



**2003**  
OSISOFT USERS CONFERENCE

# ***PI on a Mini-PC***

***Remote Data Collection with Intelligence***

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*Industrial Evolution*

***Chuck Wells***

*OSISOFT*

# *PI on a Mini-PC*

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- *Two examples of field-based PI Systems*
  - *The PC-104 for flight tracking*
  - *The mini-PC for field monitoring*
- *Improving your data collection*
  - *The PI advantage*
  - *Typical Applications*
- *Implementation details*



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# Remote Data Collection Examples

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## *“PI-in-the-sky”*

- *PI installed on a PC-104*
- *Collecting in-flight data from airplane network*

## *“PI-in-a-box”*

- *PI installed on a book-size mini-PC*
- *Collecting power consumption data from OSIsoft headquarters*



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## *Example 1: “PI-in-the-sky”*

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### ***Tracking the OSIssoft corporate plane***

- *PI installed on a portable PC-104 computer*
  - *Data collected from on-board network*
  - *Aircell transfer of real-time data to ground*
  - *Collection into “rhubarb” at OSIssoft*
  - *Replication to Industrial Evolution*
- *Real-time view of flight data from any PC*

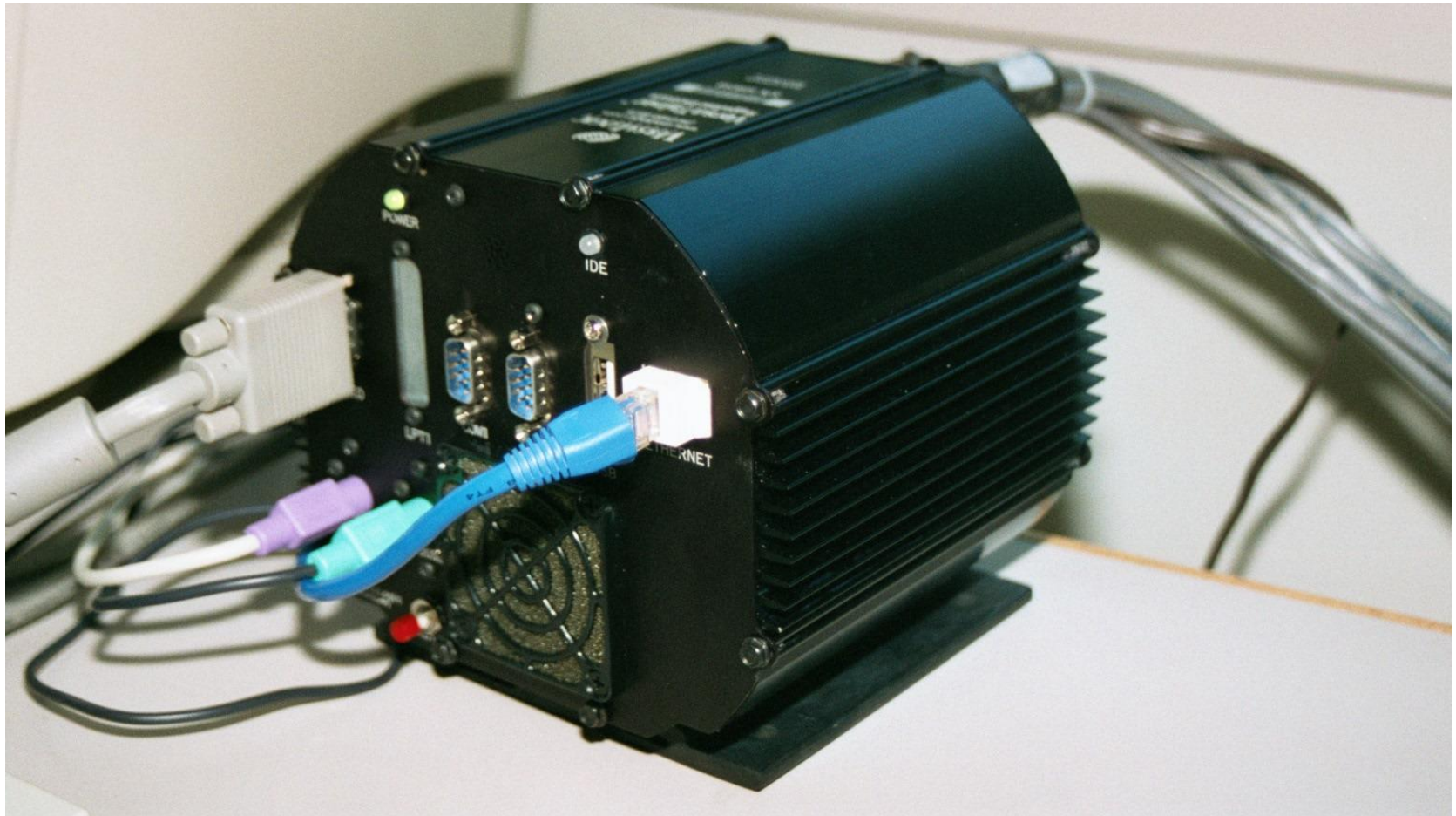


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# PI on a PC-104

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# PI on a PC-104

