FabTime Cycle Time Management Newsletter

Volume 9, No. 7 September 2008

Information

Mission: To discuss issues relating to proactive wafer fab cycle time management

Publisher: FabTime Inc. FabTime sells cycle time management software for wafer fab managers. New features in this month include include an increase in the number of custom dispatch factors from five to twenty, and new capacity planning support for a total shipment rate override.

Editor: Jennifer Robinson

Contributors: Dick Deininger and Rebecca Taylor (Taylor-Deininger Partners)

Table of Contents

Welcome

Welcome to Volume 9, Number 7 of the FabTime Cycle Time Management Newsletter! We hope that everyone has had a good summer, and we look forward to hearing from you in the coming fall and winter months (or vice versa, for those of you in the southern hemisphere). In this issue we have a brief announcement about the Fab Owners Association. Our software user tip of the month is about setting up home page tabs that update on a monthly (instead of a weekly or daily) basis. In our subscriber discussion forum we have a response to last month's article about measuring line yield, and an update on a previous discussion question about short-term fab simulation.

For our main article this month we have a special treat – a guest article by Dick Deininger and Rebecca Taylor of Taylor-Deininger Partners. The article is about measuring, monitoring, alarming and control actions that cut costs and increase productivity, to extend the lifespan of existing fabs. The article is specifically geared towards older fabs that are make products that "do not demand bleeding edge technology to be profitable... Taylor-Deininger Partners has developed a modeling capability to demonstrate the value of implementing remote monitoring in a number of application areas. The model analyzes current Fab wafer losses, die yield losses, gas usage, electrical usage, water usage, and air handling. It then estimates the value of implementing measurement, monitoring and alarming in the highest value areas. It can show how losses and usage of key materials can be reduced, thus improving productivity. The model shows that remote dynamic monitoring helps identify problems before they can adversely affect product. This paper describes a number of these situations with demonstrated savings in a number of ultra clean facilities involved in semiconductor manufacturing as well as laboratories." I hope that our newsletter subscribers will find this article of interest, and I (as do Dick and Rebecca) welcome your feedback.

Thanks for reading!—Jennifer

FabTime

Tel: (408) 549-9932
Fax: (408) 549-9941
www.FabTime.com
Sales@FabTime.com

Community News/Announcements

Five New Device Manufacturers Join Fab Owners Association

The Fab Owners Association, of which FabTime is an associate member, has been continuing to grow, with five new device manufacturer members added this summer: SVTC Technologies, Infineon Technologies, Maxim Integrated Products, Anadigics, Inc., and Atmel Corporation. All five are companies well represented on the FabTime Newsletter subscriber list, and four of the five have worked with FabTime's founders at one time or another. This makes us even more pleased to see the FOA expanding in such a positive manner.

From the FOA website (www.waferfabs.org): "Fab Owners Association (FOA) is an international, non-profit, mutual benefit corporation composed of semiconductor and MEMS manufacturers, along with our industry suppliers. We are headquartered in Cupertino, California, in the heart of Silicon Valley. FOA was conceived to provide a forum for semiconductor manufacturing executives to discuss and act on common manufacturing issues. The association was founded in 2004."

FabTime welcomes the opportunity to publish community announcements. Send them to newsletter@FabTime.com.

FabTime User Tip of the Month

Create a Home Page Tab that Slides Monthly

FabTime users typically have four types of home page tabs:

- Tabs on which all charts slide forward once a day (that is, the from and to date are each moved forward by 24 hours once per day, at a specified time)
- Tabs on which all charts slide forward once a week (the from and to date are each moved forward by 168 hours once per week, at the specified day and time).
- Tabs on which the charts never need to slide forward because all of the charts are point in time charts, which are configured to always show the very latest data (e.g. a WIP Lot List chart).
- Mixed tabs that have some daily or weekly charts, and some point in time charts. The point in time charts are not affected by the autoslide, and so can be included on tabs with charts that slide daily or weekly.

