

Symposium 2010: The 25th Meeting

- ✓ PEPSE User Group Meeting
- ✓ Performance Software User Group Meeting
- ✓ Symposium

August 18, 2010

What keeps you up at night?

- ✓ Outage headaches?
- ✓ Lost megawatts?
- ✓ Plant trips?
- ✓ Cyber security issues?
- ✓ Equipment degradation/prediction?
- ✓ A stubborn network issue?
- ✓ Inadequate time; decreasing manpower?



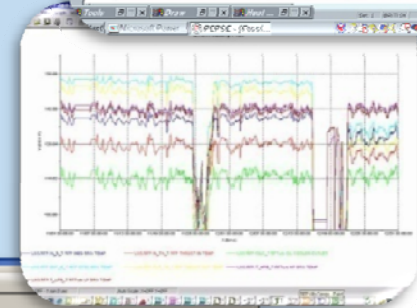
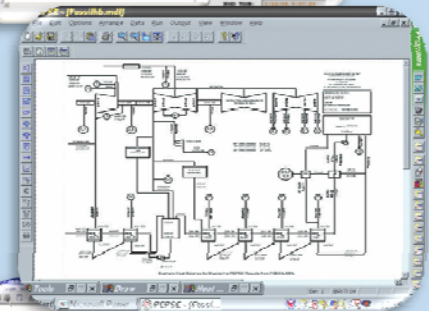
What keeps Sciencetech up at night?

The never ending need to innovate.



Sciencetech Innovations

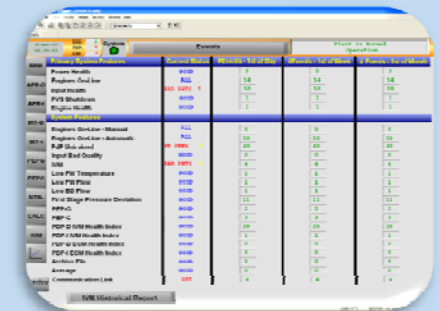
- **PEPSE**
 - ✓ Created in 1977 - mainframes
 - ✓ Minicomputers in the early '80s
 - ✓ Design mode components
 - ✓ PCs in the '90s
 - ✓ Special Option 6
 - ✓ PEPSE-PMAX link in the '00s



Sciencetech Innovations

• R*TIME

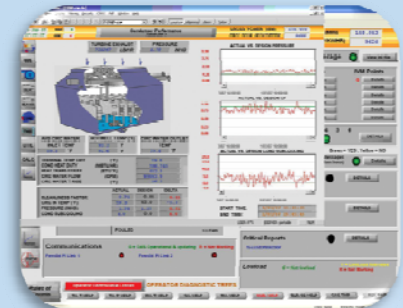
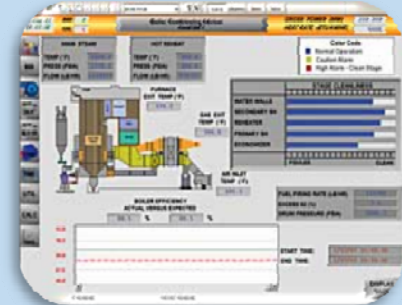
- ✓ Evolved from early post-TMI SPDS/ERFDADS projects
- ✓ Original Modcomp and DEC computing platforms; Aydin, Tesselator monitors; Flick database; all software was custom
- ✓ Unix servers; X-Windows HMI at PVNGS, NMP in early '90s
- ✓ Port to Windows 3.1 in early '90s – productize – R*TIME is born
- ✓ First to deliver on Windows platform – TMI PPC
- ✓ Presently Windows Server '08 or Solaris 9 and Windows XP/7



Sciencetech Innovations

- **PMAX**

- ✓ 'First in class' for real-time plant thermal performance in 1984
- ✓ MicroVax computer platform;
Intecolor monitors
- ✓ Windows PCs in the 90s
- ✓ Sootblower advisor
- ✓ Input Validation using Advanced
Pattern Recognition in the '00s
- ✓ WebView – real-time thermal
performance through an internet
browser

