FABFILE online

VOLUME 1, NUMBER 1, September 30, 2003


Harvey Miller

How *FABFILE Online*© was put online in less than five months

Fabfile Systems effectively closed April 2003. That offered Harvey Miller, long associated with that entity, the great opportunity summarized above and described below. A main feature of a Web-accessible database is instant access to dynamically changing information. That access is made easier yet by inclusion of a newsletter on the site. It will enumerate data changes on a daily basis, coded by company ID# for clients. Otherwise the newsletter will be free and accessible to all who go to *FABFILE Online*©
http://www.fabfileonline.com
after October 4, 2003.

There are many other enhancements and future perspectives, appropriate to this era of dynamic change.

Segmentation - the ubiquitous, pervasive, sometimes maligned, printed circuit board industry is actually many industries. We are recognizing this by creating out of the existing database, the following new databases with more coming later.

FLEXFAB includes all producers of flexible printed circuits, dedicated and part-time. All the industry differentiations now become possible and we will do them, focusing on flex.

LOWkFAB includes all producers of boards with laminates whose dielectric constant is less than 3.5. Application subsets range from high speed digital literally merging into analog to all the flavors of microwave and wireless - all will now be differentiable by structure and function.

PROTOFAB is defined by Part Numbers per Month equal to or greater than 200 and 40% or more of them new part numbers. Ray Boisonneau of Electropac pointed out that all shops aspire to be prototype these days. This database will separate out those who are.

A future perspective

BACKPLANES, standard and custom, respectively driven by embedded computers and by big boxes in networking, base stations, servers, telecom. B/Ps are a natural value-added extension to a new database. As George Dudnikov of Sanmina SCI pointed out-- the more little boxes made in China, the more big boxes made on this side.

It took a great team

From Enfinitee Interactive, Yvonne Shevnin and Mike Coffey - thank you, French New Orleans and the Australian Outback, for giving us such talented web designers and Access programmers.

Dr. David Angst, expert in signal integrity, is also pretty good with computer hardware and knowledgeable in Adobe Framemaker for our newsletter, a sage advisor to help steer a level course!

Technical communication advice and FrameMaker formatting by David Parker.

Chase Dickson is an indefatigable, creative interviewer and salesman.

Harvey Miller also comes with the package

Putting FABFILE Online© *online*

First, we made the decision to modernize to a web application. Data was previously delivered every 3 months by CD.

Next, we located a suitable database developer to design and implement the web application. It's not like an Amazon or eBay catalogue.

Then came design of the new system.

That involved conversion from the old system.

Finally, came implementing the new system, refining, and testing it.

Then an inspired afterthought, we provided the newsletter online to communicate updates to clients and share.

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Manufacturing Migration

Toward A Longer Term View

The Printed Circuit Industry provides a model that is applicable to a wider manufacturing spectrum. In 1990, the North American industry furnished half of world sales. By 2000, the share fell to less than a third. But boom times raised the absolute sales level over 20% in the decade to over $10B, masking the underlying loss of share. Then came the cliff. From 2000 to mid 2003 the world electronics industry declined about 30%, using semiconductor units as a gauge. By itself, that would have translated to $7B for the PCB industry. It was worse than that for U.S. and Canada because of the higher proportion, over 50%, of telecom, computers, and networking in their manufacturing mix. These industries collapsed by over half, which would have accounted for further industry decline to about $6B for PCBs. In the meantime, Chinese PCB output increased over 100%, using combined figures from Walt Custer and Dr. Hayao Nakahara. Most of that $2B billion Chinese industry increase replaced American output, directly in U.S. manufactured equipment or indirectly in boxes no longer manufactured in the U.S. The *FABFILE Online*© figure for North American PCB sales 2003 is $4.8B.

The two tables below are generalized models that explain the migrations of fabrication and assembly. No company can be competitive in supplying easily transportable small boxes, unless they manufacture in East Asia.

Deutsche Bank Securities Inc — May 10, 2002

MANUFACTURING ASSEMBLY COST COMPARISON -- U.S. vs CHINA

CATEGORY	CATEGORY CONTRIBUTION TO TYPICAL MFR COST STRUCTURE	SAVINGS FROM MFR IN CHINA	RESULTANT COST SAVINGS
Materials	75%	15%	11%
Labor (Direct/Indirect)	12%	50%	6%
Overhead/ Equipment	7%	25%	2%
SG&A	3%	20%	1%
Other	3%	20%	1%
TOTAL	100%		
Pre-Ship Cost Savings			**21%**

by permission of Chris Whitmore

Fabfile Online — May 10, 2002

MANUFACTURING FABRICATION COST COMPARISON -- U.S. vs CHINA

RIGID PCBs

CATEGORY	CATEGORY CONTRIBUTION TO TYPICAL MFR COST STRUCTURE	SAVINGS FROM MFR IN CHINA	RESULTANT COST SAVINGS
Materials	40%	5%	2%
Labor (Direct/Indirect)	25%	50%	13%
Overhead/ Equipment	22%	25%	6%
SG&A	8%	20%	2%
Other	5%	20%	1%
TOTAL	100%		
Pre-Ship Cost Savings			**24%**

It Began in 1962

That was the year that Fairchild Semiconductor began moving IC package assembly to Hong Kong. Wire bonders were all manual; assembly was extremely labor intensive. IC assembly found a home in East Asia. Note that Deutsche Bank's assembly cost model assigns a higher cost savings to logistical factors, materials, than to labor. IC assembly was not only a precursor of wider migration. It contributed to transfer of assembly by providing lower cost components. It was the opening culture change wedge, providing a much observed model to some people who were ready to learn from success-on top of the Japanese model. And so now we have a paradox that Marx would have trouble explaining, pragmatic "Marxism" based on dollar an hour labor. We've come a long way from the Opium War, when the West pushed China around, forcing them to take the drug. It's a developing story, with many surprises to come, not all bad.