These configurations work well for most FabTime users. However, we do occasionally get asked by users how they can set up a home page tab that slides once per month. There is no monthly autoslide option in FabTime because different months have different numbers of days, and some sites use workweek-based months instead of calendar months. However, what you can do is set up your monthly performance tab, and then once per month, manually slide all of the charts forward to the next month by using the "Slide Tab (Hours):" control. To do this, enter the number of hours in the current month, and press the forward arrow button. For September, for example, the number of hours to slide is 30 days * 24 hours/day = 720 hours. This will move the "From:" date on all of your charts to the first of the new month. You may, however, need to tweak the "To:" date on some of the charts, if the current month is longer or shorter than the previous month. To change the "To:" date on a chart, click on the chart from the home page tab, edit the "To:" date, and press the "Update" button.

If you have any questions about this feature (or any other software-related issues), just use the Feedback form in the software.

Subscriber Discussion Forum

Issue 9.06: Line Yield

We received a response from an anonymous subscriber to last month's article about methods of calculating line yield: "Regarding LY calculations, we tend to use your method C (Flow Yield Chart), partly because this method is "built in" to the MES we use. Split lots then don't tend to bother us. Another kind of split does, however, a split flow. If you imagine a situation where 90% of your WIP follows one flow, and 10% is diverted down a "side" flow (e.g., for rework), and losses are taken on the side flow, the LY impact will be artificially magnified by a factor of 10. This is because if you blindly apply your formula of Wafer Moves / (Wafer Moves + Wafer Scrap) to a step on the side flow, your Wafer Moves value is just 1/10th the "overall" Wafer Moves. In general, for any branched flows, you need to use a value for the Wafer Moves that is the sum of the wafer moves on all of the branches, not just the particular branch you are looking at for a given step."

Short-Term Simulation of Fab Dynamics

By way of follow-up to the subscriber discussion question from Issue 9.05, about the use of short-term simulation analysis for small fabs, we wanted to let you know that one subscriber did respond offline. He was able to talk with the subscriber who asked the question. The original subscriber reported: "Talking about this was a really big help, so all in all, having you post that question was very helpful to us—thanks!"

We just wanted to let you know that even when you don't see a response in the newsletter, we are using the subscriber community to form connections, to help address people's questions.

FabTime welcomes the opportunity to publish subscriber discussion questions and responses. Send your questions to Jennifer.Robinson@FabTime.com.

How to Extend the Life of Your Fabs? Measure, Monitor, and Control.

The Impact of Measuring, Monitoring, Alarming and Control Actions that Cut Cost and Increase Productivity.

By Dick Deininger and Rebecca Taylor
http://www.td-partners.com

Two thirds of semiconductor products made today are manufactured in older Fabs (150mm, 200mm and 300mm)[1]; they are focused on making products that do not demand bleeding edge technology to be profitable. These Fabs face significant, increasing pressure to cut costs, conserve resources and constantly increase productivity to be competitive in world markets.

When these Fabs were built, thousands of static-reading, analog gauges were installed throughout the manufacturing facility. These gauges monitor readings rather like the "pulse" of the entire Fab, but they are under the floor, up in the ceiling and in other remote places. They cannot be easily accessed and read. For the most part they are not dynamically monitored. At the time these gauges were installed, the cost to connect them to a network was too high and the need for the data was not contemplated. As a result, they are not connected to any monitoring facility. Some are tracked on a manual basis for static readings. The time to respond to any problem associated with the numerous flows, pressures and temperatures of the liquids and gases moving through a Fab is often lengthy and therefore costly.

Conditions have changed!

The advent of low cost, low power wireless technology has driven the cost of remotely monitoring these gauges much lower than implementing invasive and expensive hard-wired sensors and gauges. An external clamp-on capability, without tearing into the infrastructure, makes remote monitoring and dynamic alarming of parameter changes affordable. This scenario defines a classic paradigm shift opportunity.

The impact of dynamically reading many of these hidden gauges, previously thought too difficult, has uncovered significant cost, resource savings and yield improvement opportunities. The savings potential is high; indeed, these applications can extend the life of a Fab. We have identified numerous applications which result in significant cost saving.

A difficulty can be in knowing where to begin. Taylor-Deininger Partners has developed a modeling capability to demonstrate the value of implementing remote monitoring in a number of application areas. The model analyzes current Fab wafer losses, die yield losses, gas usage, electrical usage, water usage, and air handling. It then estimates the value of implementing measurement, monitoring and alarming in the highest value areas. It can show how losses and usage of key materials can be reduced, thus improving productivity. The model shows that remote dynamic monitoring helps identify problems before they can adversely affect product.