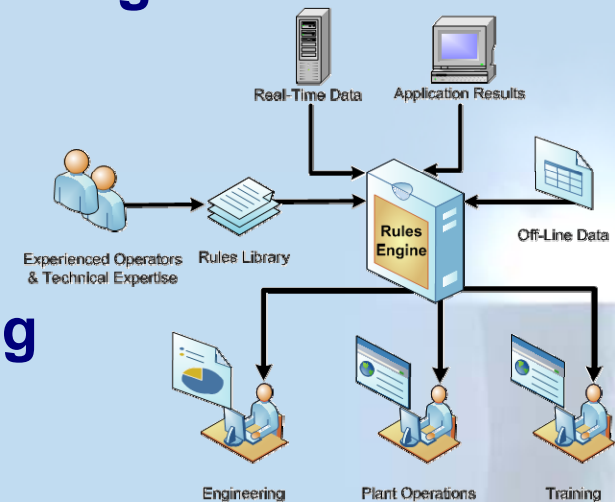
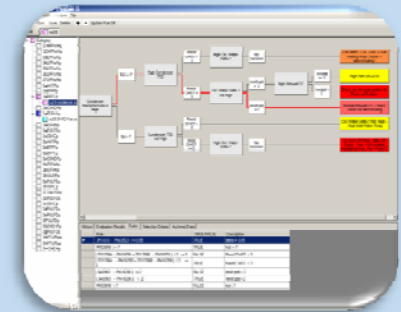


The screenshot displays the 'Asset Health' report for the 'Chicago (Chicago Investor)' asset. The report includes a 'Health' section with a 'Status' of 'Normal' and a 'Cutoff' of 9.92. The 'Asset Health' section is highlighted with a red box. The 'Asset Health' section shows a 'Normal' status with a 'Cutoff' of 9.92 and a 'Low Cutoff' of 9.00000. The 'Asset Health' section is highlighted with a red box.

Sciencetech Innovations

- **Rules Engine - Automated Assessments**

- ✓ Application is dynamic, real-time assessment process; not static look-up lists
- ✓ Rules incorporate all specific integrated information & results - real-time, periodic, off-line
- ✓ Utilizes decision tree analysis processing
- ✓ Rules configurable to any modeled component
- ✓ All rules and calculations are user configurable
- ✓ Integrates with all FAMOS monitoring products – PMAX, PdP



FAMOS

Fleet Asset Management and Optimization Solution

Debuted in 2008. What is it?

- integrated solution set of applications for analyzing and optimizing plant performance, monitoring and detecting problems, and providing insight and visualization to various plant data & information sources.

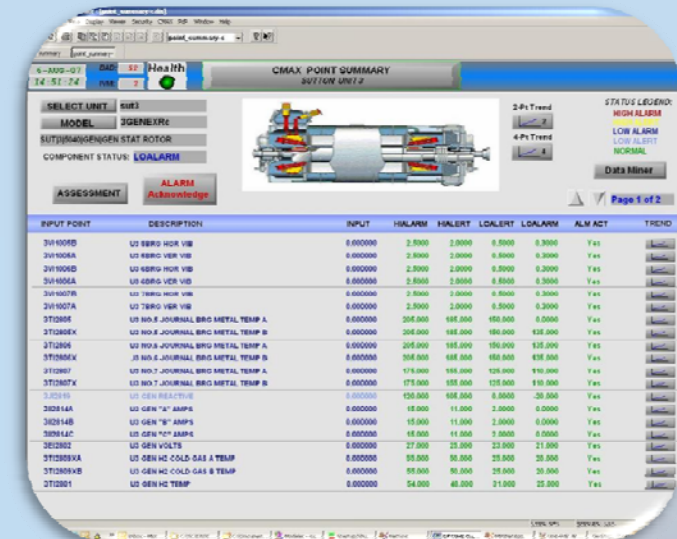


Scientech's FAMOS Product Platform

- ✓ **R*TIME** - platform for high speed data acquisition, display and historian/archival
- ✓ **PEPSE** - off-line, first-principle modeling tool to establish best achievable KPIs
- ✓ **PMAX** - thermal performance monitoring and process optimization
- ✓ **PdP** - advanced pattern recognition for anomaly detection and prediction
- ✓ **Rules Engine** - diagnostic and decision support tool, coupled with rules assessment library
- ✓ **FAMOS Suite** - integrated performance and equipment condition monitoring for asset management

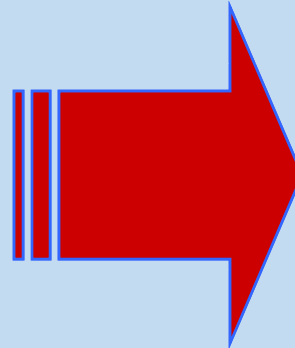
FAMOS System – Integrated Condition Monitoring

- ✓ Real-time monitoring, alarming, and information integration; composite model approach – plant health visualization
- ✓ Pattern prediction (PdP) and thermal performance (PMAX & PEPSE) monitoring results as well as other condition monitoring information
- ✓ Component Assessment Library for automated condition assessment
- ✓ Advanced alarm processing and management
- ✓ Detail diagnostics and drill-down
- ✓ Asset management resource



Complexity to Manageability (more sleep?)

