

Counting Down to the Year 2000: Ready or Not

By Leora Lawton

Perspectives on the electronics manufacturing industry.

Perhaps what is most amazing about the year 2000 (Y2K) "bug" is not that it exists, but that it took so long for our technological society to deal with it in a serious way. The irony of this millennium problem is that, while it resides in the high technology of BIOS chips and software code, the solution is sourced in people—starting with top management.

The deadline is not even precisely December 31, 1999; purchasing software for advance ordering needs to be able to interpret dates in the year 2000 correctly at the time of placing the order.

In the last two years, countless articles about the year 2000 bug have appeared. Many are posted on the World Wide Web, and quite a few are helpful. The unique focus of this article is on the electronics manufacturing industry and the suppliers and internal systems specific to PCB assembly. Interviews with relevant software companies, equipment companies and contract manufacturers provide a picture of the electronic manufacturing services (EMS) industry's progress in handling the Y2K issue.

Readiness Is Not Compliance

Circuits Assembly readers probably know the cause of the year 2000 bug: When memory was expensive, programs used a two-digit year, not anticipating the full consequences of long-lasting software and hardware systems. The two-digit year, encoded into software programs and embedded in BIOS and other chips in hardware, will revert back to "00," as in 1900, on January 1, 2000. Software needs to be checked, edited or replaced. Hardware also needs testing where a date function is involved.

Unlike the knowledge about the cause of the year 2000 problem, two terms—*compliance* and *readiness*—are far less understood. IBM uses the term "Y2K ready" rather than "compliant." *Readiness* means the product will function correctly for the rest of this century and all of the next. *Compliance* implies perfection, and few are willing to commit to that standard. Intel uses the word "capable" instead of "ready." In this article "compliant" and "ready" will be

used interchangeably. When asking for a supplier to be compliant or ready, spell out what that means to you.

Be Prepared, Or Else

The Y2K problem is unprecedented, so what, exactly, will happen on January 1, 2000, is unknown, though educated speculations exist.¹ Clearly, one needs to ensure that his or her own products are Y2K compliant. An original equipment manufacturer (OEM) must have its products free of Y2K problems, and a software company must remove bugs from its programs. Malfunctioning products will mean seriously displeased customers. In addition, customer satisfaction studies inform us that timely delivery, quality and competitive pricing are the top three requirements OEMs have for their contract manufacturers. Each of these factors may be damaged by Y2K failures, so a prepared company will not only maintain customer loyalty, but find it easier to expand its customer base (Table 1).

The murky side of the Y2K solution is the entire supply chain. First, a company's systems must be Y2K ready internally well in advance of December 31, 1999. This readiness includes manufacturing, purchasing, database, human resource (HR) and other systems. Second, one needs to verify that his or her suppliers are themselves compliant in terms of both products one is ordering from them and internal systems so orders will be carried out in time.

"One-third of our customers have written us asking about the status of our software," said TEFEN USA's (Foster City, CA) product development manager, Bryce Foster. If a supplier appears not to be ready, then alternative sources need to be established. Forms used should specify products purchased or to be ordered. Some companies use their web sites to inform customers about their products' Y2K compliance status and any steps needed to get the product ready.

Another reason for sending forms to suppliers is to protect oneself in the event of lawsuits. Litigation threatens to be one of the major costs of failure to be Y2K compliant. A delay in one company can spread to all links in the supply chain. Those forms help

• Customer satisfaction and loyalty
• Competitive edge
• Avoidance of litigation
• Public companies avoid SEC fines
• Less stress!

TABLE 1: Importance of Y2K readiness.

• www.year2000.com
• www.sematech.org
• www.mep.nist.gov
• www.sec.gov/news/home2000.htm
• www.mcg.mot.com/litfiles/y2k_assessment.pdf
• www.ibm.com/IBM/year2000/

TABLE 2: Year 2000-related web sites.

demonstrate that all reasonable steps were taken to prepare for the year 2000.

Another document that companies might want to have to protect against litigation is evidence of “due diligence,” or certification that all internal systems and products have been tested and corrected. These certifications may be accomplished by engaging outside consultants for an independent and objective audit of systems. Alydaar (Charlotte, NC), a company that performs testing and debugging services, reports finding bugs even after clients’ MIS/IT departments have tested systems. Ted Swoyer of Peritus Software Services, Inc. (Billerica, MA) adds that testing is only part of the entire quality assurance process. Both companies advise contingency plans.

