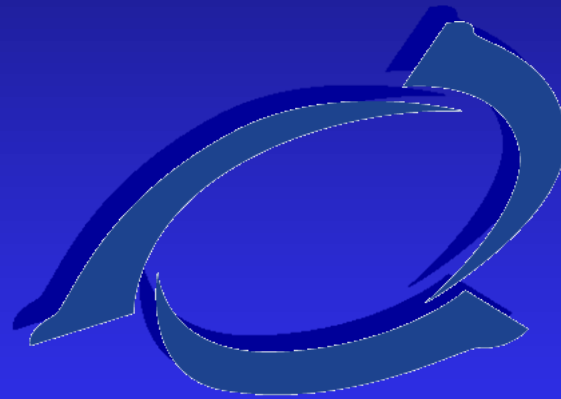


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enerVIEW.com:

Using ActiveView for Internet-Based Remote Process Management



Clean Dry Air, Inc.

Kevin Hann

Director of Control Systems

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Topics

- Clean Dry Air, Inc. – Compressed Air Solutions
- Need for Remote Process Management
- Why PI ? Why ActiveView ?
- Partnership with Omicron
- COMSYS Architecture
- enerVIEW.com
- Future Enhancements



Compressed Air - Who Cares?

- ❑ It is expensive!!!!
 - ❑ 30% of Ford's Electric Bill
 - ❑ 40% of Xerox's Electric Bill
- ❑ In the first year of operation, compressors consume more in power than their total capital cost.
- ❑ The DOE estimates that plant air compressors consume 30 billion kWh in the US annually, of which 12 billion kWh are wasted.
- ❑ Compressed air is a difficult utility to manage.



The Clean Dry Air Concept

- Deliver *Compressed Air* not *Air Compressors!*
 - Install modular, pre-engineered compressed air stations at the customer's facility.
 - Using specialized technicians to manage plants remotely, leveraging compressed air expertise over many plants.





