



THE FINAL TEST REPORT

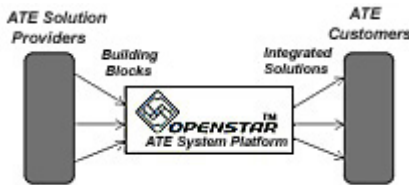


Vol. 14 No. 01

September 2003

The STC 'Opens the Kimono' a Bit on Advantest's OpenStar

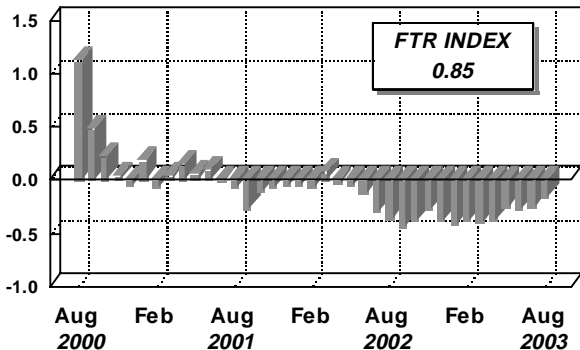
The Semiconductor Test Consortium (STC) unveiled a prototype of its open ATE architecture system - labeled the Advantest T 2000 OpenStar - and a very limited roadmap for the organization on August 28 at Advantest's U.S. headquarters in Santa Clara, CA. The Semiconductor Test Consortium was formed in July 2002 to develop a chip test architecture that is "completely open, documented and supported via solutions available from all ATE vendors." Founding members were; Advantest, Intel, Motorola, GuideTech, Roos Instruments, Racal Instruments, Wavcrest, Inovys, Pragmatics Technologies and StarGen. It now claims over 35 companies have joined STC. Open to all companies throughout the semiconductor supply chain with a vested interest in the test sector, the consortium is focused on several goals.



A number of the STC officers and founding members presented their views of the future of the consortium.

The STC chair, Paul Roddy, ATE Technology Mgr. at Motorola, said that "we are excited at the opportunity the Open Architecture (OA) tester initiative provides. We view it as a 'disruptive technology' which will significantly change the test industry!". Roddy said that Motorola expects to receive an OpenStar tester "this year" for evaluation. He asked "Can you [chipmakers and ATE vendors] afford to ignore the STC effort?"

Continued on page 2



FTR's index of ATE, chipmakers, and PC makers vs. the Dow-30, surged ten points in August as investors began to return to chip-related stocks.

Those goals include: driving the direction of the Semiconductor Test Open Architecture; publishing the architecture; providing training and workshops; identifying requirements, developing solutions and defining and managing the validation procedures.

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Elsa Koljonen, Commodity Mgr at Intel's Chandler, AZ facility and STC treasurer, defined OA from Intel's position. She described it as "an architecture in which no supplier owns the specifications - rather, those are owned by and independent organization." That will allow 'multisource competition of commodity capability,' by lowering the barriers for 2nd tier instrument and system vendors.

She announced that four OpenStar prototypes have been completed. Two have been installed at Advantest's Santa Clara, CA facility last month and a third is expected to be shipped to that facility this month. The fourth prototype will remain at Advantest's engineering center in Japan for development use there.

Koljonen also outlined STC's objectives by SEMICON/West in July 2004.

- Ship OpenStar testers to 5 different customers
- Have companies representing 75 percent of semiconductor capital equipment purchasing power as members of STC.
- Have a minimum of 7 suppliers building modules for the OpenStar.
- Have at least one additional major ATE system supplier join STC.

Paul Sakamoto, CEO of DFT tester maker Inovys (which is partially owned by Advantest) said that his company is already preparing a "high density DC Pin module and a low-cost digital channel DFT module for the OpenStar. It is also working with STC to develop "design-to-test" software links.

Dennis Petrich, Sr. VP of Wavecrest, said his company is well along with development of signal integrity analysis tools for the OpenStar platform. He noted that Wavecrest has had to develop instrument formats for each ATE vendor in the past and he "now looks forward to being able to "sell thousands of a single instrument [for OpenStar testers] rather than hundreds of each of multiple ATE vendors." Petrich is obviously quite optimistic about the demand for OpenStar testers!

Mark Roos, founder of RF/Micro-wave ATE system maker, Roos Instruments, sees the STC as allowing smaller vendors such as his company to compete with the larger ATE companies on a more level playing field.

As STC will "provide the worldwide support that Roos cannot afford," he sees his company able to sell its products to major companies which previously refused to consider them because of the lack of such support.

He also noted that, in his opinion, STC/OpenStar represented more than just a disruptive technology, it would force major changes in all ATE vendors' business models and would lead to "the death of Teradyne" which he believes will be unable to adopt itself to the change.

These presentations were followed by a 'viewing' of the prototype OpenStar tester. The tester was not operating - and no written specifications were available. So, *FTR* is unable to present many details on the system beyond visual impressions. The prototype OpenStar consists of a 'double bay' main frame and a large square test head. The main frame contains nine data processing systems (using, no surprise, Intel Pentium-based). One of these is the system controller while the other eight provide the ability to control up to eight independent test sites for parallel testing. These are connected to the test head by fibre optic cables. It also holds the 'master' 48V DC power source and a chiller for liquid cooling of modules requiring it.

The test head contains the instrument modules - in up to 52 slots according to Sergio Perez, VP of sales for Advantest U.S. There is no 'back-plane', the interface consists of up to 1300 coaxial channels, and the prototype is a 250 MHz tester, Perez said. Instrument modules can be either air or liquid cooled as is required.

The OpenStar is amazing similar to NPTest's Sapphire open-architecture tester that we described in last month's (Aug. '03, p.8) issue of *FTR*. The mainframe and the test heads are physically almost identical in size.

They contain similarly sized and number of slots for the instrument modules. Both main frames provide the base 48 volt DC supplies for the instrument modules and include a chiller for liquid cooling. One difference is the inclusion of processors in the OpenStar mainframe, while all data processing is done on the individual modules of the Sapphire tester.

As noted, the OpenStar was not demonstrated in operation - while the NPTest Sapphire was during this writer's visit to it facility in July. As a result, we were unable to make any judgement about the real status of the OpenStar development - and in particular the state of the software for that system. Any discussion of the operating software development was missing from the STC's presentations, beyond the Inovys contributions noted previously.

Perez confirmed that STC expected to ship "at least two OpenStar testers to founding companies by the end of this year, both apparently to Chandler, AZ. One, as previously noted, will go to Motorola there and, although Perez refused to confirm it, it's generally assumed the other will be delivered to Intel's Chandler facility. It's also possible that one system will be delivered to a Japanese chip-maker before the end of this year.