The SEC (Securities and Exchange Commission) recently announced that public companies could face fines if they deliberately conceal a lack of preparation. The year 2000 problem will not be viewed as an “excuse for failing to protect investor assets.” The due diligence and supplier readiness documentation may protect one’s own assets. For more information about the legal aspect of Y2K readiness, check out the Sematech website (www.sematech.org) and links provided therein (Table 2).

The SEC warning follows predictions that ill-prepared companies may fail as a result of the Y2K bug. Either they will be swamped by lawsuits from their own failures or their suppliers or customers will drag them down. Planning for contingencies may include having cash around to handle one’s own cash flow problems and being able to step up and purchase companies that are floundering due to their own poor management.

“It’s not just the fear of litigation that should motivate companies,” said John Hoxing, CAM application manager of Orbotech (Billerica, MA). “If you can’t prove that your product is Y2K ready, why would someone want to buy it?” Ultimately, one hopes that the primary motivation for being Y2K compliant is not fear of lawsuits, but the desire to maintain or gain competitive advantages.

Outside the United States

Perhaps because litigation is not as prevalent outside the United States, awareness of the year 2000 bug seems less prevalent in both Asia and Europe. Asian contract manufacturers who provide turnkey, rather than consignment, may be at greater risk.

Some Asian companies are well on their way to compliance. “Since the third quarter 1997, we have been engaged in the identification and resolution processes for Y2K,” stated Edward Duh of Orient Semiconductor Electronics (OSE, Taiwan). OSE prioritized its efforts, focusing first on enterprise resource planning (ERP) and

manufacturing execution systems (MES) that will be Y2K ready by the end of the first quarter 1999. Equipment will be inspected and upgraded by the second quarter 1999.

Getting Ready

The basic formula for getting a company ready for year 2000 is:

- Take inventory of all internal software and hardware systems and all external suppliers.
- Assess headcount and financial resources.
- Devise a plan of action and implement it; inform employees.
- Perform an audit of verification.
- Develop contingency plans (Figure 1).

The highest level of authority in the company must direct the Y2K effort. The CEO needs to know not only what the MIS/IT staff is doing, its schedule and its resources, but he/she should facilitate and direct the process. Ultimately, top management is responsible if things go wrong.

Industry organizations provide a significant amount of information, often on their web sites. “We found the Sematech website to be very helpful,” said Dave Faulkner, vice president of marketing at Cimetrix, Inc. (Midvale, UT), a provider of software for assembly equipment. “Sematech has done a fair amount of work in preparing guidelines.” Its site contains guidelines, examples of forms, testing procedures and links to other sites that are relevant for EMS companies.

Key OEMs not only deal effectively with the Y2K problem, but they frequently provide general information on their web sites, in addition to their internal plan and status of their products. Motorola’s site (www.mot.com), for example, contains fairly detailed guidelines for companies seeking to address their own internal Y2K preparedness. Ask your customers about their progress because their mishaps will affect your financial well-being and plans.

Seagate’s (Scotts Valley, CA) Y2K plan includes a step for employee awareness. Readiness plans are top to bottom, meaning that sales and marketing staff, customer representatives, manufacturing and operations staff, HR and other employees should be aware of the company’s Y2K implementation program. The customer support representative at one software company interviewed for this article knew which products were compliant, but was unaware of plans for implementing internal Y2K readiness. This lack of awareness should never exist.

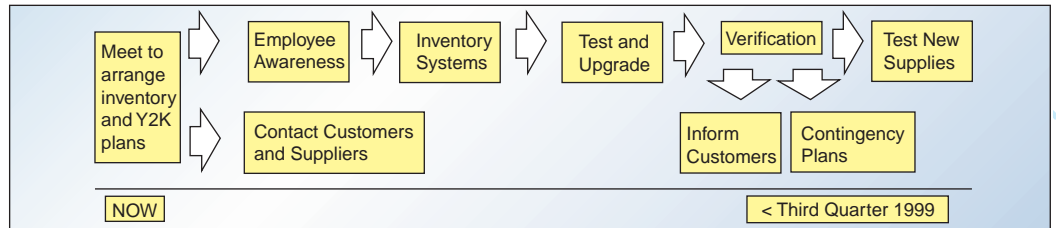
How Are We Doing?

