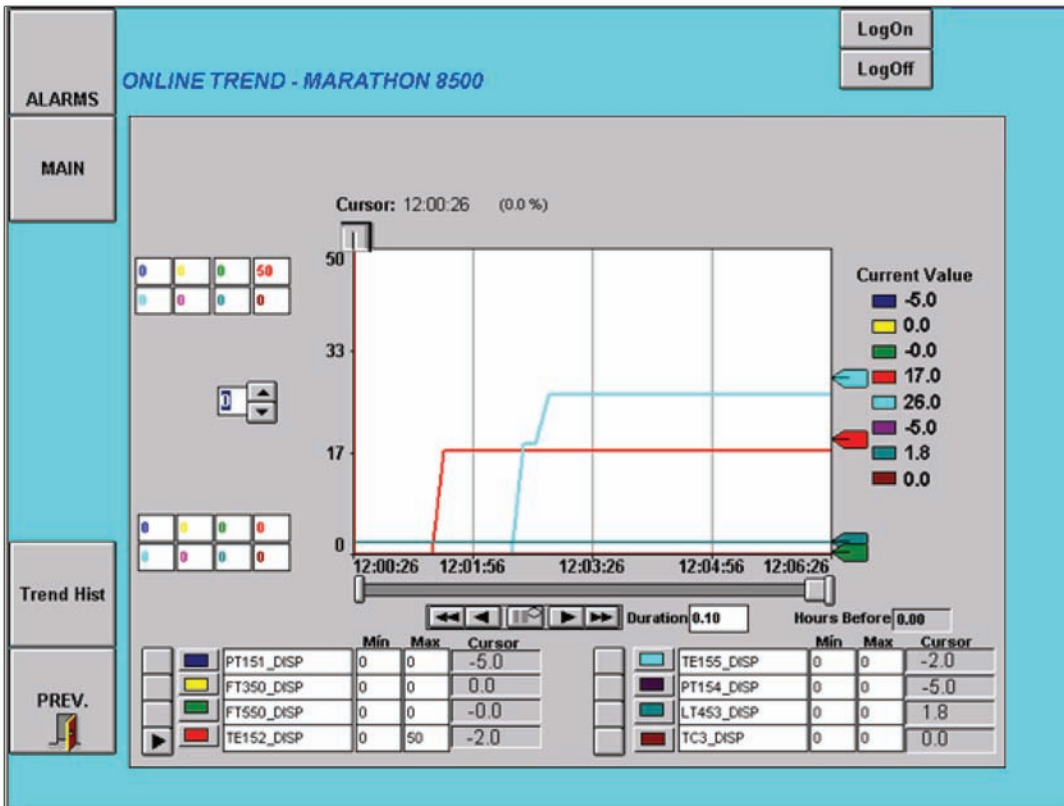


Metron, Inc.:

Semiconductor equipment supplier designs cost-effective operator interface with high resolution graphics, powerful features



- High resolution, PC-style graphics pack more information into the operator interface
- Powerful trending, analytical and operational functions are built into the interface with InduSoft HMI
- Web server, email notification and paging were provided as part of the HMI package
- Extra InduSoft processing power reduces load on machine PLC, frees up resources for advanced control
- Flexible file management functions enable operators to perform more functions at machine interface

The operator interface on a Marathon 8500 flow abatement tool combines beautiful graphics with efficient functionality.



The Marathon 8500

Youssef Loldj, Control Engineer
Metron, Inc. (www.metsci.com)

Background

Metron helps customers in the worldwide semiconductor industry to improve wafer yields, lower operating costs, and improve process efficiency.