The Clean Dry Air Concept

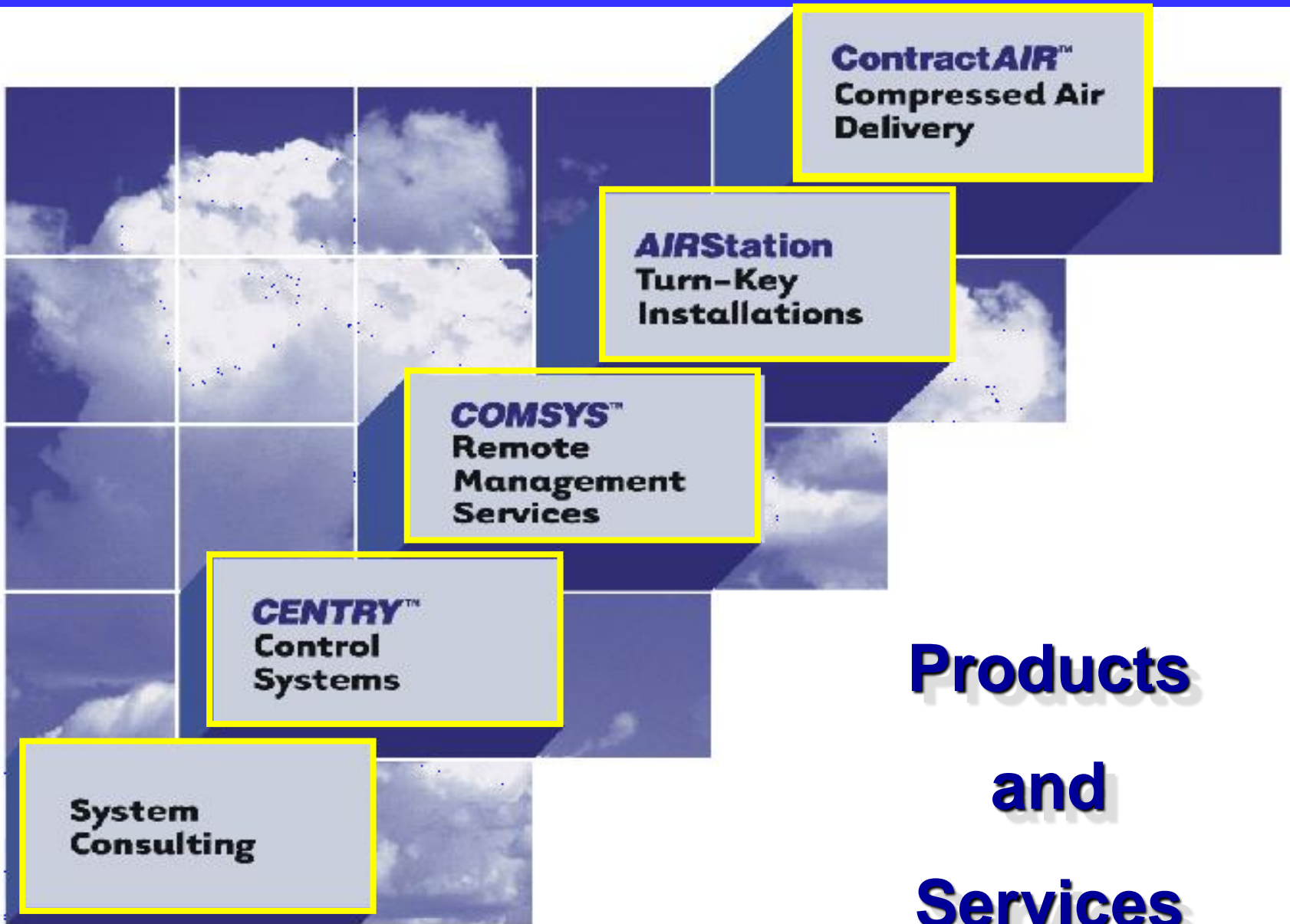


The Clean Dry Air Concept

- Deliver a complete, engineered solution for obtaining and managing this costly utility.
 - Use a suite of products and services developed by CDA to focus on compressed air.
 - Drive down the total cost of compressed air while increasing the reliability.



CDA RESPONSIBILITY



LEVEL OF SERVICE

**Products
and
Services**

The Internet Strategy

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CleanDryAir.com

eBidenergy.com

Clean Dry Air, Inc.

cmmsVIEW.com

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Need for Remote Process Management

- Delivery of energy use and other high level data to customers.
- Ability to aggregate energy and plant data across multiple facilities.
- Delivery of operating data to Clean Dry Air personnel at various locations.



Requirements for Remote Process Management

- ❑ Must be Internet-based for connection to multiple customer and CDA locations.
- ❑ Need the fastest data delivery possible using the thinnest client.
- ❑ Real-time data automatically updated.
(No manual refresh required).
- ❑ Customer data must be secure.
- ❑ Use as much standard and open technology as possible.



Why PI ? Why ActiveView ?

- Considered traditional relational databases.
 - Concern with database size/data retrieval time.
- PI designed for analog data. Provided very efficient storage and fast retrieval.
- ActiveView offered a solution that was tightly integrated with PI and easily adaptable for many different plant locations and configurations.



Partnership with Omicron

- Entered into a agreement with Omicron (Philadelphia, PA) to develop enerVIEW.com



OMICRON

OMICRON CONSULTING

A Company of the PBR Consulting Group

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Partnership with Omnicron

- Omnicron's Strengths
 - Process Monitoring Specialty Practice
 - PI Application Experience
 - ProcessBook/ActiveView Expertise
 - Broad Information Technology Expertise Including:
 - Hardware/Software
 - Networking
 - Web Site and Internet Technologies