Advantest is reportedly considering an official introduction of the T 2000 at this year's International Test Conference (ITC). However, Perez said the company is still reviewing its decision to exhibit at that conference which will be held in Charlotte, N.C. from Sept. 30 to Oct. 2.

So, the era of "open architecture testers" has arrived and users already have the option of choosing between two new platforms - the STC/Advantest OpenStar and NPTest's Sapphire testers.

The question is: which, if either, will dominate in the future is obviously an open question - as is the possibility that the two could 'merge' in the future. Several STC members and industry observers have told *FTR* they hope "that is a real possibility".

IN FTR'S OPINION

Last month a reporter for a Business Weekly asked me what I thought the state of the chip equipment market was? My reply - in



six words - was that "Business is better, profitability is not,"

As we point out in our review of last month's reports from three of the top six ATE

companies - it's still a nonprofit world for TAP companies!

Nevertheless, there are some signs of improvement. In July Advantest reported an "operating profit" of \$2.6 million, on sales of about \$191 million for its chip test equipment division and last month Agilent Technologies reported an "operating profit" of \$6.0 million, on sales of \$167 million, for its semi test group (p.6). However, among the other major ATE makers, even operating profits remain elusive.

Despite that, investors continued to bid ATE shares up last month. *FTR's* list of 16 publicly-held TAP companies gained an average of 15 percent last month. Advantest's ADRs gained almost 26 percent, to close the month at just short of a new 52-week high. Agilent's shares fared less well than the average, closing the month up about 12 percent, but that was a 52-week high for that stock. The big winner in August was LTX. It shares gained just over 50 percent for the month - despite the fact that it reported a GAAP loss for its final fiscal quarter of \$81.5 million or \$1.61/share on sales of \$33.65 million.

The Philadelphia Exchange Semiconductor Index (SOX) rose 17 percent last month. It ended August up 58 percent for the year-to-date and a very impressive 113 percent since its October 2002 low.

SEMI's 3-month average of July's chip equipment bookings by U.S. vendors was \$763.4 million, 6 percent higher its revised June bookings.

That was 35 percent lower than the \$1181.9 million reported for the same month last year. SEMI's book-to-bill ratio in July was 0.97 - the eleventh straight month below unity!

So, what is going on here? Why are investors jumping back into chip and chip equipment stocks, when chip revenues are 30 percent lower than they were three years ago and chip equipment sales are 60 percent below what they were then!

And, industry analysts are looking for chip sales to only improve about 11 percent this year, over last year's levels, and chip equipment sales by only about one-half that amount.

If investors are looking forward to chip equipment sales to rebound to the 2000 highs soon - they may be in for a long wait. IC Insights' mid-year update sees chip capital expenditures improving in the second half and taking off in 2004, but a return to the peaks of 2000 isn't in its forecast. In fact, it forecasts the next peak in chip CAPEX to occur in 2005 at approximately \$49 billion, well below the \$60.8 billion mark set in 2000. It then sees it dropping then in 2006 to \$40.2 billion before climbing again in 2007 to \$42.2 billion, about the same as in 1996.

When using the \$42 billion figure forecast for 2007, the 1994-2007 average annual increase in chip capital spending is only 5 percent - 7 points less than the 12 percent 1978-2002 average annual increase.

One explanation for the jump in chip equipment shares is provided by the two graphs at the right. Investors may be looking at the five-year comparison of chip and chip equipment stock price growth - as measured by the SOX index.

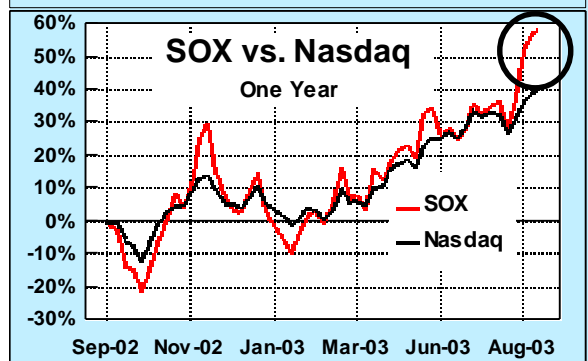
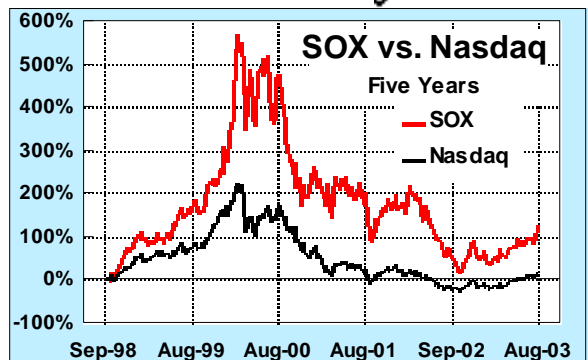
They see that chip stocks outperformed the Nasdaq Composite stocks by almost 3X at the peak of the last cycle - and as the 1-year graph shows - may do it again this time. As a result they are afraid of being "too late to the party" if they wait for fundamentals to catch up with the price.

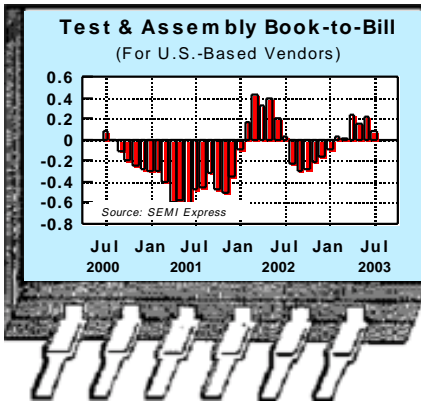
The promised electronics recovery in 2001 and again in 2002 produced brief improvement, but fizzled out quickly and some investors got burned! Recovery is again the outlook for the rest of 2003 and into 2005. Maybe, this time they are right.

Economic growth is again accelerating worldwide, Chip inventories are apparently back in balance and there is little surplus capacity at the leading edge manufacturing facilities that will get most of any pickup in orders.

If economic growth does continue follow the consensus outlook, this time those momentum investors may turn out to look like prophets!

That's just my opinion,

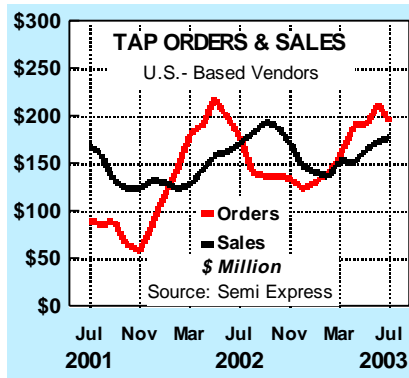




SEMI reported that after three months of decline, its 3-month average bookings for U.S. chip equipment suppliers were \$763.4 million, about 6 percent higher its revised June bookings of \$722.3 million. Billings were \$787.6 million in July, about flat with the \$776.5 million reported for June. The July book-to-bill for all equipment was 0.97.