Ensuring that none of the highly reactive gases used in semiconductor manufacture escapes into the environment is crucial to successful manufacturing. Metron flow abatement tools treat gas effluent from

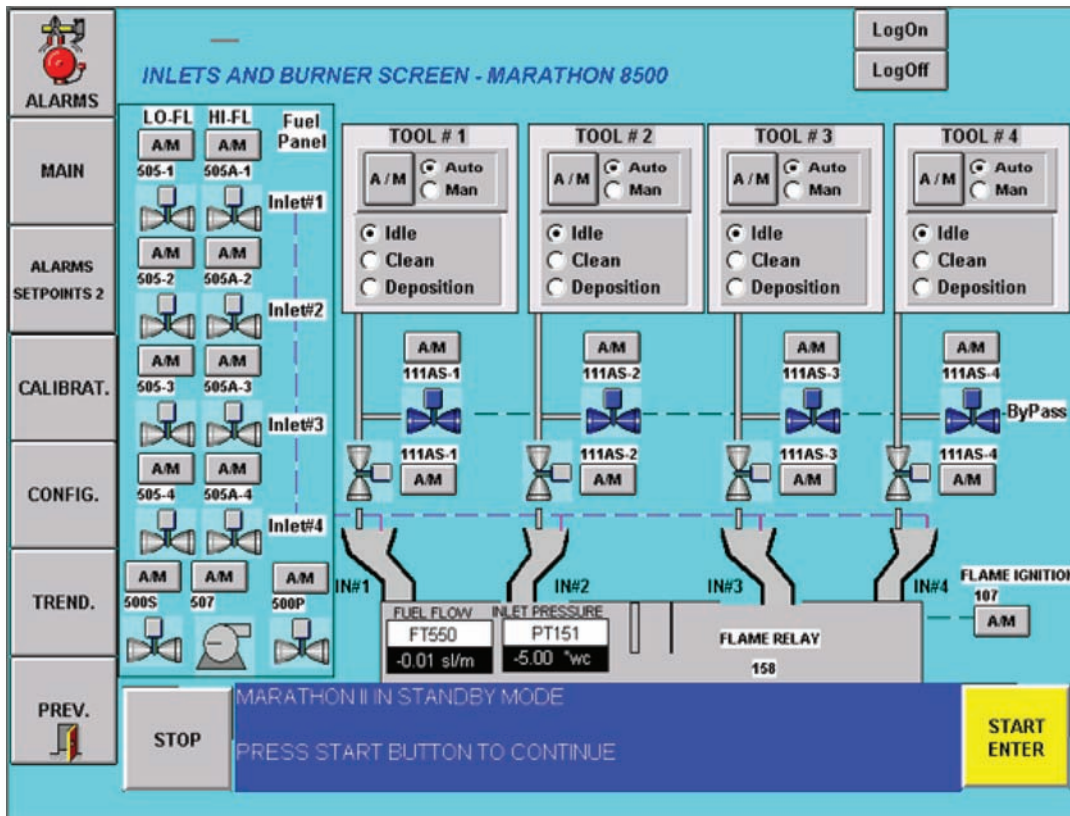
semiconductor fabrication. The Metron Marathon series is an advanced point-of-use integrated thermal/wet treatment system that provides a controlled gas conditioning environment for semiconductor process chemistries. The Marathon series performs controlled decomposition/oxidation treatment of flammable, pyrophoric, corrosive, and particulate generating process recipes.

The Challenge

Metron recently added a new model to the Marathon™ line: the 8500 high flow abatement tool. The 8500 performs highly efficient gas destruction in ultra-high volume applications including epitaxial, low-k, and perfluorinated compounds ▶



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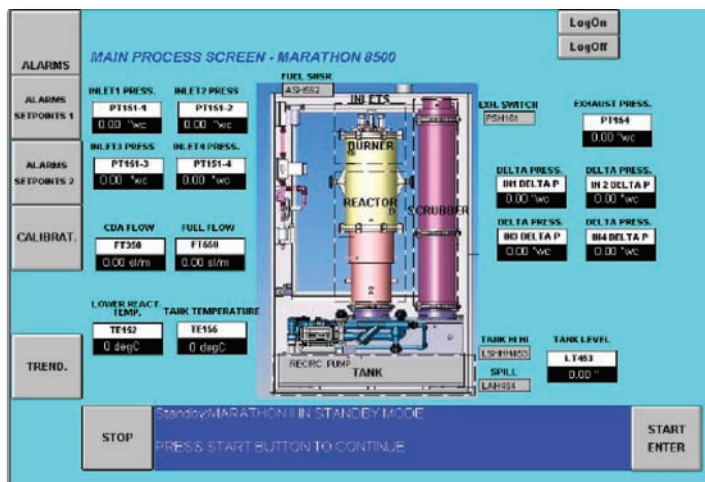
From one screen, the operator can view and control the status of various gas flows being processed by the machine.