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# *Example 1: “PI-in-the-sky”*

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## *Communication to Host*

- *Autodialer to ISP over Aircell*
  - *Access to phone 2 minutes each 10 min*
  - *Disconnect on inbound call*
  - *Disconnect on outbound call*
- *VPN connection to San Leandro server*
- *PI to PI synchronization*



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## *Example 1: “PI-in-the-sky”*

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*On-board Clients:*

- *ProcessBook*
- *DataLink*
- *Connection via vnc and/or pcAnywhere*



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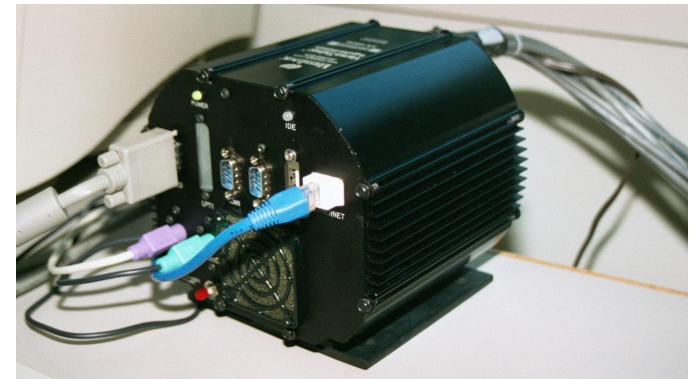


## *Example 1: “PI-in-the-sky”*

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### *PC-104 Specs:*

- *700 MHz CPU, ethernet, video, mouse, key*
- *256 Mbyte RAM*
- *4 Channel Serial Board*
- *2 Channel ARINC Board*
- *Internal UPS Board*
- *Internal Temp, Static & Dynamic Pressure*



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# Tracking the OSIssoft Corporate Plane

Airplane Tracker - Microsoft Internet Explorer provided by AT&T WorldNet Service

File Edit View Favorites Tools Help

Back Forward Stop Home Search Favorites Media Print W Go

Address <http://www.osisoftdemo.com/Dashboard/dashboard.asp?DashboardID=http://www/DAVCatalog/ICE/Public/2-%20-%20Airplane%20Tracker/>

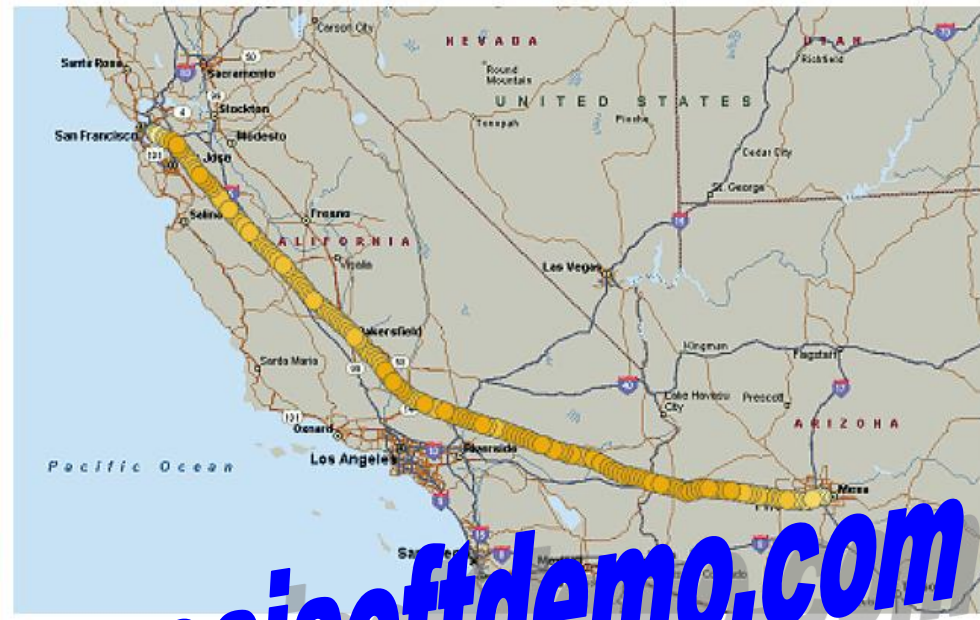
 **Airplane Tracker** LogOut | Publish | Adhoc Trend