Front-end equipment bookings improved by 12 percent, at \$570.5 million compared to \$510.2 million in June. In July 2002 bookings were \$1,002.5 million.

Billings were \$609.5 million, compared to \$602.6 million for in June and \$796.4 million one year ago. The July book-to-bill ratio for front-end capital equipment was 0.94.

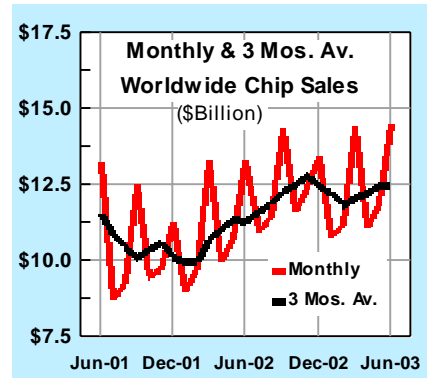


Back-end or TAP bookings were \$192.9 million in July, down 9 percent from the June's bookings of \$212.1 million, but higher than the July 2002 bookings of \$179.4 million.

Billings were \$178.1 million - slightly above billings one year ago - resulting in a book-to-bill ratio of 1.08 for this equipment segment.

SEMI's final manufacturing or TAP equipment book-to-bill ratio has now been above unity for six months in a row.

TAP Book-to-Bill			
	Jun'03	Jul'03	Jul'02
Book	\$212.1	\$192.9	\$179.4
Bill	\$173.9	\$178.1	\$172.7
B/B	1.22	1.08	1.04



June Global Chip Sales up 9.5% YoY

The SIA's 'un-averaged' sales numbers show that the worldwide chip market was doing less well in June '03 than its 3-month average numbers would indicate. The 'raw' numbers also showed that in June, and for the seventh month in succession, chip sales in the Americas region were down from the same month in 2002.

Chip sales in June were \$14.54 billion, higher than the \$12.54 billion 3-month average put out by the SIA, however the month's sales were up 9.5 percent YoY - in contrast to the 10.4 percent rise that the averaged numbers said. Chip sales for the period of January to June 2003 of \$74.1 billion are 10.5 percent ahead of the same period in 2002, according to the SIA's actual numbers.

However, the numbers show that the chip sales recovery is actually happening only in Asia. In the first half of 2003 sales for the Americas, at \$14.67 billion, are 5.8 percent lower than they were in the first half of 2002. In Europe sales - measured in euros - in June were 2.117 billion euros, a decline of 8.7 percent from June 2002 and a decline of 4.8 percent from May 2003

June 2003 Worldwide Chip Sales

The SIA said its 3-month average of worldwide chip sales reached \$12.54 billion in June 2003, up slightly from the \$12.49 billion reported in May of 2003. For 2003's second quarter, chip sales of \$37.6 billion were up 3.2 percent from \$36.4 billion in the year's first quarter, and up 10.4 percent from the \$34.1 billion recorded in the second quarter of 2002. SIA president **George Scalise** commented; "As predicted, the recovery is broad-based, and now is beginning to draw strength from computation, the largest end market for semiconductors, as well as the global consumer and communications sectors." For the June quarter, sales in Japan rose 5.3 percent on a QoQ basis, Asia Pacific was up 5.9 percent, and Americas was up 3.6 percent, while sales in Europe declined by 4.1 percent due to sluggish economic growth in Europe and outsourcing of production to Asia.

\$Billions					
Market	May'03	Jun'03	Change	Jun'02	Change
Americas	2.47	2.49	+0.7%	2.58	-3.7%
Europe	2.45	2.41	-1.6%	2.15	+12.3%
Japan	2.93	2.98	+1.4%	2.45	+21.3%
Asia Pacific	4.64	4.66	+0.5%	4.17	+11.8%
Total	12.49	12.54	+0.3%	11.35	+10.4%

June '03 Regional Chip Sales		
	MoM	YoY
Americas	+18.8%	-3.5%
Europe	+29.0%	+7.5%
Japan	+11.7%	+19.6%
Asia-Pacific	+26.3%	+13.0%
Worldwide	+21.7%	+9.5%

TSMC Retains 50%+ Foundry Market Shr.

Taiwan Semiconductor Manufacturing continued to hold just over half of the worldwide chip foundry market share during the first half of 2003, according to the new foundry rankings from IC Insights. However, foundry start-ups 1st Silicon, Jazz, Silterra, and SMIC are all gaining ground in the marketplace, it said.

IC Insights' 1H '03 Foundry Rankings

Rk.	Foundry	1H '03 Sales	Mkt. Shr.
1	TSMC	\$2,566M	51%
2	UMC	\$1,269M	25%
3	Chartered	\$305M	6%
4	Dongbu/Anam	\$175M	4%
5	SMIC	\$115M	3%
6	Jazz Semi	\$90M	2%
7	X-Fab	\$75M	1%
8	Silterra	\$70M	1%
9	1st Silicon	\$65M	1%
10	SSMC	\$60M	1%
11	ASMC	\$56M	1%
12	CSMC	\$50M	1%
13	Polar Fab	\$40M	1%
14	Tower	\$26M	<1%

ATE Sales

Agilent Technologies

Said **Infinion Technologies** has selected the Agilent 93000 SoC system to test high-speed wired communication applications.

Said the **Shanghai Research Center for Integrated Circuit Design (ICC)** has selected multiple Agilent test platforms, including the Agilent 93000 SoC and Versatest Memory Testers.

Credence Systems

Said that **AMI Semiconductor** purchased 'multiple' SZ M3650 mixed-signal test systems for automotive, medical and industrial chips.

Said that **Atmel** has purchased multiple Octet SoC systems to test multimedia communications chips.

Said that **Best Electronics & Components** - Bicutan Paranaque City, The Philippines - has purchased multiple ASL 1000 test systems.

LTX

Said that **FastRamp Test Services**, a subsidiary of **STATS**, has selected its Fusion CX for its full-service test engineering facility in Milpitas, CA.

Nextest Systems

Said **Emosyn** - a fabless chip company head quartered in Danbury, CN and a design center in San Jose, CA - has ordered 'several Maverick test systems for its *Theseus* Platinum secure microprocessor

Teradyne

Said that **C* Core Technology**, a collaboration between the **China Ministry of Information and Motorola**, selected its J750

Said that Taipai, Taiwan-based **ULi Electronics** a fabless developer of core logic chipsets has selected its Tiger test system as its characterization and production testers.