(PFC) process exhaust abatement.

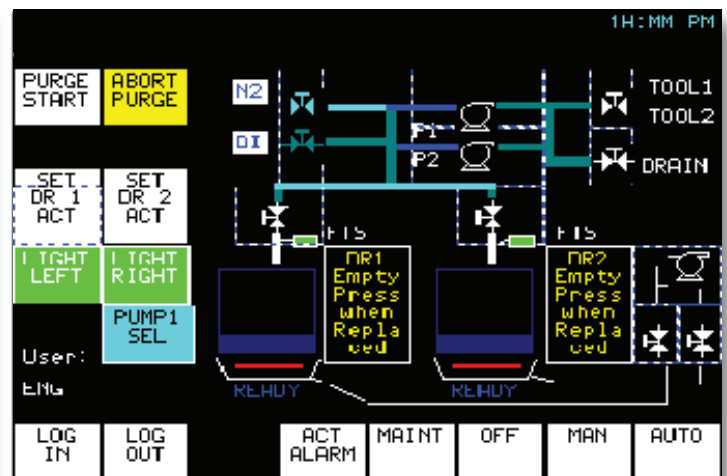
The control system for the new equipment had to meet demanding requirements for safety and reliability, had to conform to the SEMI S2 Guideline and CE Marking requirements covering a large range of safety and health provisions, and had to demonstrate a high level of efficiency while remaining cost competitive.

Obviously, a crucial element of the control system was the operator interface. Metron required an OI that would be cost-effective solution while also enabling the product design team to provide sophisticated graphic displays and incorporating features for process optimization with a minimal strain on computing resources. ▶

The Indusoft graphic interface versus the traditional operator interface



Screen developed with Indusoft



Screen developed for a traditional operator interface

The Solution

The control platform chosen by the Metron engineering was a dual PLC system, using the second PLC for safety interlocks. OMRON was the chosen PLC. The operator interface unit is composed of InduSoft Web Studio running on an Arista ARP-1610 panel running Windows CE. The Arista panel was specifically chosen because of its solid reputation as a stable hardware platform.