**Airplane Tracker** [Flight Details](#) [Photos](#)

### Dashboard View

- ICE/Private/ice
- ICE/Public
  - 1 - Welcome
  - 2 - Airplane Tracker
    - Flight Details
    - Photos
  - 3 - Building Monitor
  - 4 - Cleveland Weather
  - 5 - JEA Water Plant
  - 6 - Timken

### Microsoft MapPoint Flight Record



### Atmospheric Information

Descriptor	Value	Engineering Units
Distance To Go	Shutdown nmi	
Time to Destination	Shutdown minutes	
Present Longitude	Shutdown Degrees	

### Flight Details

Descriptor	Value	Engineering Units
True airspeed	Shutdown knots	
Mach number	Shutdown unit	
Ground Speed	Shutdown knot	
Vertical speed	Shutdown fpm	

<http://www.osisoftdemo.com/Dashboard/dashboard.asp?DashboardID=http://www/DAVCatalog/ICE/Public/2 - Airplane Tracker/#A>

Internet

Start | W | I.. | S.. | P.. | U.. | A.. | D.. | F.. | P.. | 4:46 PM

## *Example 2: “PI-in-a-box”*

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### ***Tracking Power Consumption at OSIsoft HQ***

- *PI installed on a book-size mini-PC*
  - *Data collected directly from the power meter*
  - *Network transfer of real-time data to “rhubarb” server*
  - *Replication of power & related data to Industrial Evolution*
- *Real-time view of San Leandro office power consumption from any PC*



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## Example 2: “PI-in-a-box”

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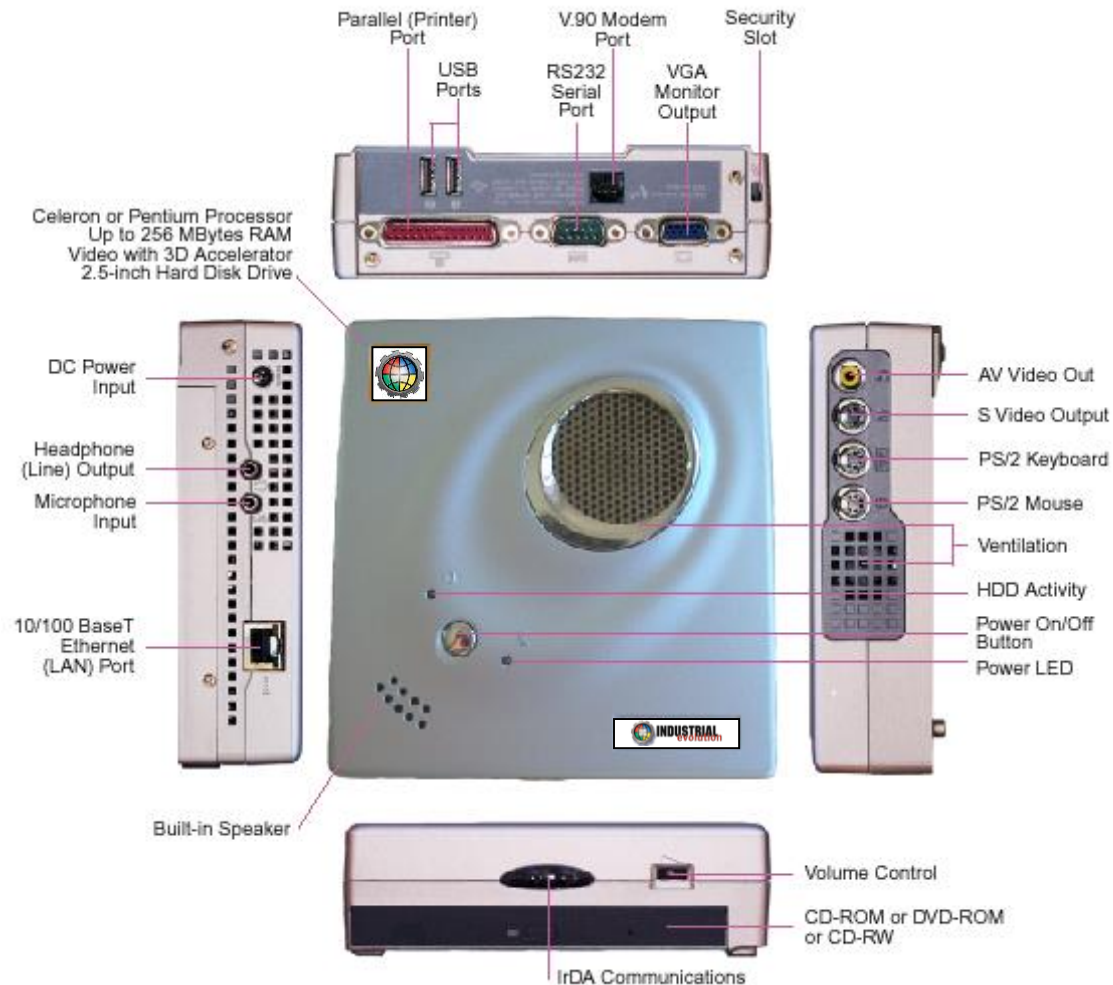
- *PI installed on a mini-PC*
  - *P3 733 CPU*
  - *20GB*
  - *128 MB*
- *No client software*
- *No keyboard, mouse or screen*