FINANCIAL REPORTS

Agilent Technologies

FQ3 Ending July 31 : \$000

	2003	2002
Sales	\$1,502,000	\$1,391,00
Net	(1,556,000)	(228,000)
Per Shr.	(3.28)	(0.49)

Credence Systems Corp.

FQ3 Ending July 31 : \$000

	2003	2002
Sales	\$45,460	\$47,722
Net	(31,711)	(18,957)
Per Shr.	(0.50)	(0.31)

ESI Corporation

FQ4 Ending May 31 : \$000

	Restated 2003	Restated 2002
Sales	\$22,476	\$40,415
Net	(20,795)	(8,510)
Per Shr.	(0.75)	(0.31)

Fiscal Yr. Ending May 31 : \$000

	2003	2002
Sales	\$136,885	\$162,885
Net	(50,086)	(17,777)
Per Shr.	(1.81)	(0.65)

MCT Inc.

Q2 Ending June 28 : \$000

	2003	2002
Sales	\$2,333	\$3,879
Net	(1,508)	(1,849)
Per Shr.	(0.09)	(0.13)

LTX Corporation

FQ4 Ending July 31 : \$000

	2003	2002
Sales	\$33,654	\$32,630
Net	(81,531)	(90,319)
Per Shr.	(1.61)	(1.84)

Fiscal Yr. Ending July 31 : \$000

	2003	2002
Sales	\$119,449	\$121,273
Net	(145,068)	(149,880)
Per Shr.	(2.92)	(3.08)

ATE STOCKS

COMPANY	Ticker	Close	Change	52 Week	
		08/29	Month	High	Low
Aehr Test	AEHR	\$4.25	7.9%	\$5.33	\$1.74
Aetrium	ATRM	\$2.36	10.8%	\$2.79	\$0.58
Advantest	ATE	\$17.35	25.7%	\$17.45	\$7.30
Agilent	A	\$24.32	11.9%	\$24.30	\$10.50
Cohu	COHU	\$22.10	11.2%	\$22.34	\$9.78
Credence	CMOS	\$11.49	20.6%	\$12.49	\$6.19
Electroglass	EGLS	\$2.44	26.4%	\$3.35	\$0.83
ESI	ESIO	\$20.35	18.5%	\$25.37	\$11.00
FormFactor	FORM	\$19.59	5.1%	\$21.00	\$16.21
InTest	INTT	\$5.40	13.9%	\$6.00	\$2.71
K & S	KLIC	\$11.74	35.4%	\$12.45	\$1.91
LTX	LTXX	\$14.91	50.5%	\$15.58	\$3.12
MCT	MCTI	\$0.66	-26.7%	\$1.30	\$0.27
Mosaid \$C	MSD	\$7.34	4.7%	\$9.65	\$4.30
Photon	PHTN	\$32.57	20.4%	\$37.40	\$12.85
Teradyne	TER	\$17.83	8.4%	\$19.64	\$7.10
Average Change in Aug.			15.3%		

It's Still a Nonprofit World for ATE Cos.

Once again, profits were almost totally missing from the financial reports of the three major ATE equipment makers for their fiscal quarters ended July 31, 2003. This despite quarter after quarter of reporting facility closures, worker layoffs, asset write-offs and other efforts to "right-size" their operations. Still, all of the reporting CEO's professed to be 'cautiously optimistic that the "turn-around is in sight" and predicted "break-even" for their companies in the next two or three quarters.

Agilent Technologies

At first glance - it was a terrible quarter for Agilent. That company reported sales of \$1.468 billion in the third quarter of 2003, flat from \$1.467 billion sequentially and up just one percent from \$1.456 billion in the like period a year ago. On a GAAP basis it posted a loss of \$1.556 billion, or minus \$3.28/share for the quarter, compared to a loss of \$146 million, or \$0.31/share in the previous quarter and a loss of \$228 million or \$0.49/share, a year ago.

However, much of the loss in its latest quarter was due to a \$1.4 billion non-cash write-down of deferred tax assets. Excluding that charge and \$99 million of net restructuring charges and intangibles amortization, Agilent's loss for the third quarter was \$11 million, or \$0.02/share, versus a loss on a comparable basis of \$0.31/one year ago. The company credited its improved results to a reduction in its structural costs by about \$100 million - including the elimination of an additional 2,400 employees during the quarter.

Its Automated Test segment's recovery continued in the third quarter, with orders of \$251 million - up 18 percent YoY and 15 percent sequentially - the highest levels it had seen since the fourth quarter of 2000. Its semiconductor test revenue of \$167 million was up only about 4 percent, from \$161 million in the same quarter last year.

Agilent's chip tester orders rose 20 percent YoY, to \$215 million - producing a book-to-bill ratio of 1.29 - well ahead of SEMI's ratio of 1.19 for that period.

In addition, its chip tester units returned to operational profitability - earning \$6 million compared to operating losses of \$5 million one year earlier and \$37 million during the previous quarter.

Agilent's Automated Test Unit		
Q2 Ending July 31: (\$000).		
	2003	2002
Sales		
Chip Test	167,000	161,000
Mfg. Test	39,000	34,000
Orders		
Chip Test	215,000	179,000
Mfg. Test	36,000	33,000
Ops Earn	6,000	(5,000)

Credence Systems

Credence reported revenues of \$45.5 million - down approximately 5 percent from sales of \$47.7 million in the same quarter of 2002, but up approximately 7 percent sequentially - and a GAAP loss of \$31.7 million or \$0.50/share compared to a net loss of \$19.0 million or \$0.31/share same quarter last year.

Its GAAP loss for quarter included a \$1.9 million charge for the cost of goods sold in connection with a legal settlement during the quarter with inventory supplier Reptron and the write-down of excess spare part inventories.

In addition, the third quarter net loss included special charges of \$4.3 million for employee termination expenses associated with the May 2003 layoffs, transition costs associated with IT outsourcing, and asset write-downs. Excluding these charges, the company's loss was \$25.5 million or (\$0.40) per share.

Credence said that its net orders for the July quarter were \$50.8 million, up 12 percent sequentially, resulting in a book-to-bill ratio of 1.12.

Credence said that mixed signal testers made up 62 percent of the total sales for the quarter.

It was able to take revenue on its first two Octet SoC testers during the quarter. It also said that it had three new customers for the Octet in the quarter, including Atmel.

Credence ended the quarter with cash and investments of approximately \$357 million, including the \$180 million convertible note offering it closed in the quarter.

It is targeting a breakeven revenue run rate of \$75 million per quarter - which it expects to reach "during the second (April) quarter of next year."