Taking stock of the situation is easier with concrete examples. Accordingly, we look at three links on the EMS supply chain: software providers; equipment manufacturers and contract manufacturers.

Software

Software for EMS includes statistical process control (SPC), test and manufacturing systems. When the software package itself does not include a time-based feature, the hardware or platform on which it operates may contain non-compliant features. Do not assume that a recently purchased system is Y2K ready. Most software products, including EMS software applications, consist of recent versions that are Y2K ready and older versions that are not. For example, Northwest Analytical, Inc. (Portland, OR), a provider of SPC software,

FIGURE 1: Timeline for year 2000 readiness plan implementation.



states that its most recent product is compliant and earlier windows versions can be upgraded at no charge with a software “patch,” but their DOS version must be replaced.

“Those who are currently on a maintenance program will automatically receive a free upgrade,” stated Liz Hodge, sales manager at GW Associates (Sunnyvale, CA), a provider of test and driver software. Their test software, SECSIM Pro Version 2.0, is Y2K compliant. Customers not on the maintenance program will receive a letter informing them about renewal.

In some lucky companies, the forward-thinking software developers anticipated the problem when they wrote the applications and put in four-digit year codes. “We really don’t have Y2K issues,” said Foster of TEFEN USA.

Equipment

Any piece of equipment containing an embedded chip with a date function needs to be tested. GenRad (Westford, MA), a man-

ufacturer of assembly equipment and software is addressing their Y2K issues in the methodical manner required. Their website (www.genrad.com) has extensive coverage of their products from the Y2K perspective. They are evaluating their line of products and defining which are compliant, how to bring non-compliant products up to standard, and which products will most likely not be brought up to standard.

Other equipment manufacturers, such as Faxitron X-Ray (Buffalo Grove, IL), report that no date-dependent software is used with their equipment, so the equipment is year 2000 compliant. Internally, a compliance plan exists and the company feels confident that it will be ready.

Contract Manufacturers

The Gartner Group reported that, as of the beginning of 1998, 88% of all companies with fewer than 2,000 employees had not started a project to deal with the year 2000 problem. In speaking

with large and small contract manufacturers (CMs), I found that all companies had dealt with it on some level, but some, though not all, of the smaller companies seemed to be less methodical. When asked about whether they have an internal program, the IT manager of one small CM answered, "Not really. You read articles and their advice is very resource-intensive. We just can't do that." This type of response does not mean they are doing nothing, but rather that the effort is more fragmented than orchestrated. Another small CM answered, "Someone in IT takes care of it. They basically go out and check vendors."

With larger companies, however, they do have the resources to be more methodical in their approach. LeeMAH Electronics, Inc. (San Francisco, CA) expects to be completely Y2K compliant by the beginning of 1999, which includes identification of compliant vendors and their own internal systems. They sent out forms to their own suppliers and received replies to about 80% of them. Of those, one-third are already compliant and the rest have active Y2K programs. They began the program in 1997 and sent out a newsletter to customers in May 1998 to update them on the program's status.

"It took us three months to get our company compliant," said SMS Technologies' (San Diego, CA) vice-president of sales and marketing, Elliot Shev. A CM of 230 employees, they carried out a methodical inventory, testing and upgrade of all internal systems. All the work was carried out internally by their MIS department. "I

wouldn't assume anything—I would test everything," he added, stating that they continue to test everything that they receive.

Conclusion: It's Not the End of the World

The abundance of thoughtful sources of information on the Internet covering the year 2000 bug and the interviews conducted with EMS-related companies are reassuring. In nearly all cases, management is being responsible in addressing the problem with the attention it requires. Running off into the desert with a stockpile of food and supplies as suggested in *Wired*² seems extreme. At the same time, if your company has not yet assessed what needs to be done, then make it your top and most urgent priority. The Y2K problem is one of management, not technology, and it can be greatly mitigated through careful management and foresight.

References

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2. Poulsen, K. (1998, August) The Y2K solution: Run for your life!! *Wired*, pp.122-125, 164-167.

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