Architecture Overview

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MOMCenter

Machine Operation Monitoring Center

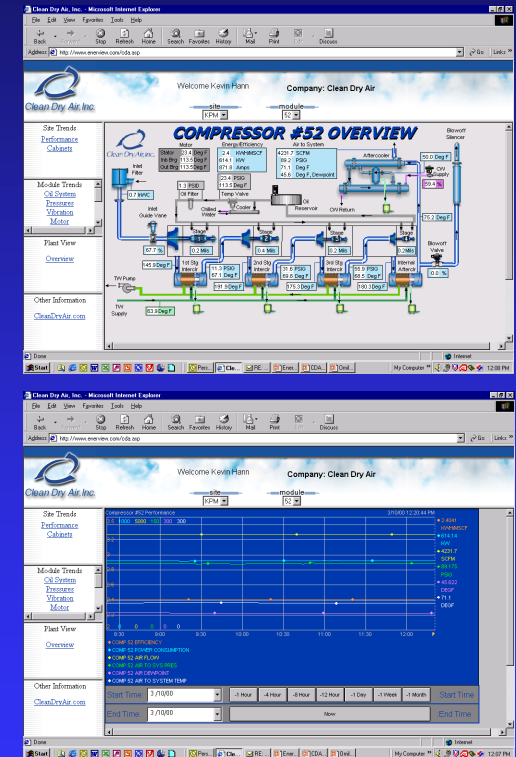


CENTRYPCS™



CENTRYCLC™

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COMSYS

Architecture (Plant)

- *CENTRY*_{CLC} (Compressor Level Controller)
 - PLC-based Compressor Controller
- *CENTRY*_{PCS} (Plant Control System)
 - On-site Industrial PC
- Communications Interface to Clean Dry Air *MOM*Center
 - Standard or Leased Phone Line
 - Virtual Private Network (VPN) via the Internet
 - Private Network, such as Frame Relay



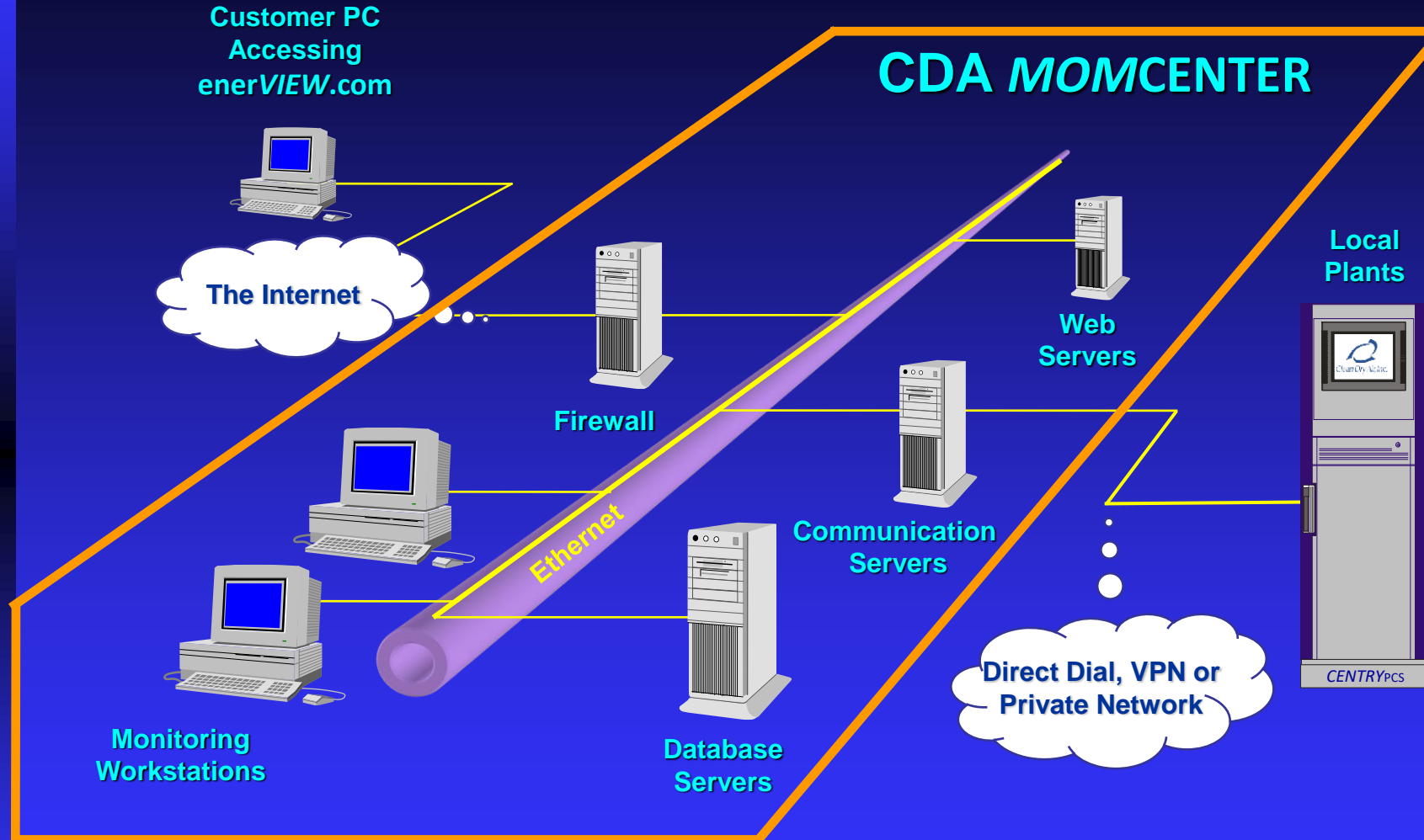
Architecture (MOMCenter)