This paper describes a number of these situations with demonstrated savings in a number of ultra clean facilities involved in semiconductor manufacturing as well as laboratories.

It Ain't Your Imagination....

....it really IS tougher out there these days. DRAM, flash and other IC prices have fallen roughly 50% this past year, and while volumes have gone way up, the margin for errors and waste have gone way, way down. Net margins of 3% are not atypical. In this environment, there really is no room for a scrapped wafer. The three year trend in both IC and DRAM pricing is depicted in Figure 1, on the next page.[2]

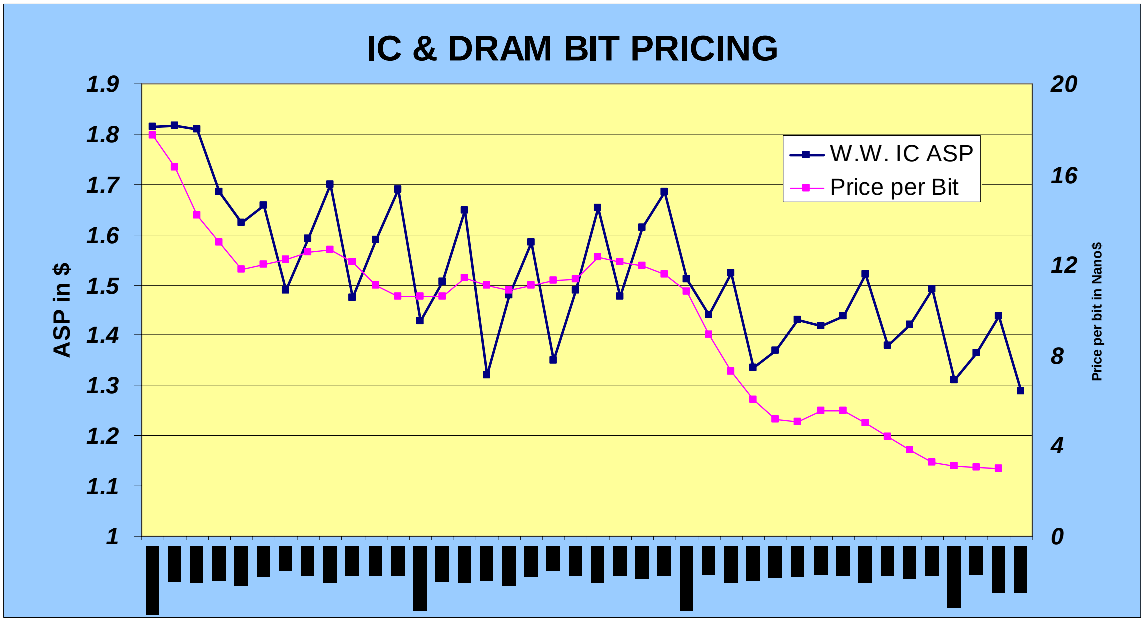

Figure 1, 3 Year IC/DRAM Pricing Trends

This situation puts extreme pressure on Fab operations. Couple that with rapidly changing product demands requiring lower costs, and you have yourself a recipe for money-losing operations if they are not tightly controlled.

Monitor, Manage, and Control. Or Die.

It is impossible to control anything that you do not measure. Without control, it is impossible to manage a Fab to the tight financial tolerances required in low margin situations. What is needed is a capability enabling Fabs to further cut chilled/process cooling water usage, reduce electricity usage, reduce unneeded exhaust, cut expensive gas usage, avoid costly repairs and yield losses and more rapidly find problems in the Fab or any process-based manufacturing operation.

We have been modeling the value of paying closer attention to these things. Following are four real-world case studies, undertaken within the past eight months at four different companies, which enabled Fab managers to find heretofore hidden variations in water pressure/temperature, gas flow, and equipment status that were driving undefined yield variation.[3] We also discuss a new capability that goes a long way towards dropping the cost of cleaning plasma tools, to illustrate new productivity gains relating to a major area in a Fab.