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## Example 2: “PI-in-a-box”



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San Leandro Office Power Monitoring - Microsoft Internet Explorer provided by AT&T WorldNet Service

File Edit View Favorites Tools Help

Back Forward Stop Home Search Favorites Media Print Preview Print

Address http://www.osisoftdemo.com/Dashboard/dashboard.asp?DashboardID=http://www/DAVCatalog/ICE/Public/3%20-%20Building%20Monitor/ Go

San Leandro Office Power Monitoring LogOut | Publish | Adhoc Trend

San Leandro Office Power Monitoring

**Dashboard View** ?

- ICE/Private/ice
  - Building Monitor
    - Web Links.VBS\_files
- ICE/Public
  - 1 - Welcome
  - 2 - Airplane Tracker
  - 3 - Building Monitor
    - Web Links.VBS\_files
  - 4 - Cleveland Weather
  - 5 - JEA Water Plant
  - 6 - Tinken

**Power Consumption Data** ?

Descriptor	Value	Current State
Instantaneous VA rms	203.64	500.0
Instantaneous Watts	177.52	500.0
Phase A Voltage	278.28	500.0

**Power Cost Information** ?

Descriptor	Value	Engineering Units
Energy Cost	21.000	\$

777 Davis St, San Leandro

**Atmospheric Information** ?

Descriptor	Value	Engineering Units
Inside Temperature	77.60	Deg F
Outside Temperature	59.70	Deg F

**Local Webcam** ?

Webcam feed showing a cityscape with a bridge and buildings.

**Web Links**

New | Organize

Cleveland Weather Page

**Inside/Outside Temperatures, degF** ?

Graph showing Inside Temperature (red line) and Outside Temperature (blue line) over time. The Y-axis ranges from 55 to 80 degF. The X-axis shows dates 5/7/03 10:32:02 AM and 5/8/03 10:32:02 AM.