- Communications Servers
- Database Servers
- Web Servers
- Monitoring Workstations
- Communications to the Internet
 - T1 Line



Architecture Detail

COMSYS

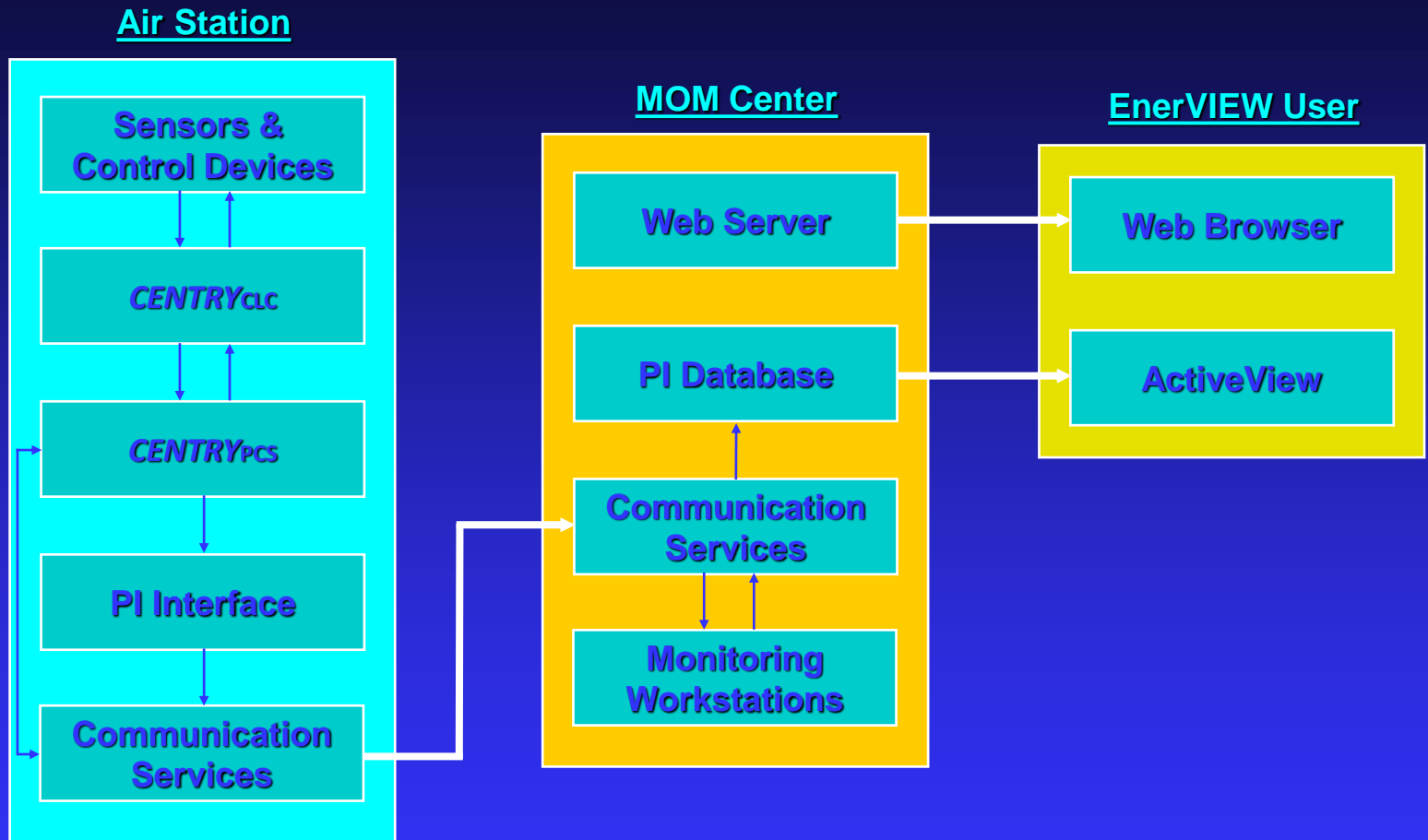


