

What's Cold and What's Hot in the Spring Industry?

A look at the practices and technologies of yesteryear and what's replaced them

By Jack Beardwood



Over the last several years, a chain reaction of technological advances has contributed to drastic changes in the spring industry. Despite leapfrog progress, due to a variety of factors, business has become much more competitive. In order to survive, efficiency in all phases is necessary.

In the past, a son would follow his dad into the business. Nowadays, the industry is struggling to attract talent. The days where someone could start as a general laborer and move up in the business are long gone – unless they pick up an engineering degree along the way.

As the cutting edge in technology and management becomes ever sharper, the question arises: Are things really better now than they were back when slide rules were as essential for a springmaker as a shovel is to a ditch digger?

As the industry continues to cope with an ever-changing landscape, perhaps a glimpse at the past can provide some insight into the future. If not, it surely can be a walk down the proverbial memory lane.

“One thing we certainly don’t use now is a slide rule, but I can tell you, I still know how to use one,” says Dave Weber, president of A.V. Weber in North Wales, PA, who has been in the business for 29 years. “I don’t know if I could actually find one, but I could use it. Nowadays, we just punch a couple of computer keys, and we’ve got an answer for any question that you could come up with. There may be only one or two other people in my plant who even know what a slide rule is.”

Despite the higher stakes of increased global competition, and pesky problems protecting oneself from the astronomical costs of litigation or product recall, Weber says springmaking is still a worthwhile vocation. “If it weren’t fun, I wouldn’t come to work anymore. I still enjoy it, but it is many times tougher than it was when I first started doing this.”

Just a few years ago, someone could scrape together a handful of used machines and go into business. Nowadays, in order to compete, a company needs much more capital to purchase sophisticated computer-operated equipment.

Ed Lanke, president of Wisconsin Coil Spring in Muskego, WI, who has 45 years’ experience in the spring business, says more companies utilize CNC machines in order to eliminate certain operations and save labor costs. “You’ve got to do it; otherwise you’re just going to die on the vine. [The cost of] technology today is unreal, but you’ve got to be prepared to make a big investment in equipment in order to remain competitive.”

“There are still tricks to spring coiling that need the human touch,” says Weber. “While the computer programs are wonderful, you still need skilled personnel. You still need a setup person to do the computer work and to know how to set the necessary tools on the coiler.”

One of the major changes in the business is customers – orders are much smaller than they used to be. This “just in time” philosophy means additional work and expenses for the manufacturer. “Smaller quantities with more shipments mean additional invoicing, paperwork, work orders, shipping orders and inventory control. All of these things are being transferred to the supplier,” says Lanke.

Once hot, batch processing has long gone cold. According to Doug Morris, manager of Peterson Spring’s Windsor Plant in Ontario, Canada, companies used to have as many as 10 coilers running at the same time for weeks on end, regardless of whether there was a market in the foreseeable future. Grinding work and other processes, like packaging, were often way behind.

Now cellularization or line concepts are the common practice. “Now we’re more in a cell where you start and finish the part within a prescribed area, and all necessary equipment is within that same area,” he says. “We can have a finished part in 35 minutes. Before, we used to have these big buckets of parts in between everybody’s operations.”

The benefits are improved quality (because the final part can be promptly inspected), work efficiency and lower costs.

“We’re not holding big quantities of inventory, so we don’t have to put cash out for material,” he says. “We don’t

have to put cash out for labor, because we are only making what we need to make.”

The system also benefits workers, who escape the drudgery of performing the same job all day because they are now more diversified and trained to work on all machines.

Cellular manufacturing does have its challenges, however. “Your machines have to be well maintained, and your personnel must have excellent changeover skills,” says Morris. “There are a lot of difficulties going this way, but the benefits are just tremendous. The way management used to think was the faster you ran and the more busy you ran, the more money you were going to make.”

Cellularization and smaller orders have also led to large facilities becoming cold. “As you remove waste from your operation, your plants don’t have to be as big,” says Morris. “Our inventory turns have significantly increased, so we don’t store as much raw material, and we don’t have the amount of work in process that we used to. Therefore, plants can be much smaller and still produce the same sales volume. Moreover, the number of employees has been reduced because of the automated high-output equipment today. You can now produce almost 50 percent more than you did 10 years ago on a machine.”

Mark Kretschmar, design engineer for Lion Precision in St. Paul, MN, harkens back to the days when batch ovens were used to prevent uncoiling. “When you make a spring, the first thing it starts to do is uncoil. It’s invisible to the eye but very measurable by gauges like ours. You’d coil a million springs, then you’d take them over in baskets and run them through a batch oven. The problem is that the springs were placed in ovens for different rates of time after they were manufactured.”