LTX

LTX - as did Agilent - had a tough quarter on a GAAP basis. It reported a loss for its final fiscal quarter of \$81,531,000, or \$1.61/share on sales of \$33.65 million - up from \$28.78 million in the previous quarter. However that loss included charges of \$17.2 million associated with its acquisition of StepTech and a write-off of \$48.5 million of excess inventory.

Excluding those and other charges, its non-GAAP loss for the quarter would have been \$10.8 million or \$0.22/share.

LTX's sales for its full fiscal year were \$119.5 million compared to \$121.3 million in the preceding fiscal year. Its full year loss was \$145.1 million, or \$2.92/share on a GAAP basis, compared to a prior fiscal year loss of \$149.9 million, or \$3.08/share on a GAAP basis.

LTX's booking for the final quarter were \$40.3 million, up 26 percent sequentially. Although it said it had no customer cancellations in the quarter, it removed \$5.9 million from the back log which was \$80 million at the end of its fiscal year. It said that "about half of the backlog is shippable within the next six months."

LTX claimed it won two new customers in the latest quarter - reportedly Motorola, and a Taiwanese subcontractor.

Texas Instruments remains its major customer, accounting 45 percent of its revenues for its latest fiscal year - but that's down from 58 percent in the previous fiscal year, it said.

FOCUS ON Synopsis



Synopsys, based in Mountain View, CA, has long been the runner-up to its San Jose, CA-based neighbor, Cadence Design Systems, in the chip-design software business. In little more than 15 years, Synopsys has grown from a small one-product start-up to a diverse company,



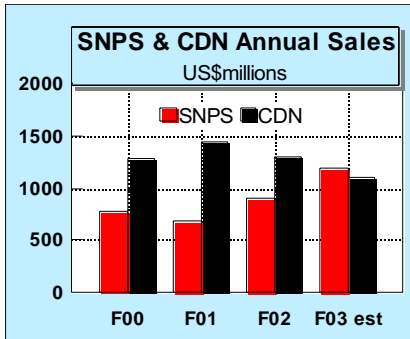
CEO Aart De Geus

The company was founded in 1986 by Dr. Aart J. de Geus and a team of engineers from General Electric's Microelectronics Center in Research Triangle Park, NC.

First called "Optimal Solutions," Synopsys was chartered to develop and market the synthesis technology developed by the team at GE. Synopsys proceeded to pioneer the commercial application of logic synthesis that has since been adopted by virtually every major electronics company.

While it would appear that the fortunes of EDA companies such as Synopsys would rise and fall with those of the notoriously cyclical chip and PC industries. - that's not so. Because the hyper-competitive chip makers can't afford to be unprepared for sudden surges in demand, they must keep their IC designs current and ready to go. Consequently, EDA firms such as Synopsys, manage to sell relatively steady streams of software tools through good times and bad for the broader tech world.

So, while chip and chip equipment makers have seen their revenues cut by two-thirds and their profits vanish over the past two or three years, the major EDA companies, at worst, have seen their sales flatten but have generally remained profitable.



Synopsys has over the years partnered with a number of ATE makers and in late 2001 announced a partnership that links Synopsys' TetraMax automatic test-pattern generation (ATPG) software to Teradyne ATE systems. However, recently it appears to have been working most closely with Agilent Technologies on programs to port STIL data from its design tools to Agilent's 93000 platform testers and data back from them to its own failure analysis tools.

In 2001, Synopsys appeared to be slipping even further behind Cadence Design, thanks to a change in its sales model. Until three years ago, it recorded revenue at the time it made a sale. When the tech meltdown arrived, it switched to a so-called 'subscription model', which has since become an industry standard. Under this approach, customers pay for products and Synopsys records the revenue - in installments over the software's useful life. So, orders from 2002 and 2003 will keep on filling Synopsys' coffers in 2004.

Its revenues dropped 13 percent in 2001 as a result of the change. For that fiscal year Synopsys' revenues were less than half that of Cadence's.

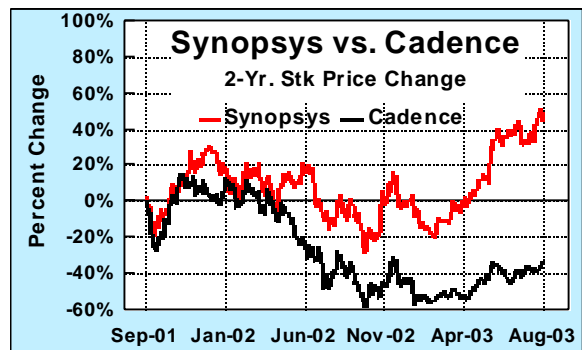
Synopsys now appears to have fully recovered from that setback in 2001 - and then some. For the first two quarters of this year Synopsys has moved into first place - with sales of \$292 million in its quarter ended in April and \$300 million in its July quarter compared Cadence's \$256 million in its March quarter and \$276 million in its June quarter. In addition Cadence fired about 500 employees during its June quarter.

Synopsys' success is partially due to the fact that its product line is concentrated in the market's most lucrative segment - software for creating the smallest and the most complex chips. But, an even bigger factor in its surge may be the 2002 acquisition of Avant!, which helped fill holes in Synopsys' product portfolio.

Synopsys shares are up by more than 50 percent in the past 12 months, to \$68, while Cadence's stock is at \$14 and change, below its 52-week high of \$15.12.

Synopsys' third-quarter earnings report last month only fueled the buying enthusiasm. Its revenues jumped 27 percent YoY and it had a profit of \$48.5 million, or \$0.60/share, compared with a loss of \$137.6 million, or \$1.93/share, last year (mainly because of charges related to its acquisition of Avant!)

For the company's fiscal year ended Oct. 31, Synopsys said it expects earnings in the range of \$3.05 to \$3.15 a share, based on sales of about \$1.165 billion to \$1.18 billion. The latest estimates for Cadence are for earnings of \$0.47/share on revenues of \$1.10 billion for its fiscal year ended in Dec. 31.





Credence Systems' subsidiary, Optonics, introduced its EmiScope-I-GP system. Based on its EmiScope platform, the new lower-cost EmiScope-I-GP performs transistor-level backside analysis of ICs containing any number of metal layers. Featuring long working distance (LWD) lenses, the system addresses the imaging needs of packaging technologies such as wirebond and tape automated bonding (TAB).

The company claims the EmiScope-I-GP offers enhanced debug capabilities that can shorten the post-silicon design debug and yield analysis cycle.

Using time-resolved emission technology, the EmiScope-I-GP can trace a signal at the node level and verify significant timing differences. In addition, the LWD lenses of the EmiScope-I-GP enable probing in a wide variety of load board and package configurations, including wirebond devices and devices mounted in the final application board.