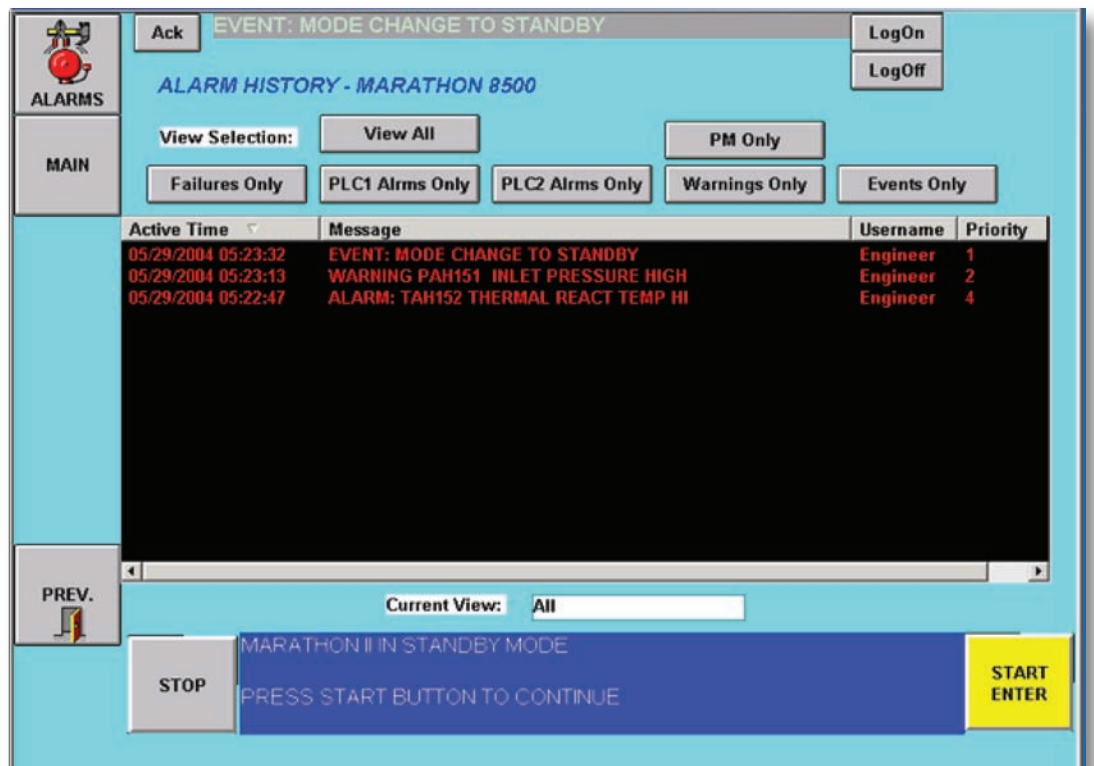
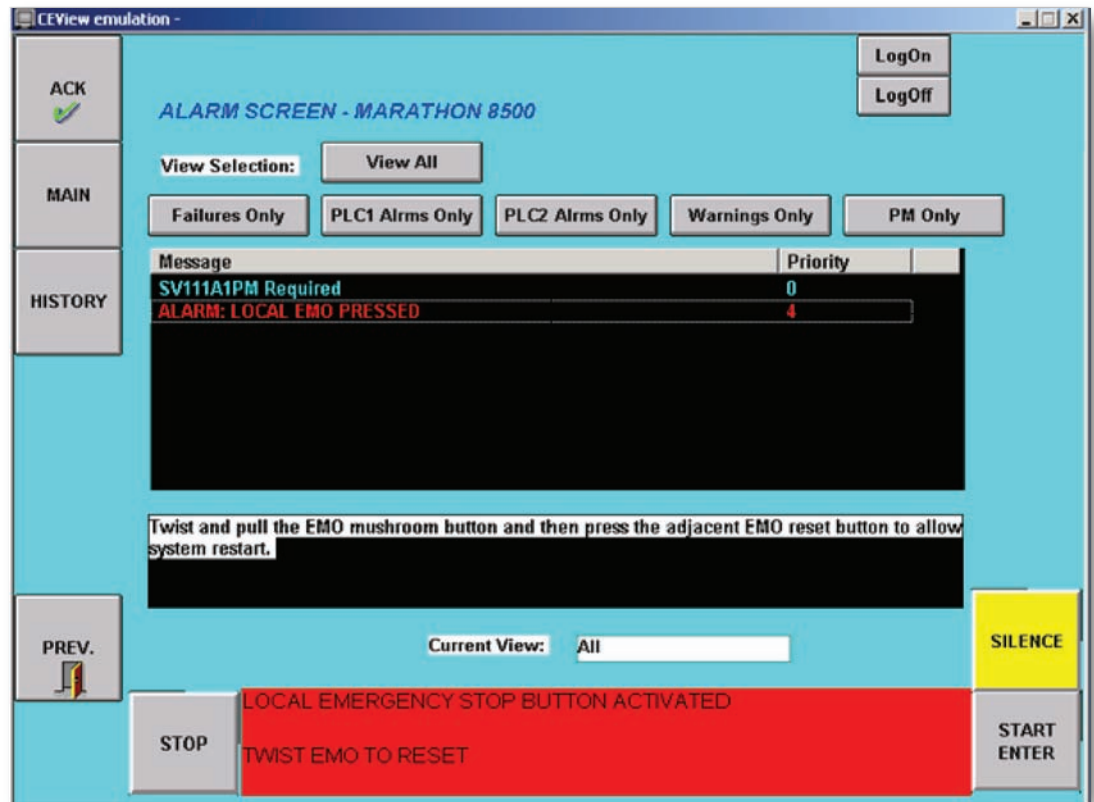
Solution Justification