What are hot now are in-line ovens. The springs fall directly onto a belt, which moves them into the oven and out when they are done. Thus, they don’t have hardly any time to change dimensionally. The time a spring waits to get heat treated is equal for all of the springs. “It greatly narrows down the amount of variation in them,” he says.

Mike Betts, president-owner of Betts Spring in San Leandro, CA, says final inspection – where you don’t find out something went wrong until the end of the process – is cold. “In the old days, springs were produced and inspection was completed at the end of the process. Today, you have

in-process inspection, where every worker participates in the inspection process from start to finish. So you eliminate the need for final inspection.”

Another change is quality demands. According to Morris, the customer expects 100-percent perfect parts. “Today, even one or two (bad) parts per million is not acceptable. It used to be that you never heard from your OEM unless you were somewhere above 25 parts per million. Then they would work with you to reduce that number. Today it is zero. If you have any quality issues, you must do a 100-percent sort. They will either come into your plant and do the sort in-house, or they will make you send your parts to have them sorted (all at your expense).”

Morris, who has been in the business for 20 years, says the new philosophy was born out of forces felt by the big three American automakers as they reacted (read: panicked) to increased competition from Japanese manufacturers. “The perception – right, wrong or indifferent – is that the Japanese have higher quality, so General Motors, Ford and Chrysler are saying, ‘No, we are going to have the same quality, and you are going to give us 100-percent perfect parts.’”

“In the old days, you could squeak by and be late on a delivery, and not pay a price for it,” says Betts. “Today, if you’re late, you will be eliminated as the vendor of choice. If you have a quality problem, you could be taken off the qualified vendor list.”

Six- to eight-week delivery was more acceptable in years past, he says. “Today, one to four weeks is more common. Customers are demanding just-

in-time deliveries in order to lower their inventory carrying costs. Shorter lead times make it more difficult for the supplier. This is one of the biggest and most complicated battles that we all fight today.”

Another major change in the business has been the mind-boggling price-down trend. While almost every industry in the nation has been able to increase prices to make up for the higher cost of doing business, springmakers have continually had to lower their prices.

“I get a letter once a year from a customer of mine that basically says, ‘Happy springtime, it’s time to talk about price reductions,’” says Weber. “They’ll come to you and say, ‘This year, we need you to find a way to cut 15 percent off the price of our parts.’ The customer is pressured to hold the price line to get as much for their money as they can. They go to their suppliers and say, ‘You’ve got to reduce your price by X percent.’ And they expect you to do that by



finding faster and better ways to manufacture the part, or certainly by fewer rejections – anything that you can think of.”

In days gone by, hard-working associates could work their way up to the top of the firm, but not so much anymore, says Morris. “In the automotive industry, most of the design and prototype work has been driven down into the parts-supply basin, which has reduced the costs for the Big Three. As a result, there’s a lot more engineering that’s required in our plants, as well as our design group. You used to be able to grow from the plant

floor up by doing a lot of the jobs, but now you are going to need a university degree if you want to succeed. That’s a big change in our organization over the last 10 years.”

According to Mary Bresnahan, owner of the Bresnahan Group, Wheaton, IL, a management/training consultant firm with several spring company clients, MBO (Management by Objective) and 360° Performance Reviews are yesterday’s cold turkey. In fact, progressive companies are eliminating performance reviews. She says many employers are simply using “job pertinent” checklists to cover their backs. “If you do a poll and ask people if they like performance reviews, 99 percent will say no (including the bosses). I always thought of it as going to the principal’s office. If you review performance on a project-by-project basis, there’s continuous feedback, which is more productive and better received.

“Formal performance reviews do not get the outcome we’ve looked for over the years. They do nothing for fostering the accountability we all want to see, yet tradition says we have to do them,” she states. “New variations of performance reviews come out and they’re real hot for a while until people find out they don’t work.”

“All that formal performance reviews succeed in doing is expose the employer to possible litigation at a later date and antagonize the employee,” she says. “The process that needs to be there is an ongoing communication and feedback about performance. If you need something in the future, what you should say is that the worker performs to standards or does not perform to standards.”

The male-dominated work force is another thing that is long gone, says Bresnahan. Two incomes are needed to support a modern-day family, plus a high percentage of women simply enjoy the challenges of employment. Women have not only infiltrated the front office of spring businesses, they are also found in all phases of the operation. “There are some companies who have excellent women springmakers,” she says. “We’re getting rid of the old school of thought that women can’t do this. I think it’s a positive to have more women in the business. It can help with communication

because women typically have been raised to communicate more than men. Because of this, women can be better at training than men.”

Another new phenomenon is work-life balance. To eat, drink and sleep one’s job is much less prevalent. Employers actually encourage a well-rounded individual. “Years ago, there was no balance between your work and

your personal life,” she says. “You gave everything to your work. Now people are looking to have more of a balance between their work life and their personal life, especially the

men. A man will say, ‘I want to get off at such-and-such time because I want to go to Johnny’s ball game.’ Now there are much more balanced employees who have interests outside of work, and that oftentimes keeps them from getting over-stressed, which has many side effects like poor health, poor production and absenteeism.”