Two companies who have new products that have a role in improving a Fab's productivity are the source of the situations described below.

Cypress Systems, a start-up subsidiary of Cypress Semiconductor in Silicon Valley, has developed a wireless gauge reader (WGR) which can monitor, track and alarm numerous manufacturing and facilities parameters which heretofore have been invisible to Fab productivity initiatives. The innovative and patent-pending WGR simply attaches to the front face of an existing gauge in minutes and transmits its reading wirelessly without the need to break seals, run wires, or perform leak checks and revalidation. The case studies revolve around experience and results from using the WGR in a wide variety of applications.

Would you rather run wires to this gauge or simply clip the blue "facemask" to it and begin reading real time data values to a web interface in less than a day? A traditional transducer would cost $4K vs

$1,250 for each point solution. The transducer cost includes downtime of $1K, transducer/sensor $300, wiring/installation/design $1,500, fire code conformance $1K, and I/O panel termination $200. The WGR cost includes everything needed to make it work: wireless access point, server and web interface.

Another company, Forth-Rite Technologies LLC, has developed a capability to monitor and control plasma tools by externally tracking the RF power profile. With the advent of this RF monitoring capability, shown in Figure 2, many plasma tools can now track end points more accurately, reduce expensive gas usage by 50% and cut cycle times by 40%. These are nontrivial numbers.[4]

Figure 2, Forth-Rite RF transducer

Both of these approaches to Fab productivity can be done relatively inexpensively with ROI's in under six months.

Fab-Wide Productivity

Situation #1, Remote Gas Bottle Monitoring[5]

Micrel has installed a Wireless Gauge Reader system to automate the monitoring of manual gauges at Micrel's 150mm, 30K wafer start per month Fab. The projected annual savings generated by this effort is estimated to be $215,000, with an investment payback period of less than seven months.

Micrel's facility, similar to other fabs built in the 1980's, has hundreds of manual gauges which measure critical parameters on gas cylinders, pressure valves, and other numerous facilities equipment. Key gauges are read manually twice a day, requiring valuable time from skilled technicians. In addition, gauge excursions may not be detected for up to several hours which can lead to unplanned downtime and scrap. Micrel installed WGRs on roughly 100 of their gas systems; this helped them automate the gauge reading process, and led to $40,000 in reduced downtime, $95,000/year savings in labor cost, and 10% lower consumables use (i.e. process gases), roughly $80,000. The system also provides easy to use software which allowed Micrel personnel to define and send early warning alarms to their computer, pager or cell phone in the event of excursions.

Situation #2, Gas Usage "Debugging"

The Stanford Nanofabrication Facility (SNF) is a good example of a high-mix facility that has a wide range of customers. In any given month, nearly 250 researchers from Stanford, non-Stanford academic institutions, and industrial firms make use of this facility to build prototype devices and structures. There is an installed base of nearly 100 instruments that are used in the fabrication of advanced electronic devices, integrated optics structures, MEMS/NEMS devices, biological and biomedical devices, and structures based on nanotubes.

With so many diverse activities and processes in the laboratory, it is a challenge to monitor both the equipment and the building facilities to insure that they are operating properly. Because this facility was originally opened in 1985, there is a large installed base of analog gauges of various types with very few electronically monitored points.

Because nitrogen usage is the single largest non-salary expense in operating this facility, Stanford's management is always on the lookout for nitrogen leakage or waste. To help better monitor this key system, SNF has installed 21 WGRs on a variety of pressure gauges throughout the facility.

Having this data lead directly, and rapidly, to cost reductions. As SNF's Ted Berg stated, "Soon after installing the WGRs in the facility, engineers noted certain periodic drops in the nitrogen pressure delivered to the facility that had not been previously observed. With the timing of these pressure drops in hand, they were quickly able to determine that one of their spin rinse dryers was entering a nitrogen purge cycle much more frequently and for a longer duration than needed. It was a simple matter, once this was discovered, to alter the purge cycle to both save nitrogen and to reduce the pressure fluctuations in the nitrogen system. The ability to record and store this data makes it much easier to spot patterns and to correlate data from a variety of sensors that is virtually impossible by simply spot checking analog gauges."