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Data Flow

COMSYS



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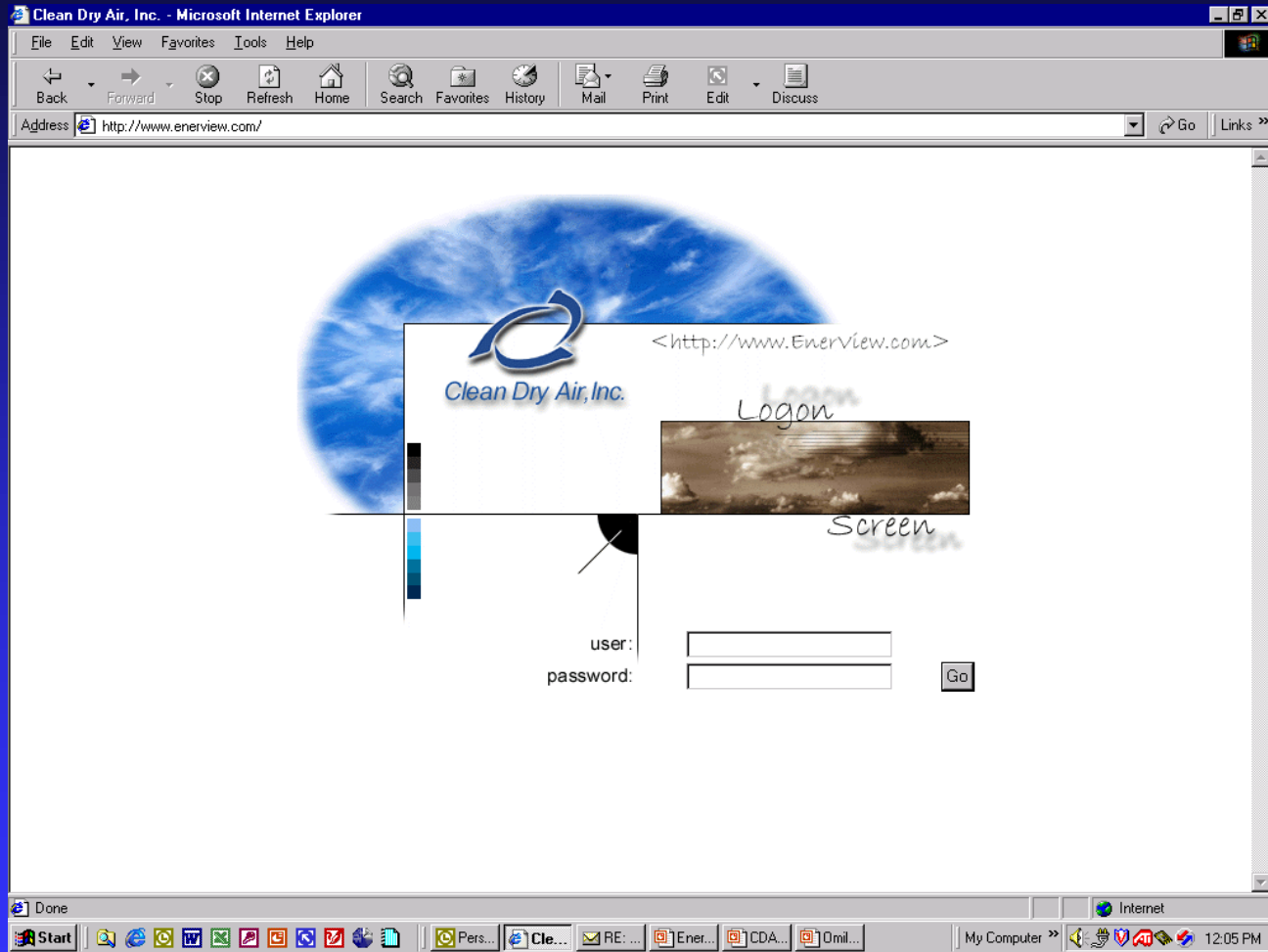