Price and availability:

The new EmiScope-I-GP system is available immediately and the basic configuration of the EmiScope-I-GP is priced under \$1 million.



EmiScope®-I-GP system

Credence's New IMS Vanguard 250 Tester

Credence Systems also introduced the IMS Vanguard 250 engineering validation test system for digital and logic ICs last month. This new system offers validation, characterization and yield enhancement capabilities for mainstream consumer ICs, including devices for DVD players, game consoles and cellular handsets, according to the company.

Unlike traditional ATE systems, the IMS Vanguard 250 provides engineers with interactive software tools to address performance problems in real time. The system's software allows designers to quickly change pattern, voltage and timing parameters utilizing a powerful, easy-to-use graphical interface.

The IMS Vanguard 250's ability to provide immediate results in the engineering lab can shorten device development time by weeks or months, the company claims.

The IMS Vanguard 250 provides clock speeds running at 250 MHz and data rates of 250 Mb/s. The system can be configured with up to 512 I/O pins and as many as sixteen clocks.

In addition, the IMS Vanguard 250 is fully upgradeable to 550 MHz performance, with high-speed data rate options to 1.1 Gbps.

Price and Availability

The system starts at \$300,000 and is available for immediate order, but delivery time was not provided.

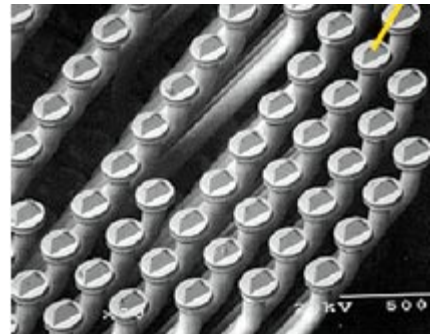


IMS Vanguard 250 Eng. Tester

FormFactor's BladeRunner 175/MicroForce Technology

FormFactor - working with Tokyo Electron (TEL) and Intel - has developed two new products for probing high-pin-count SoCs with delicate low-k dielectrics under the contact bumps. While manufacturers of advanced logic devices are moving to low-k dielectrics to increase performance, they have found that those dielectrics have a cracking threshold as low as one order of magnitude below that of standard dielectrics.

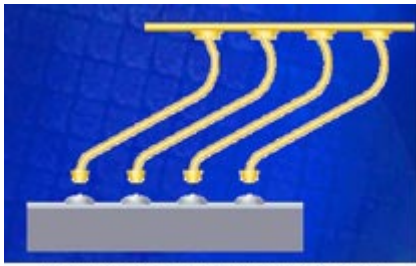
FormFactor's newest MicroSpring structure, the BR175 (*BladeRunner 175*) reliably probes bump pitches down to 175 μm , while its MicroForce technology combines low probe force with stable contact resistance to address wafer test challenges for high-performance, flip chip applications.



MicroSpringContacts for Flip Chip bumps

Its *MicroForce* technology provides one-tenth the probing force (approximately 1g per contact) required by conventional probe solutions, reducing the risk of damage to both interconnect bumps and the low-k dielectrics that lie beneath them. Combining its MicroSpring contact structure with a specialized movement of the automated wafer prober chuck, MicroForce technology allows the BR175's probe contacts to gently slide across flip chip bumps.

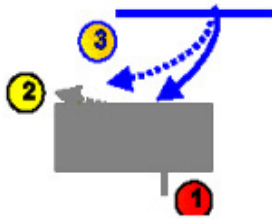
MicroForce technology also creates a stable, low-resistance (less than 0.25 ohms) electrical contact on flip chip bumps to achieve a higher level of test accuracy, the company claims.



BladeRunner Probe Schematic

This potentially increases overall electrical yields by minimizing false failures, according to the company.

MicroForce probing utilizes a coordinated X-Y-Z probing motion which provides the required 'scrub' to insure reliable contact with the bump with as much as a 10:1 reduction of probe force.



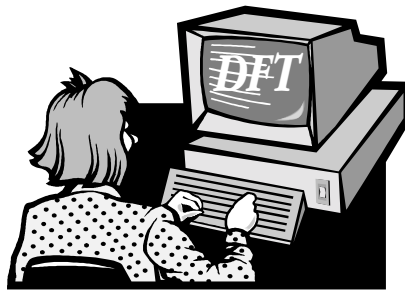
- 1 - Prober Chuck Moves in Z-axis
- 2 - Contact with Flip Chip Bump
- 3 - Chuck moves in X-Y-Z

It also results in much less damage to the bump than is caused by the high-force contact required by conventional wafer probe needles, according to FormFactor.

Based on tests made with Intel microprocessors, FormFactor reported a max force/probe of 0.3g/mil with MicroForce was required vs. 3 - 4g/mil without MicroForce. It also reduced optical alignment errors by more than 80 percent during trials, it said.

More information on both the BladeRunner probe card and on the results of testing with FormFactor's MicroForce technology is available at: www.formfactor.com/FormFactor%20Online/technology.html.

You can also download the complete slide presentation FormFactor provided at the *Southwest Test Workshop* in June, in PDF format, from that page or also from <http://www.swtest.org>



Teseda Unveils New Version of Its V500

Teseda announced a new version of its *V500 DFT-Focused Engineering Test System* last month. The latest version includes



significant new capabilities that enable a wider range of applications, according to the company. The laptop-sized V500 already included DFT-Intelligent software for processing and display of DC scan and BIST data, *DFT-Optimized* hardware with 50MHz data rates, and 32 million vectors behind each pin.



Teseda Validator 500

New features include support for delay (AC) scan and IDDQ test methodologies; enhanced BIST control; and seamless integration with DFT tools from Cadence, SynTest, and several other DFT tool vendors.

Enhanced V500 Features:

- Delay (AC) scan test support (optional) to effective test rates of 300MHz.
- Integrated IDDQ support, including automated control of the QD-1010 Current Measurement monitor from Q-Star Test, for standard, delta, and current ratio IDDQ methodologies
- Integrated clocking to 700MHz for memory and logic BIST support.

- Expanded I/O logic voltage and DUT power supply flexibility for a wider range of IC technologies
- 16 additional clock pins, bringing the total system pin count to 348, to handle larger and more complex chips
- Integrated support for Cadence *TestBench* and SynTest *Turbo-ScanATPG* STIL-based import and fault isolation diagnostics (complementing similar integration with Synopsys *TetraMAX* and Mentor's *FastScan*)
- Support for scan compression tools, including Mentor Graphics *TestKompres* and Synopsys *SoCBIST DBIST/XDBIST*
- An application programming interface (optional) to allow users to customize the V500 to their own test flows
- Export of edited timing and vector data in STIL (IEEE 1450) format, for integration with production ATE

Pricing and Availability

The base system price of the V500 remains at \$60,000 (\$173/pin) and is shipping now.