Situation #3, CMP Slurry Filter Clog

At an R&D foundry, a CMP slurry filter was clogging at unpredictable intervals requiring 1-2 wafers to be scrapped before the clog was identified and the filter changed. This event occurred every 7-14 days. The financial impact of this situation, given that it happens towards the end of the process, is that the wafers are nearly fully loaded with cost. The market value of each scrapped wafer is estimated at $1,650.

There are three approaches to take in this situation: 1) Do nothing, and take the hit when a wafer is scrapped, 2) Change the filters more frequently, or 3) Monitor pressure across the pump and alarm operators when the filter is nearing its operating limit.

Doing nothing scraps 1-2 wafers at market value of $1,650 each, every 7-14 days. The financial hit is 1 - 4 wafers lost, or $1,650 - $6,600. This is clearly not a desirable approach, given the regularity with which this problem occurs and the simplicity of addressing it more proactively.

Changing the filters twice as often might reduce the problem, but the window of failure still exists. This solution requires at least 26 additional filters/year at a cost of $4,160/yr. This drives unnecessary tool downtime that significantly impacts throughput of the CMP area. Most importantly, the filter swap is unrelated to an actual filter clog event, so there is still the possibility of a wafer scrap event, at a cost of $1,650 per wafer.

The most effective approach involves monitoring the filter pressure, tracking and trending it, and alarming operators when the filter is nearing its operating limit. This maximizes tool production availability and eliminates associated wafer scrap. Implementing this approach requires one WGR per slurry filter, at a cost of $1,250.

Using either the cost of a wafer or the lost revenue associated with a scrapped wafer as the basis for a financial model, the ROI for installing the monitoring capability and changing the filter accordingly, is less than one month.

As a test, a WGR was installed on a CMP tool in the foundry. After WGR was in use for one month, the filters were found to clog 3 hours to 15 days after installation. Based in part on this information, the foundry derived a strategy for dealing with the clogging filters.

Figure 3 (at the top of the next page) covers a 12 hour time horizon tracking PSI across the CMP filter. The pressure climbs over a three hour period and spikes, indicating a pressure buildup indicative of a filter clog. The filter tends to recover in between jobs as shown in the chart. The peaks and troughs over the next 9 hours are a very helpful insight into how a filter increasingly clogs with usage. The last hour shows the pattern indicating an unrecoverable clog is forming; the PSI