**Power Consumption Costs, \$/hr** ?

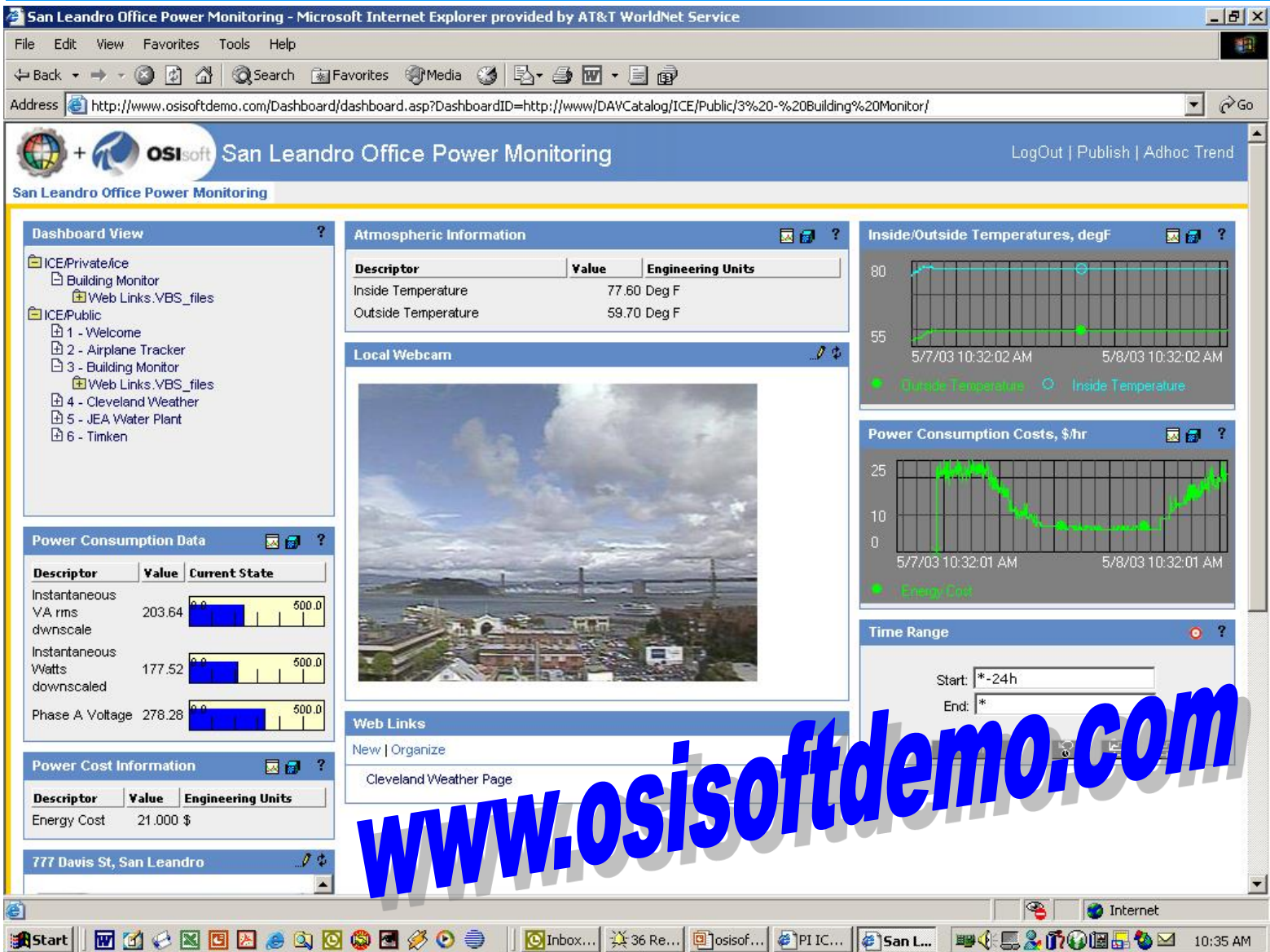
Graph showing Power Consumption Costs over time. The Y-axis ranges from 0 to 25 \$/hr. The X-axis shows dates 5/7/03 10:32:01 AM and 5/8/03 10:32:01 AM.