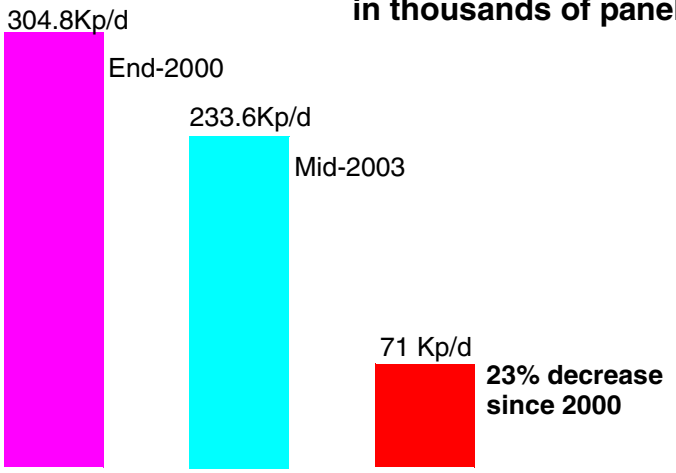
-- to be continued --

A Fab Capacity Study

In the Printed Circuit industry, capacity is expressed in Panels/Day, a figure important for the firm and collectively, for the industry. It is a figure that is forthcoming because in a capital-intensive industry, it has to be a main feature of the Business Plan. Panels/Day or p/d is a field in the current *FABFILE Online*© database.

Now we ask and soon will insert into our interviews the following question: "What percentage of your company's installed fab capacity are you currently using?" That figure cross-checks many other sales parameters and its product can be added and tracked to gauge total output.

North American PCB Capacity Decline, 2000 to 2003, in thousands of panels / day (Kp/d)



sanity checks

1) capacity of selected large production facilities that closed

Sanmina Santa Clara	5K
Sanmina Derry	3K
TTM Burlington	1K
Tyco Melbourne	.75K
Sanmina 1	.6K
	19.35K compared to
	71.2K total decline

2) convert to SF and multiply by $6/SF x 250 days to approximate potential laminate market:

304800p/d x 3SF/panel x $6 x 250 days = $ 1,371M in 2000, now $1,051M

FABFILE Online© data

"First" Plant Closure: Dueber Hampden Watchworks

The Dueber Hampden Watchworks was closed and the machinery moved from Canton, Ohio to Moscow, Russia in 1930. This plant closure was an early example of what has happened to the electronics industry of today, except this closure was caused by the Great Depression of 1929-1936.

Cash flow was so minimal, the workers were paid their final wages in watches.

PCB Records Updated September 2003

ID #	Status Changes in CAPS
12	65% capacity, embedded computers
16	up 10%
17	65% capacity, proto microwave
19	65% capacity, all proto
22	
29	65% capacity
67	70% capacity, medical
76	>80% capacity, RF and defense flex
94	70% capacity, defense CAD and proto CAM"
100	65% capacity, proto, RF flex
109	70% capacity
153	
157	95% capacity, protos for Industrial Controls
163	
164	multilayer flex for Defense Electronics
208	
244	est annual sales increase 02-03: 15%
282	75% capacity, power supplies
300	
322	low price proto
324	microwave, 80% capacity
328	volume-60% capacity
332	

PCB Records Updated September 2003

ID #	Status Changes in CAPS
340	est annual sales increase 02-03: 15%
344	60% capacity, high volume low price
368	>80% capacity, RF and power flex
392	
398	microwave, 60% capacity
435	low price proto
441	DELETE FROM FABRICATOR DB, specialty laminator
471	microwave, 60% stripline
482	RF flex
484	80% capacity, volume proto, short run
485	65% capacity, proto, RF flex
486	
500	probe cards now use vertical
504	>80% capacity, RF and implantable flex
512	80% capacity, specialty consumer small boards
513	microwave
546	BOUGHT
557	volume change
562	high volume automotive flex

Now *FABFILE Online*© Can Help Industry Players

Below is a quote from industry guru Walt Custer. It describes the unique utility of FABFILE. We could not evoke his important, personal experience but will resort to his words:

FABFILE is a very useful marketing tool. When I was VP of Marketing & Sales at Morton Electronic Materials, I used it regularly to access process material and equipment potentials, set up sales territories and have a ready database on my notebook computer of all North American PCB fabs with key contacts and phone numbers. It can be sorted by company, state, ZIP code, annual sales, PCB capacity by type and many other fields. FABFILE can also be used by PCB makers to identify potential acquisitions and track the competition. In these difficult times having updated data on all 600 North American PCB fabs is most useful. Call (650) 327-2029 or e-mail sales@fabfileonline.com for more information.

FABFILE online
255 Town & Country Village
Palo Alto, CA 94301

Telephone (650) 327-2029
e-mail sales@fabfileonline.com
http://www.fabfileonline.com