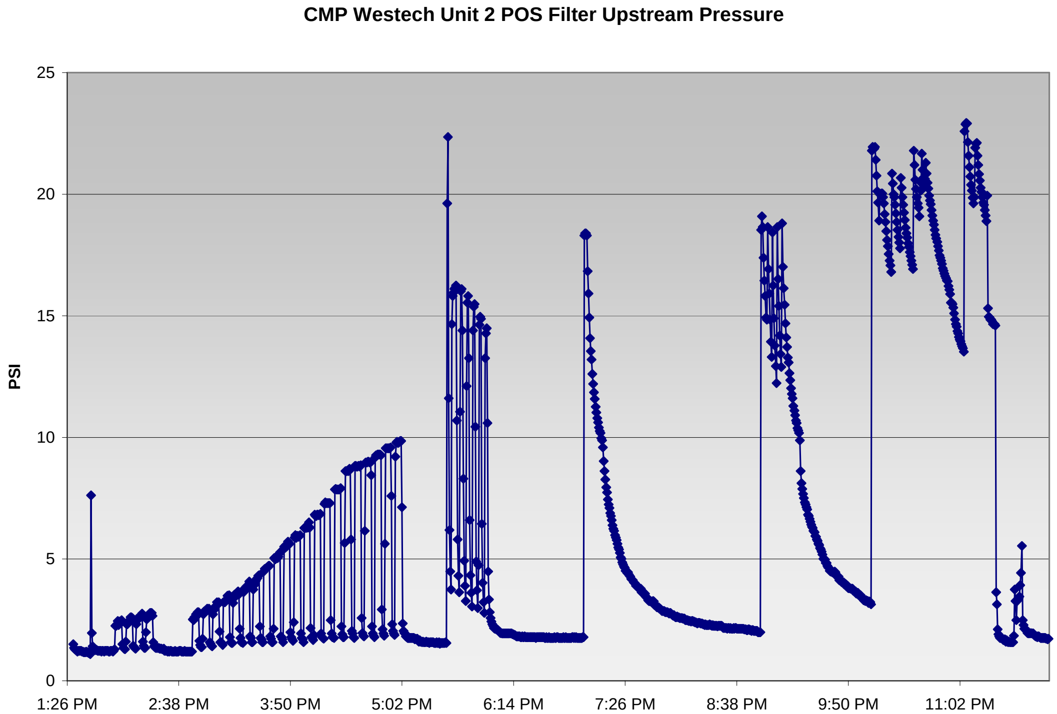

Figure 3, CMP Filter Pressure Trend Plot

peak is not followed by a deep trough. Using trend plots such as these, the Equipment team is now able to better gauge when to replace the CMP filter.

Situation #4, Process Cooling Water Pressure Monitoring

A fourth example deals with monitoring the process cooling water in an equipment product development lab. They were seeing a severe drop in pressure of the process cooling water and could not explain it. It appeared to occur at random intervals. Without resolving the problem, these failures ultimately could result in tool down time, pump repair costs ($2500 - $6000) and potential wafer losses.

This sort of situation provides a solid rationale for monitoring the process cooling water. The Fab equipment engineering team decided to use 15 WGR's in their facility with a one minute sample rate.

After installing the WGR's and tracing the pressure profile, they discovered that it was not random, rather it was periodic. The problem was traced to a gate valve opening too fast in a tool. It was supposed to open slowly.

In another instance, after the WGR's were installed, an alarm sounded as the pressure was falling. A leak was discovered in a piece of support equipment. No vacuum pumps were lost, a real benefit and cost avoidance.

This customer believes the WGR's non-invasive capability and ease of installation made this an easy addition to their operational management capability. In addition, the WGR's are easy to move around. The cost to cut into a line and install a wired unit would be about $3-4k total. This is roughly 4x the WGR cost and there is no down time when using WGR.

In another Fab situation at a separate company, the main cooling water supply pipe suffered a rupture due to old age at the fitting, causing the entire Fab's source of process cooling water to disappear. It happened on a Friday night, during football season, and only one technician was on duty. This really happened! The Fab suffered downtime of one week, five pumps had to be replaced, at a cost of $75,000. As Fabs age, this sort of thing begins to happen. An inexpensive tool such as remote water pressure monitoring would have alerted the technician, perhaps in time to avert the burnout of all the pumps. Downtime might have been reduced to a single day. We'll never know.

Productivity Improvement Within A Tool[6]

An improvement has been developed in the way an end point is detected in plasma CVD/PECVD based tools. This improvement reduces the time and materiel spent cleaning the chamber. Forth-Rite Technologies, LLC has developed an RF sensing capability which has been demonstrated in a number of customer sites on both Novellus' and Applied Materials' plasma deposition tools. The impact has been significant. A 10% to 50% reduction in chamber clean times (20 minutes on a 25 wafer batch) over conventional methods was achieved. It enables overall C2F6 to be reduced by 40% to 50%. It further enables PFC gas emission reductions. This technology reduces costs by saving cycle times and reducing gas consumption while extending the life of both chamber components and abatement devices. It results in fully particle free, time and consumption optimized chamber cleans.

An illustration of the reduction in time spent cleaning a chamber is shown in Figure 4, below.

This technology has been repeated in numerous tools and chambers with consistent results. The customer base is growing and suppliers think so highly of it, they are now making this capability an option which can be ordered directly.

The ROI is 1 to 3 months and does not alter the Fab process.

The financial analysis summary of a customer scenario:

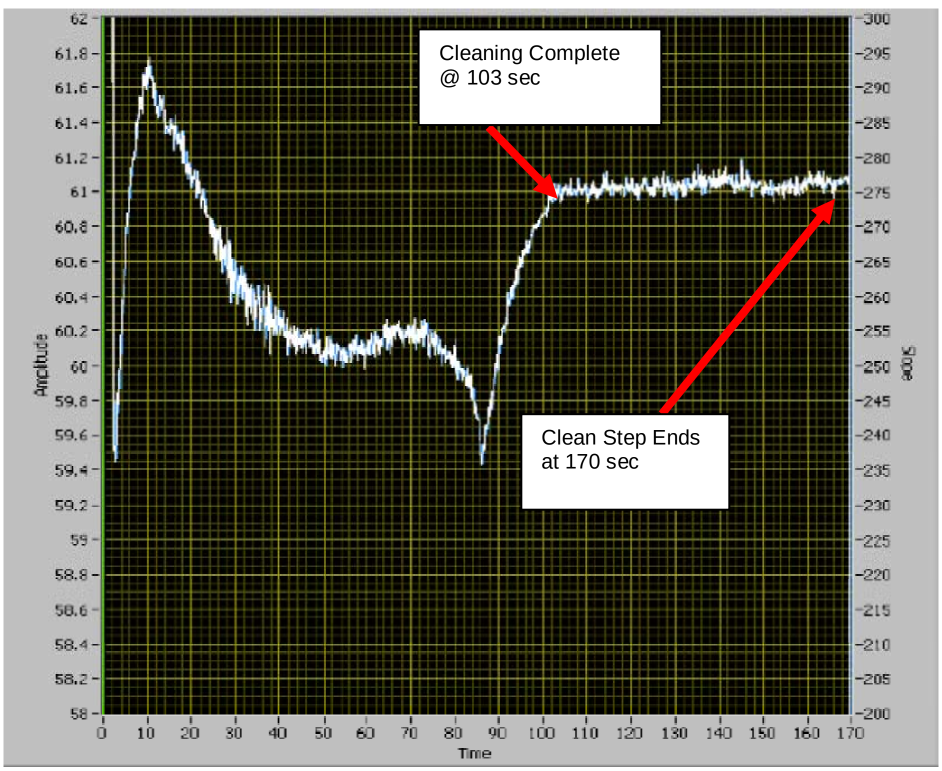

Figure 4, RF Endpoint Chamber Clean Elapsed Time

- Spot Market Pricing of Clean Gases is:
  - $28/lb C2F6
  - $18/lb C3F8
  - $36/lb C4F8

- Only 40% as much C3F8 is needed to etch a film area as compared with C2F6. Further, C3F8 is "easier" for abatement systems to "digest" and thus is less expensive to abate. These two factors translate into a 74% reduction in cleaning costs.

- Actual customer data indicates a savings of $2400 per 8" tool, per month, when their C1 chamber clean was converted from C2F6 to C3F8 using the Forth-Rite control mechanism.

Including the cost of the gas handling conversion, the ROI was less than 5 weeks per tool[7].

With this ROI it should be an easy decision to install capability such as this in all older Fab plasma tools

Summary and Conclusions

1. You must measure and monitor before you can control.

2. There has been a sea change in the way information can be remotely monitored, both for gauge data and for end-point detection. Costs and hassle factor are both much lower than even 3 years ago.

3. Start with monitoring. You will be surprised at what is found! Expect to see more variability than is suspected. Don't be surprised if you "stumble" across a cause for unexplained die yield loss.

4. Customers get best results by using WGR for diagnosis/trouble shooting to start with, then expanding into more automated control methods.

5. The ROI's can reasonably be expected to be under 6 months.

Acknowledgements

We wish to acknowledge the following people for their significant support and interest, and for providing the data from their initial installations that quantifies the value of raising Fab productivity:

- Ted Berg, Sr. Engineering Associate, Stanford's Nanofabrication Facility
- Ron Farry, Equipment Engineering Manager, Micrel
- Guy Gandenberger, Vice President, Worldwide Operations, Micrel
- Pat Ireland, San Jose Facilities Manager, Novellus
- Steve Kim, VP & GM, Cypress Systems
- Dave Low, Facilities Operations Manager, Novellus
- Phil McGowan, Equipment Engineer, SVTC
- Carl McMahon, Sr. Product Manager, Novellus
- Mike Moore, GM Fab Services, SVTC
- Ray Romero, Maintenance Manager, SVTC
- Harry Sim, CEO, Cypress Systems
- Terry Turner, CEO, Forth-Rite Technologies, LLC
- Tom Wenger, Corporate Facilities Manager, Micrel

Endnotes

[1]February 2008, "Hidden Gold In Your Manufacturing Facility", Taylor-Deininger Partners, Inc., FEO Magazine.