FINANCIAL REPORTS

Synopsys Inc.

FQ3 Ending July 31 (\$000).

	2003	2002
Sales	\$300,400	\$236,100
Net	48,500	(13,600)*
Per Shr.	0.60	(1.93)

*Excluding acquisition-related expenses, mostly related to last year's purchase of Avant Corp., Synopsys said it would have earned \$66.9 million, or \$0.82/share, versus year-earlier earnings of \$39.7 million, or \$0.53/share.

EDA STOCKS

COMPANY	Ticker	Change		52 Week	
		08/29	Month	High	Low
Cadence	CDN	\$14.22	4.0%	\$15.12	\$8.65
LogicVision	LGVN	\$3.08	-6.1%	\$3.49	\$1.28
Mentor	MENT	\$20.25	19.0%	\$20.56	\$3.93
Synopsys	SNPS	\$68.21	9.0%	\$69.75	\$31.81
Average Change in Aug.		6.5%			



Japan's July Eqpt Orders up 27% YoY

Worldwide orders for Japanese chip making equipment rose 27 percent YoY and 7.8 percent sequentially in July, to Y98.64 billion (US\$838.6 million), as domestic demand remained solid while demand from other Asian nations picked up, the Semiconductor Equipment Association of Japan said. It was the second consecutive month of YoY gains, and the order value was the second largest in a year - only slightly under the Y98.84 billion posted in May.

Worldwide sales of Japanese-made chip equipment grew 21 percent YoY in July to Y77.22 billion (US\$656.9 million) and the SEAJ's three-month moving average book-to-bill ratio was 1.40 in July, topping the key 1.00-mark for the third month straight. That ratio was 1.57 in June.

Japanese chip makers continue to lead the order growth, the SEAJ said. Still, in the domestic market, July orders for chipmaking equipment made by both Japanese and foreign companies slipped 5.3 percent YoY to Y56.93 billion (US\$484.3 million.).

The SEAJ noted that the YoY drop is due to an abnormal jump in orders a year ago. Domestic sales of chip-making equipment made by both Japanese and foreign companies surged 76 percent YoY in July, to Y61.37 billion (US\$522 million.).

Analysts in Japan expect demand to continue to boost orders for the present July-September quarter. But, a Morgan Stanley Japan analyst said "it remains to be seen whether they can continue to receive a stable amount of orders after October."

Japan's Chip Makers Seeing Order Surge

Japan's chip equipment makers appear to be seeing a strong resurgence in orders. Due to strong demand from manufacturers of both domestic and other Asian makers of digital consumer electronics, orders received in the April-June quarter exceeded those of the previous quarter. However, they remain cautious - mindful that in the April-June 2002 quarter orders also showed solid signs of improvement, only to be dashed when the following quarter experienced a slowdown.

Tokyo Electron reported that its new orders received in the April-June quarter reached Y104.8 billion (US\$890.5). Although that was a 30 percent YoY decline, it was the first time in three quarters that the figure exceeded the Y100 billion level. TEL specifically pointed to orders received from Japanese companies being up about 60 percent YoY.

Even more impressive, Advantest reported that its orders in the April-June period jumped 61 percent on the year to Y31.8 billion (\$US270.2 million).

"We're beginning to confirm the recovery trend, and the number of order cancellations has declined as well," according to Hitoshi Owada, a managing executive officer at Advantest. As a result, it has upgraded its projected value of orders for the year ending March 31, 2004 by Y5 billion from its initial forecast of Y135 billion (US\$1.147 billion).

JAPANESE ATE STOCKS

INDEX	Ticker	Close 08/29	Change Month
NIKKEI 225	N225	10,344	8.2%
Advantest	6857	8,090	22.6%
JEM	6855	2,370	20.3%
MJC	6871	1,410	6.8%
TEL	8035	8,220	16.3%
TSK	7729	3,720	13.8%
Yokogawa	6841	1,129	19.2%
Average Change in Aug. '03			16.5%

ASE Reports Better Results for Q2

Taiwan-based Advanced Semiconductor Engineering, reported Q2 revenues of NT\$12,773 million (about US\$373.6 million) for the second quarter of 2003, up 18 percent YoY and 10 percent sequentially. Profits for the quarter were NT\$360 million (US\$10.5 million) or US\$0.017 per ADS.

ASE said that its testing operations generated revenues of NT\$2,752 million (US\$80.5 million) - up 15 percent YoY and up 9 percent sequentially. 82 percent of that amount was contributed by its final test operations, 13 percent by wafer sort operations, and 5 percent by engineering test operations.

Its gross margin for its test operations was 19 percent, compared with 6 percent in the 2002 quarter and up from 14 percent sequentially. It said it spent US\$43 million on new equipment for its test operations during the quarter. As of June 30, 2003, ASE said it was operating a total of 1,107 testers, including 40 testers added during the quarter.

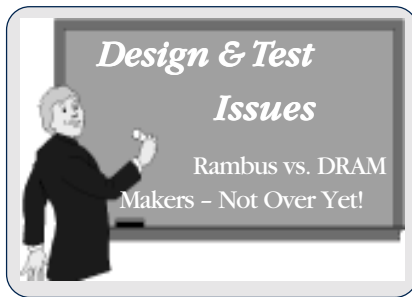
Strong YoY Gains by Taiwan Pkg/Test Cos.

The largest Taiwan-based packaging and testing service providers reported solid YoY revenue growth in July '03 - mainly on strong sales in the PC and consumer electronics markets. As it marked the start of the traditional peak season and low IC inventories worldwide, the strong performance by Taiwan's IC manufacturing industry is expected to continue through the full third quarter.

Taiwan's Pkg/Test Cos

July '03 revenues (US\$M)

Company	July'03	YoY
ASE	\$131.3	16.6%
SPIL	\$68.8	16.8%
King Yuan	\$17.0	17.6%
Powertech	\$11.0	32.7%



The long-running battle between Rambus and major DRAM makers was appealed to the U.S. Supreme Court last month after a guilty verdict in Infineon's suit against Rambus, was overturned by a Federal District Appellate Court in January of this year. In the meantime, the Federal Trade Commission had brought claims against Rambus as well. A trial based upon those claims is currently taking place before an administrative law judge.

As we are sure *FTR's* readers know, the DRAM makers and the FTC have accused Rambus of withholding information — namely patent applications — that they claim the company was required to disclose to the Joint Electron Device Engineering Council standards body, better known as JEDEC, in which Rambus participated during the 1990s.