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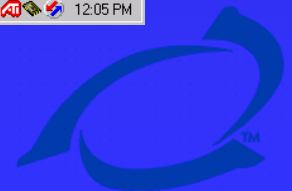
- ❑ Browser-based remote access to process data.
- ❑ Delivers “real-time” process data to the desktop.
- ❑ Based on ActiveView ActiveX control.
- ❑ Interfaces to PI database.
- ❑ Users screens customized to their specific plants.
- ❑ Users can look at multiple plant or individual unit energy/process information.
- ❑ Both trend and graphical screens.



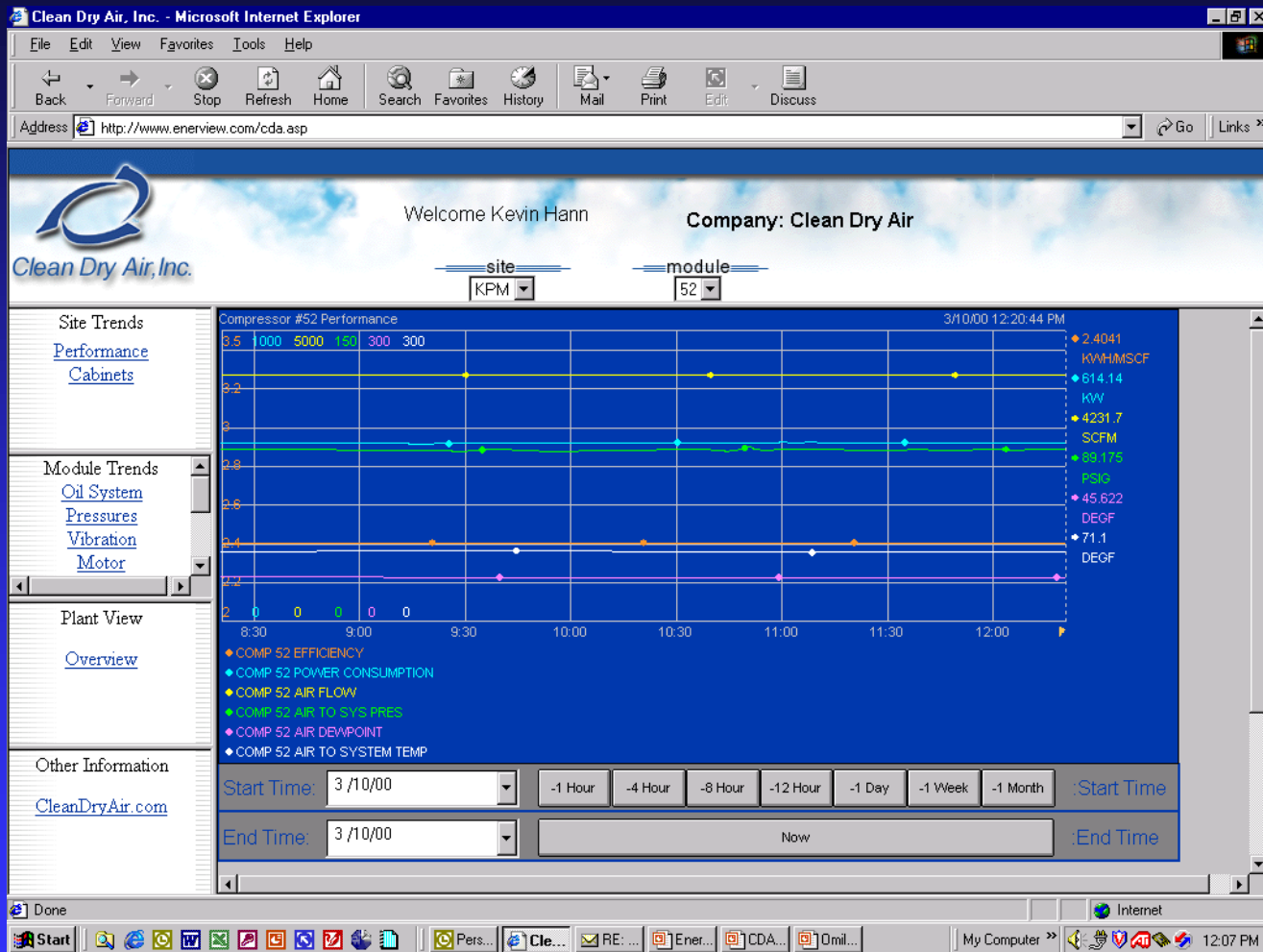
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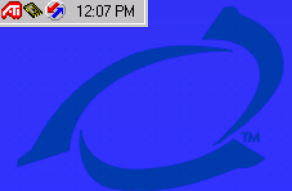
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Clean Dry Air, Inc. - Microsoft Internet Explorer