[2]Copyright (c) 2008 by VLSI RESEARCH INC. All rights reserved. Reprinted with permission from VLSI RESEARCH INC.

[3]Where possible, company names are used to facilitate adoption for the betterment of the industry.

[4]Data provided by Forth-Rite Technologies, LLC.

[5]Data source: "Micrel Gas Cylinder Case Study", January 2008, www.cypress.com/-systems/files/pdf/micrel-case-study.pdf.

[6]All data provided by Forth-Rite Technologies, LLC.

[7]Forth-Rite Technologies, LLC supplied data.

Subscriber List

Total number of subscribers: 2864, from 478 companies and universities. 21 consultants.

Top 20 subscribing companies:

- Maxim Integrated Products, Inc. (235)
- Intel Corporation (156)
- Micron Technology, Inc. (80)
- Chartered Semiconductor Mfg (73)
- Western Digital Corporation (73)
- X-FAB Inc. (72)
- Analog Devices (65)
- Infineon Technologies (63)
- Freescale Semiconductor (62)
- ON Semiconductor (61)
- Texas Instruments (58)
- International Rectifier (55)
- NEC Electronics (54)
- TECH Semiconductor Singapore (54)
- Cypress Semiconductor (53)
- STMicroelectronics (50)
- IBM (45)
- NXP Semiconductors (44)
- Spansion (36)
- ATMEL (35)

Top 3 subscribing universities:

- Virginia Tech (11)
- Ben Gurion Univ. of the Negev (8)
- Nanyang Technological University (8)

New companies and universities this month:

- ACP Test Company Inc
- GKN Driveline
- McKinsey
- Nikon Precision Equipment
- Taylor-Deininger Partners
- West Cryogenics, Inc.

Note: Inclusion in the subscriber profile for this newsletter indicates an interest, on the part of individual subscribers, in cycle time management. It does not imply any endorsement of FabTime or its products by any individual or his or her company.

There is no charge to subscribe and receive the current issue of the newsletter each month. Past issues of the newsletter are currently only available to customers of FabTime's web-based digital dashboard software or cycle time management course.

To subscribe to the newsletter, send email to newsletter@FabTime.com, or use the form at www.FabTime.com/newsletter.htm. To unsubscribe, send email to newsletter@FabTime.com with "Unsubscribe" in the subject. FabTime will not, under any circumstances, give your email address or other contact information to anyone outside of FabTime without your permission.

FabTime® Cycle Time Management Software

"Instead of spending time preparing reports, shift facilitators can get the data they need quickly from FabTime, and then spend their time making real improvements."
Mike Hillis
Cycle Time and Line Yield Improvement Manager
AMD Fab 25

FabTime Subscription

One low monthly price includes

- Software installation and real-time connect to your MES
- End user and system administrator training
- Unlimited users via your Intranet.
- Software maintenance and regular upgrades (approx. 6 per year, via our no-downtime patch system)
- Add-on dispatching and planning module for a slightly higher monthly fee

Interested?

Contact FabTime for technical details or a pilot project quote.

FabTime Inc.
Phone: +1 (408) 549-9932
Fax: +1 (408) 549-9941
Email: Sales@FabTime.com
Web: www.FabTime.com

Turn fab MES data into information and save time and money

- Are your supervisors swamped with daily reports, but lacking real-time information?
- Is it difficult to link equipment performance to cycle time?
- Does each new cycle time analysis require IT resources?

FabTime can help. FabTime saves your management team time daily by turning fab MES data into information, via a real-time web-based dashboard that includes lot dispatching. FabTime saves your IT staff time by breaking the cycle of custom-developed reports. With FabTime, the end user can filter for exactly what he or she needs, while staying in a comprehensive framework of pre-defined charts. Most importantly, FabTime can help your company to increase revenue by reducing cycle times up to 20%.

"I use FabTime every day, and so do the supervisors who report to me. The data that I need is right on my home page where I need it when I come in every morning."
Jim Wright
Production Manager
Headway Technologies

FabTime Benefits

- Cut cycle times by up to by 20%.
- Focus improvement efforts on the tools that inflate cycle time.
- Improve supervisor productivity – cut reporting time by 50%.