- Higher expectations on everyone
- No time to waste
- Less or decreasing manpower
- Intolerance for unanticipated equipment failures
- Need for immediate data acquisition
- Need to predict degradation as early as possible
- Many sources of component & system information
- Many databases to access
- Need for real-time performance indicators



- ✓ **Optimized Processes**
- ✓ **Application Integration**
- ✓ **Automation**
- ✓ **Trusted/Capable Supplier**



FAMOS Installations

- ✓ PMAX adopted world-wide by >250 thermal power plants (nuclear, fossil, combined cycle)
- ✓ PMAX is the On-line thermal performance tool of choice at 59 of USA's 104 nuclear generating units
- ✓ Utilized by seven (7) major nuclear fleets in the USA
 - Constellation – Duke – Exelon – First Energy – PSEG – TVA – FPL (Turkey Point & ST. Lucie)
- ✓ PEPSE is in all the USA nuclear power plants
- ✓ PdP is used at fossil, wind, and T&D situations; some fleet, others site specific
- ✓ FAMOS implementation at fossil fleet



What's next?

(Project Facelift)



What is 'Project Facelift'?

- ✓ **Commenced in April 2010**
- ✓ **Plan and develop the business case for the next several years of integration and innovation in the FAMOS product line**
- ✓ **To the extent possible evaluate the technical and implementation underpinnings for:**
 - **Decisions related to “make vs. buy”: acquisition of technology, teaming partnerships, internal development, open source tools, etc.**
 - Platform decisions
 - Common 'look and feel'
 - Enhancements
 - **Phasing the development to integrate with Scientech and CWFC business goals**

Who is 'Project Facelift'?

- ✓ **Brent Young, Chairman**
- ✓ **Jim Herzau, ER/Utility Applications Expert**
- ✓ **Dan Popovich, Software Engineer**



Project Facelift - Scope

- ✓ Become familiar with the various FAMOS products.
- ✓ Reach out to key stakeholders, both internal and **external**, and identify their needs.
- ✓ Collect information on the business process for the FAMOS line of products.
- ✓ Identify, evaluate, and recommend technologies/modifications to enhance the FAMOS user experience, marketability, development, and support.
- ✓ Deliver presentation of Project Facelift results to Scientech management during the 2011 business planning cycle.
- ✓ **Brent/Jim/Dan: do all of this in your spare time.**

Prepare a business case for Project Facelift

- ✓ What direct “fixes” and “updates” need to be made to the products?
- ✓ What technologies would be most appropriate such as compilers, operating systems, databases, languages, platforms, networks...?
- ✓ What is the market for these products?
- ✓ Who competes with us; what are they doing?
- ✓ **✓ What are our customers asking for?**
What would the project cost in time, resources and money?
- ✓ What are the benefits of modernizing the FAMOS products?
- ✓ What are the most requested and desirable improvements?
- ✓ What would be “nice to have”?
- ✓ What are the costs and benefits of these upgrades?
- ✓ How difficult will it be to implement specific updates?
- ✓ What are our conclusions and recommendations?

What is your (the customer) role in Facelift?

- ✓ What direction do you see FAMOS going?
- ✓ Looking down the road and around the corner, what is the next big problem you face for which you have inadequate tools to solve?
- ✓ In what areas does the current FAMOS implementation fall short of your expectations?
- ✓ If you could have one new super-whammy-dyne enhancement to FAMOS that solves your most gnarly, most stressful problem what would it be?
- ✓ **All week, and especially on Friday, passionately communicate your needs for the FAMOS suite.**



Why FAMOS?

- ✓ Integrated solutions focusing on major plant cost drivers: thermal performance and equipment reliability
- ✓ Converts mountains of data into reliable information allowing efficient and productive action
- ✓ Asset management resource for operators, engineers and management
- ✓ Solutions supporting nuclear, fossil and renewable plants
- ✓ Flexible maintenance subscription terms; not dependent on third party software
- ✓ Dedicated power plant specialists as a life-line and M&D Center
- ✓ Technology with a business case (\$\$\$) and documented payback < one year



Why select Scientech as technology partner?

- ✓ **Demonstrated commitment to plant performance improvement through advanced monitoring tools for over 30 years**
 - **Dedicated business unit: Plant Performance Group**
 - **FAMOS: a suite of optimization tools**
 - **Experienced, dedicated staff for day-to-day support and consultation**
- ✓ **Competitive technology to improve performance and equipment reliability; focused at reducing O&M costs**
- ✓ **Proven implementation focuses on engineering expertise in CM practices for improved model building to assure actionable information with minimum nuisance alarms**
- ✓ **Scientech has a competitive pricing structure and flexible investment terms.**

We think we can improve your sleep.

