water Treatment
High Purity Water
Nitrogen
KP Fire Department
Start Time: *-24h
End Time: *
Apply
Purchased Power - RGE Tie Lines
19.64 MWATTS 7/31/2007 3:18:57 PM
$ 82.81 7/31/2007 3:25:00 PM
120
100
80
60
40
20
0
-20
7/30/2007 3:23:48 PM
24 Hour(s)
7/31/2007 3:23:48 PM
RGE TIE TOTAL MWATTS
LBMP Realtime Price

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EIS Helped to Identify Many "Generation Side" Savings

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

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EIS Helped to Identify Many "Demand Side" Savings

- Identified opportunities in manufacturing to implement an energy conservation mode between product runs
- More effective utilization of labs with fume hoods
- More effective "Time of Day" scheduling for lighting and HVAC
- Heightened awareness of many end users
- System is considered an essential tool during our energy savings workshops (Kaizens)

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Kaizen Process

What is a Kaizen Workshop?

- A short burst of intense activity & effort (generally 3 to 5 days)
- Biased toward action over analysis
- Focused on improving the Value Stream and achieving flow
- Driven to resolving a specific problem or achieving a specific Kodak goal

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Kaizen Planning & Preparation

- Team Formation
  - The team should be a cross functional team of 6-8 people including people with skill sets such as:
    - Maintenance – Electrical or Instrumentation
    - Process Engineering
    - Operations
  - The Team should be empowered to make basic decisions during the event and have the support of their management! This needs to be established prior to the event.
  - Appropriate HSE personnel - that may be needed to approve some procedural changes - should be on call to enable a timely review “during” the event.
- Schedule
  - Typically 3-5 days
  - Short opening and closing meetings should be held to update the management team and allow the team to demonstrate their successes. Each team member should be allowed to speak.

Kaizen Planning & Preparation

- Gather Process Information
  - Equipment lists
  - Motor Lists
  - HVAC and Exhaust data
    - Drawings showing the specific areas that are being conditioned by each respective fan system
    - Air flow data from individual systems if possible
    - KW reading from HVAC fans
    - Any “screen prints” from a local Building Automation System (BAS) if they exist. This information can be invaluable to help tune or re-commission these systems and help minimize any unnecessary simultaneous heating and cooling.
  - Time of Day (TOD) schedules for lighting and HVAC system.
  - Hours of operation for the process or facility
  - Overall Utility Usage

Typical Energy Kaizen Findings and Success Stories

1) Real-time energy usage information through our Energy Information System (EIS) has allowed us to better understand where and how the energy is being used. This information has helped identify many demand side management (DSM) opportunities as well as several generation side optimization opportunities.

2) We have worked with one of our Film Sensitizing buildings to implement an energy conservation mode between product runs. All VSD fans go to reduced speed, still keeping the machine in a positive pressure but moving less air to do so.

3) We have reduced air flows in many buildings to better match the current requirements. We have found most areas are significantly over supplied with outside air; that needs to be conditioned. This has helped reduce our peak loads along with the averages.

4) We have reduced exhaust loads from many fume hoods in our research labs.

5) We have "tuned" or re-commissioned many HVAC systems to minimize simultaneous heating and cooling wherever possible.

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Typical Energy Kaizen Findings and Success Stories

6) Implemented and/or expanding the use of "Time of Day" (TOD) schedules to shut off or slow down HVAC systems on nights and weekends.

7) Reduced lighting levels to match the current use. (e.g. we had some buildings that were previously used as equipment assemble areas and are now just used for storage. These areas were still lit to 100+ foot candles.)

8) Implemented and/or expanding the use of "Time of Day" (TOD) schedules to shut off lights on nights and weekends.

9) We had many building vacuum pumps that ran 24/7 and are now on demand timers, significantly reducing run times.

10) On the "generation side", we have optimized the use of redundant deaerators, improved steam balance, and generally reduced the parasitic loads

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Results

- Energy and Greenhouse Gas Reductions
  - Roughly 16% in 2006
  - Roughly 12% in 2007

- Approximate Annual Coal Reduction of 200,000 Tons

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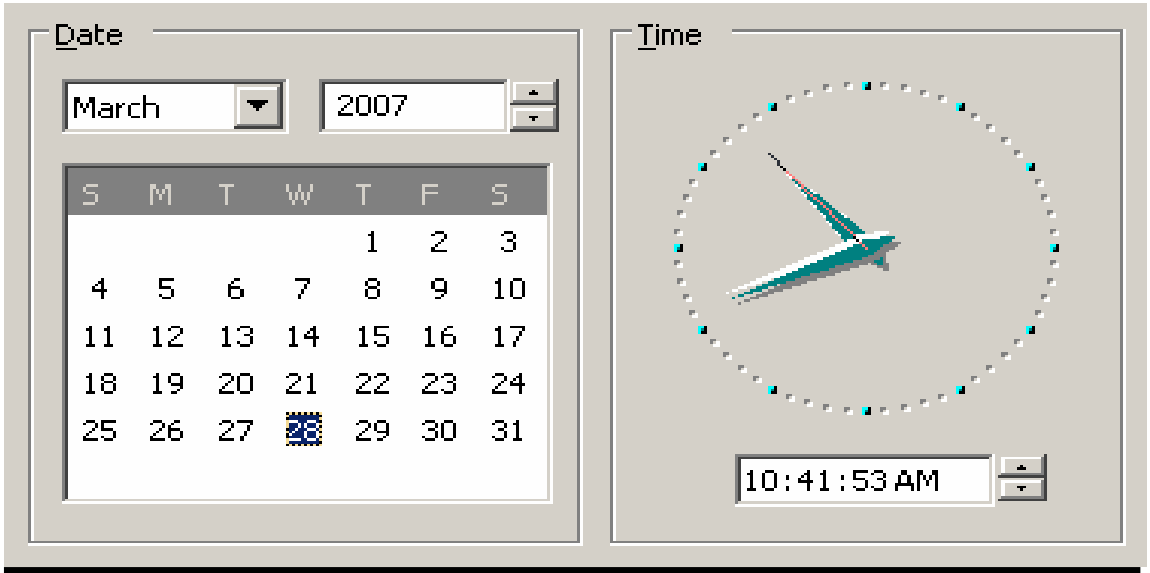
The Goal Has Been Achieved!!!

- The savings including reduced O&M fees, reduced hotel loads, and the savings from the energy conservation efforts that were necessary to get us to this point:
  - Approximately $75,000/Day or $27,000,000/Year!



The last operational coal-fired boiler was shut down in Bldg 31

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What’s Next?

- Continue All Our Conservation Efforts
- Expand More of Our Focus to Other Sites
- Leverage Our Learning's
- Continue ENERGY STAR Involvement
- Outreach to Our Suppliers
- Outreach to Our Community

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Questions & Discussion

2008 Web Conferences

Month	Topic
January	ES Update
February	Green Power Strategies
March	Engaging Employees in Energy Efficiency
April	Leading Energy Programs – ES Partners of the Year
May	Energy Efficiency and Green Buildings
June	Our Top 3 Energy Projects
July	Motivating and driving facility performance
August	“Cool” Energy Savings Strategies
September	Supply Chain Energy & Climate Initiatives
October	Energy & Climate Risk Management
November	Energy Strategy & Project Financing

Past Presentations – See “Networking Opportunities” @ energystar.gov

Announcements

- July 10 – Supply Chain Working Group: Toyota Presentation

- July 15 – Laboratory Benchmarking Update Meeting

To participate, register on-line at energystar.webex.com/meeting

Thank You!