Address: <http://www.enerview.com/cda.asp>

Welcome Kevin Hann Company: Clean Dry Air

site: KPM module: 52

COMPRESSOR #52 OVERVIEW

Motor

Stator	23.4 Deg F
Inb Brg	113.5 Deg F
Out Brg	113.5 Deg F

Energy/Efficiency

2.4	KWH/MSCF
614.1	KW
871.8	Amps
23.4	PSIG
113.5	Deg F
Temp Valve	

Air to System

4231.7	SCFM
89.2	PSIG
71.1	Deg F
45.6	Deg F, Dewpoint

Motor Data: 0.7 InW/C, 67.7 %, 145.9 Deg F, 63.9 Deg F (TW Supply)

Stage 1: 0.2 Mils, 11.3 PSIG, 67.1 Deg F, 191.9 Deg F

Stage 2: 0.4 Mils, 31.6 PSIG, 69.8 Deg F, 175.3 Deg F

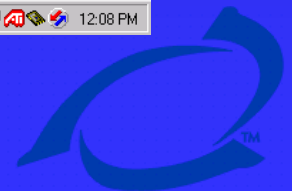
Stage 3: 0.2 Mils, 55.9 PSIG, 68.5 Deg F, 180.3 Deg F

Internal Aftercr: 0.2 Mils, 0.0 %

Other Data: 1.3 PSID, Oil Filter, Chilled Water, Cooler, Oil Reservoir, CW Return, 50.0 Deg F, 75.2 Deg F, 59.4 %, 0.0 %

DEMO

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Future Enhancements

- EnerVIEW Enhancements
 - User Management of Passwords
 - User Configuration of Trends
 - Numerical Data Downloads
 - Automatically-Generated Custom Reports
- ActiveView Enhancements
 - Browser Independence
 - Thinner Client
 - Integrated Security with NT
 - Generic Screens with Aliasing
 - Connectivity Issues



Future Enhancements

- More Universal Broadband Customer Connections
 - Faster Downloads of ActiveView Control
 - Faster Downloads of Trends and Graphics
- Faster Communications to Plants
 - Live Video of Air Station
 - Infrared Mapping of Equipment
 - Acoustic Signature of Machinery



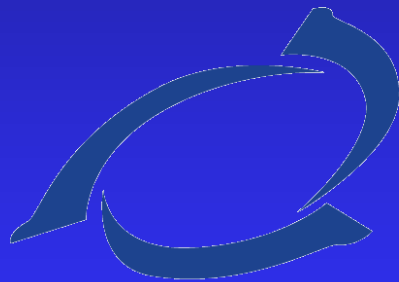
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Thank You



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