**Time Range** ?

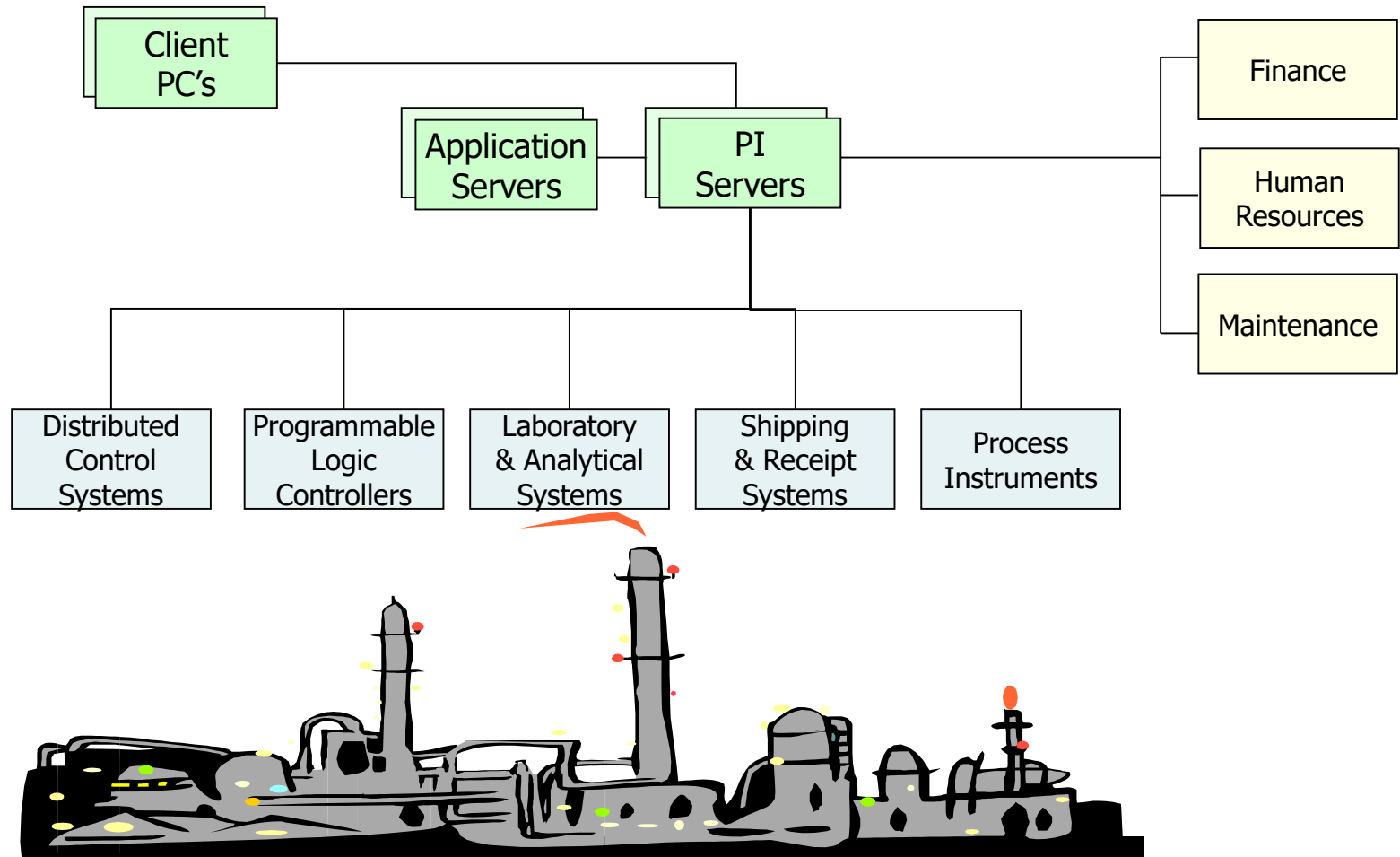
Start: \*-24h  
End: \*

www.osisoftdemo.com

Start | Internet | 10:35 AM



# Data Collection Today



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# *The PI Advantage for Data Collection*

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- *350+ device & system interfaces*
  - *Unlimited data buffering & storage*
  - *Proven & robust software product*
- *What if you could bring in these signals as a single PI-to-PI data stream?*
- *This is so much better than custom programs with multiple links to bring in “outside” signals*



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# The AnyWhere Gateway

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- *Typical deployment:*
  - P3 733 CPU
  - 10GB
  - 128 MB
  - No screen
  - No keyboard
  - No mouse
  - Network communications
- *Weight and Size:*
  - 950g / 2lbs, 2oz
  - 157mm x 146mm x 45mm. / 6" x 5-3/4" x 1-3/4"



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# *The AnyWhere Gateway*

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- *Data Input:*
  - USB
  - Firewire
  - RJ-45
  - RS-232
  - LPT
- *Software Used:*
  - Win2K
  - PI UDS
  - PI-to-PI
  - PI Interfaces
- *Sold as a monthly service subscription*
  - *Full support & 24/7 monitoring by Industrial Evolution*