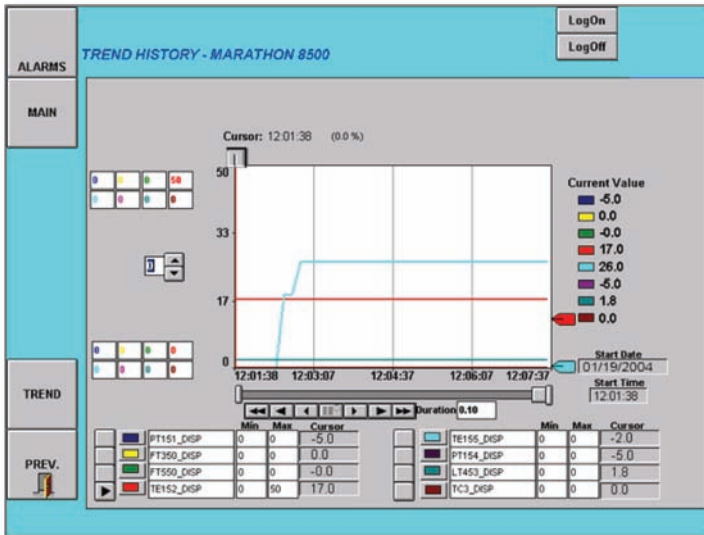
Metron engineers had a number of highly specific reasons for selecting an InduSoft solution.

Cost Effectiveness

Traditional Windows industrial PC-style operator interfaces were priced at \$1100 to \$1400 for units with a six-inch display, and \$2000 for units with a twelve-inch display. These figures did not include any software and either a machine-level HMI product or a full SCADA package would have been required in addition. The Arista box running Windows CE and an InduSoft runtime license included came in under \$1200 for the six-inch unit and \$2100 for a twelve-inch unit. When compared with other SCADA packages, the runtime solutions were usually even more expensive. ▶

Right: Alarms can be easily managed from the operator interface of the Marathon 8500.





The same screen can be used to view trends and trend history

Graphics Quality

Metron determined quickly that much better graphic displays could be built using the InduSoft Web Studio than with the operator interfaces usually available with PLCs. Not only was the resolution finer, the selection of colors better, but InduSoft provided a library of existing symbols and permitted the Metron designers to create symbols. Bitmapped graphics in formats such as .jpg could be imported, and Windows CE provided the standard Microsoft icons with which operators would already be familiar, thereby eliminating the need for additional training.

Ease of Programming, Powerful Features

The operator interfaces normally offered with PLCs offered no way to program any control logic. This meant that all logic needed to reside in the PLC. With InduSoft all the programming needed for the graphics could be handled by the operator interface terminal. Not only was programming time reduced because of the built in development tools of InduSoft, but the demands placed on communications and PLC processing resources could be minimized.

InduSoft also offered the development team a host of

other features and functions that enabled them to build in additional features. These included file management functions, clock and time functions, plus the ability to create and file reports in XML and .txt formats as needed. The file management function meant that in developing OI application, Metron designers could give an operator the ability to open, move and delete files such as alarm files directly from the touch-screen. Clock settings can also be modified for scheduling purposes.

The alarms and alarm history features of InduSoft Web Studio included the ability to provide email notification of alarm conditions; even though other SCADA packages may offer this feature, it usually involves an additional cost.

A major cost savings was realized because of the InduSoft web server. This means that multiple clients can access the Marathon 8500 control system without incurring the cost burden for extra licenses.

Working With InduSoft

The development team got excellent support from InduSoft. Design was started with one version of InduSoft and when a new release came out, problems were

experienced with the speed of communications with the PLCs used for control; once InduSoft was contacted they identified and resolved the issue within days.



Marathon development team from left to right: Shaun Crawford, Youssef Loldj, Manual Diaz, Megawati Tanudjaja, Daniel Clark, Earl Oshiro, Robbert Vermeulen, Rodney Chiu.

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