The filing was supported by the Boston-based law firm Lucash, Gesmer & Updegrove LLP in a "friend of the court" brief which claims: "Rambus v. Infineon goes to the very heart of the integrity of the standard setting process. As we are a national leader in forming and representing the organizations which set standards, we felt that it was our duty to acquaint the Supreme Court with the importance of the issues involved. This is hardly the right time for the courts to be undercutting processes that are crucial to American technology, Homeland Security and national competitiveness."

Additional briefs were filed by the Attorneys General of 15 States and Puerto Rico, by JEDEC and by five chip companies. Ten major standard setting bodies and a standard setting joint venture, are parties to the brief.

However, should the Supreme Court refuse to hear the appeal — which many observers see as the most likely case — it's possible that the FTC and DRAM makers may have opened an expensive 'can of worms.' Some industry observers believe Rambus' attorneys — while defending the company in the FTC's courtroom — may have laid the groundwork for an antitrust case by Rambus. It may claim industry members conspired to restrict the output of Rambus' RDRAM memory so as not to let it succeed at becoming a dominant standard in the market. And, reportedly, Rambus executives reportedly have said they were considering pursuing such a case.

So, as the saying goes — it may not be over until it's over!

BiTS 2004 Workshop

The *BiTS (Burn-in and Test Socket) 2004 Workshop* — to be held on March 7 - 10, 2004 at the Hilton Phoenix East/Mesa Hotel, Mesa AZ — is seeking presentation proposals on a broad range of topics related to the socketing field. You can submit previously unpublished, technical presentations by an abstract of 250 to 500 words by October 17, 2003 to abstracts@bitsworkshop.org.

Suggested subjects include:

- Burn-in and test sockets for leading edge packages/technologies
- Socket and contactor solutions for high speed digital and analog requirements
- Thermal management & modeling: solutions for sockets, burn-in systems, handlers, etc.
- Test and burn-in board design considerations
- Multi-DUT / Strip Testing; wafer level operations; massively parallel test
- Advancements: new products; trends; future requirements; challenges in MEMS socketing
- Test and burn-in floor operations — BIB and socket tracking, repair, reliability, etc.
- Socket cleaning methods and techniques.

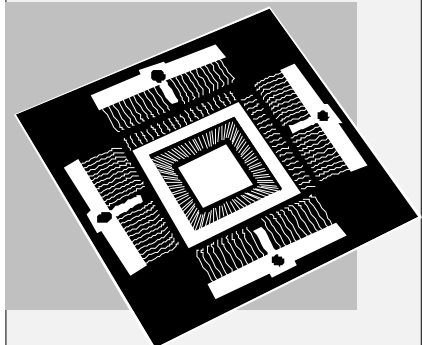
ITC Expands to Include MEMS

The International Test Conference (ITC 2003), scheduled for the week of Sept. 29 in Charlotte, NC, has added two MEMS lecture series in hopes of expanding its attendance.

An introductory session — presented by engineers from Sandia National Laboratories and Carnegie Mellon University — will cover design, fabrication and industrial uses of MEMS. A second session will delve into the failure mechanisms of MEMS devices.

This year's conference theme is *Breaking the test interface bottlenecks*. Speakers will cover topics ranging from nanotechnology to system testing. In a Keynote address, David Yen, executive VP at Sun Microsystems, will discuss chip testing from the perspective of a network hardware provider. Yen will describe how Sun leverages its processors and ASICs to improve test and reliability, and what manufacturers need from the ATE and EDA communities.

ATE/DFT MEETINGS



September 2003

Sept. 30 - Oct. 2

*International Test Conference
Charlotte Convention Center
Charlotte, NC*

www.ictestweek.org

December, 2003

3 - 5 *SEMICON-Japan 2003
Chiba, Japan.*

www.semi.org

March, 2004

7 - 10 *The BiTS Workshop -
Hilton Mesa Hotel, Mesa AZ*
www.bitsworkshop.org



INDUSTRY

Intel confused the markets last month. First, it provided a positive update on its outlook for this quarter, then, its CEO, **Craig Barrett**, said "We don't know how much of this Q3 is a kickback of a SARS-related spending that didn't happen in Q2. Whether the fourth quarter will continue off of that, we don't know yet."

The SIA raised its chip forecast for this quarter to "5% to 8%" growth, but didn't change its estimate of 10.1% growth for the full year, in its quarterly webcast last month.

Semico Research dropped its '03 chip forecast to 10.7%. Last year it was projecting 30% growth in 2003, but earlier this year, it lowered its forecast to 23% and then to 17%.

Gartner-Dataquest said last week that chip capital spending, which in 2002 declined 38% to \$27.7 billion, will grow just 8% to about \$29.9 billion with the most investment growth expected to come in Japan and Europe.

COMPANIES

Teradyne has reportedly begun cutting about 500 jobs -in an effort to end the company's string of losses. Teradyne would not officially comment on the report.

LTX reportedly fired about 34 employees last month. Of those, about 17 were from its recently acquired **StepTech** operation.

Aetrium announced it has signed an agreement for **Spirox** to distribute its IC test handlers in Taiwan and China, including Hong Kong.

Aehr Test Systems said that it has been issued three additional patents for various aspects of its wafer-level burn-in and test technology.

SV Probe and Singapore-based **Ellipsiz** have formed a joint venture company, *SV Probe Asia*. The new company's manufacturing will be in Vietnam, with the core design team and main headquarters in Singapore.

FormFactor has begun volume production of a probe card that tests a 253 DRAM DUTs per touchdown.

Teseda and **SynTest** have partnered to streamline and facilitate communications between Teseda's V500 and SynTest's new debug and failure analysis software, *TurboDiagnosis*.

PEOPLE

LogicVision has named **Ronald H. Mabry** as VP for marketing and business development. He most recently served as VP, sales and marketing for **PACT XPP Technologies**.

Bruce R. Wright has been named to **Credence Systems'** board of directors. Wright is the senior VP of finance and CFO at **Ultratech**.

Jos C. Henkens, who had been on Credence's board, passed away in mid-July while on vacation in France.

Thomas J. Campbell, Dean of the **Haas School of Business** at the **University of CA, Berkeley** has been named to **FormFactor's** board.

Dov Oshri has been named CFO at **ST Assembly Test Services**. He was previously VP for finance and operations at **Orbotech**.

Young K. Sohn was named Sr. VP/GM of **Agilent's** Semiconductor Products Group. Sohn was most recently was the chairman/CEO of **Oak Technology** and previously held management positions at **Intel** and **HP**.

Harvey Chang, Sr. VP/CFO of **TSMC** will leave that company on September 8 to become president of **Taiwan Cellular**. Its controller, **Lora Ho**, will take over his positions.

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