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# *AnyWhere Gateway Applications*

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- *Environmental station monitoring*
  - *Pick up unlimited data from remote environmental monitoring stations*
- *Advantages*
  - *Proven PI-to-PI transfer*
  - *Use OSIsoft product interfaces*
  - *Network or ISP-based communications*
- *Benefits*
  - *Seamless fit with your PI System*
  - *Unlimited data collection, buffering & transfer*
  - *No per-call data retrieval charge*
  - *24/7 support & monitoring*



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# *AnyWhere Gateway Applications*

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- *Remote processing facility / Satellite plants*
  - *Centralize unlimited amounts of processing data from remote plants in real-time*
- *Advantages*
  - *Proven PI-to-PI transfer*
  - *Use OSIsoft product interfaces*
  - *Network or ISP-based communications*
- *Benefits*
  - *Seamless fit with your PI System*
  - *Unlimited data collection, buffering & transfer*
  - *No per-call data retrieval charge*
  - *24/7 support & monitoring*



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# *AnyWhere Gateway Applications*

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- *Inventory locations / Customer operations*
  - *Manage remote inventories, or even follow product use at your customer sites*
- *Advantages*
  - *Proven PI-to-PI transfer*
  - *Use OSIsoft product interfaces*
  - *Network or ISP-based communications*
- *Benefits*
  - *Seamless fit with your PI System*
  - *Unlimited data collection, buffering & transfer*
  - *No per-call data retrieval charge*
  - *24/7 support & monitoring*



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# *AnyWhere Gateway Applications*

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- *Loading docks / Shipping yards / Terminals*
  - *Combine all storage, shipping & receipt measurements from all field depots / locations*
- *Advantages*
  - *Proven PI-to-PI transfer*
  - *Use OSIsoft product interfaces*
  - *Network or ISP-based communications*
- *Benefits*
  - *Seamless fit with your PI System*
  - *Unlimited data collection, buffering & transfer*
  - *No per-call data retrieval charge*
  - *24/7 support & monitoring*



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# *AnyWhere Gateway Applications*

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- *Four “internal” applications:*
  - *Environmental station monitoring*
  - *Remote processing facility / Satellite plants*
  - *Inventory locations / Customer operations*
  - *Loading docks / Shipping yards / Terminals*
- *Many other applications possible...*
- *Deploy anywhere you might think to put a PI System or a API node*



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# *AnyWhere Gateway Applications*

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- *Equipment monitoring / Warranty support*
  - *Share performance data from operating equipment with the equipment manufacturer; obtain “real-time” warranty support*
- *Advantages*
  - *Proven PI-to-PI transfer*
  - *Use OSIsoft product interfaces*
  - *Network or ISP-based communications*
- *Benefits*
  - *No pre-requisite plant systems*
  - *No impact on existing systems or added IT work*
  - *Unlimited data sharing*
  - *Secure viewing of data limited to intended users only*



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# AnyWhere Gateway Applications

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- *“Application-in-a-box” service*
  - *Have application vendors maintain & support on-site applications and deliver their value as a service to your site*
- *Advantages*
  - *Proven PI-to-PI transfer*
  - *Use OSIsoft product interfaces*
  - *Network or ISP-based communications*
- *Benefits*
  - *Application vendor responsible for results*
  - *No impact to existing systems*
  - *Remote support avoids distraction to plant staff*



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# *AnyWhere Gateway Applications*

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- *Two “external” applications:*
  - *Equipment monitoring / Warranty support*
  - *“Application-in-a-box” service*
- *Many other applications possible...*
- *Deploy anywhere you want limited & secure collaboration with a partner*



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# Implementation Details

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- *Subscription includes:*

- *Hardware*
- *Win2K*
- *PI UDS*
- *PI-to-PI*
- *PI Interfaces*
- *24/7 monitoring*
- *Full support*



- *Available from Industrial Evolution*



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# Implementation Details

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- *Upgrade opportunity*
  - *Move to full PI license at any time!*



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# *Where can I see it in action?*

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- *See it on [www.osisoftdemo.com](http://www.osisoftdemo.com)*

*or*

- *Drive it in the Exhibit area today or the cybercafe tomorrow*