Perhaps the most sobering change in the business is its image among the young and the need to attract talent. “In the U.S. there is no glamour, there is no respect for manufacturing – not like there is in Europe and in the Asian countries,” said Bresnahan. “Manufacturing as a whole is having a hard time attracting people. Because springmaking is such a very small segment of manufacturing and springs are a secondary product, spring companies have an even harder time. Do you know of any 18 year olds who know about spring manufacturing and are dying to get into a plant and make it their career? If the parents don’t know about manufacturing and they still think it’s dirty and grungy like it was in 1940, they’re not going to tell their kids to go there. However, it’s a good career.”

Bresnahan says there used to be more pride in the manufacturing profession. Youngsters today want to do high-tech, sit in offices and work on computers. “There is a very changed view, and we as a country keep moving away from manufacturing. That’s scary to me.”

Another change, largely seen as a good one, is in management styles. There has been a decided move from an authoritarian approach to allowing almost all employees a chance to give input.

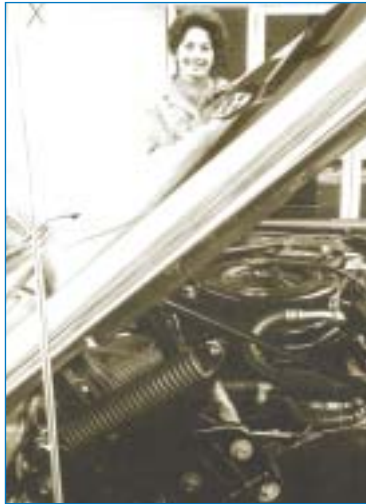
“There is more of a partnership attitude,” says Weber. “You’re not just a cog in a wheel simply to be used for your pay time and then you go home and don’t care. There now is a partnership aspect in sharing information with employees. In the old days, I don’t think that sharing financial information and explaining why we do things was done. Instead, it was the dictatorial ‘do it the way I say’ approach.”

What are the benefits? “I think your employees feel like they have more of a stake in the company,” he says. “They feel like they have more control over their own lives,

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which I think leads to happier employees. You get more by involving them, instead of just telling them. And I think that employees are more sophisticated these days in that they like to have a say in how work is done. They'd at least like to know as much about a particular job as they can. You get more production, less stress and less unhappiness in the working ranks, and less arguing and back stabbing among employees. If they are more involved, they have more of a feeling that it's coming from them. They have more at stake, and they are more likely to work as a team. I think that the team aspect is quite different than it used to be, and it's much more productive for the company."

Bresnahan says the younger generation won't tolerate an authoritarian management style. "They want to be



challenged. They want to be able to do their thing. They want to be talked to and included. If they're not, they'll say, 'I don't need this; I'm out of here.' "

She says a freedom-based management style is optimum. "If a manager says, 'This is my project and this is exactly what I want you to do,' employees are not going to feel as accountable as they would if they had some input into the process."

A variety of quality management systems, all of which were touted to have been the best thing since the advent of sliced bread, have come and gone. Deming, Juran and Quality Circles are gone. Six Sigma and Lean Manufacturing are hot.

"The old gurus of Juran and Deming basically promoted good quality control with the use of statistical techniques," says Praveen Gupta, president of Quality Technology Company, a performance improvement firm in Schaumburg, IL. "Six Sigma is an integrated methodology – a strategy to improve the process in such a way that it affects a company's profitability directly. The other methods were piecemeal. Six Sigma has incorporated all of them into a complete methodology. It is more comprehensive, and it links to results. The previous techniques were more subjective. They did not guarantee improvement. In this one, a lot of companies have reported tremendous improvement in performance and profitability."

Gupta, who has worked with several spring companies and is the author of "Six Sigma Deployment," says, "With other techniques, you did the job and waited for the results that may, or may not, have come. They did not directly create accountability for performance improvement, so

improvement was not realized. If nobody followed up later on, they never made money. With Six Sigma, you don't do anything unless you have a very clear picture that if you do this it is going to make money. Other programs are more focused on quality objectives, whereas Six Sigma relates to business objectives. Six Sigma requires you to set very aggressive goals for improvement, not like 10 percent or 15 percent, but 50 percent. When you set goals for improving 50, 60 or 70 percent, it forces people to think out of the box vs. tweaking a knob. The rate of improvement is much higher."

Gupta says Lean Manufacturing is another widely used technique in the spring business. "All of them (performance improvement methods) have come down to two key aspects of improvement – quality and cycle time – and they both lead toward each other. A company won't be able to reduce cycle time unless it improves quality. They are two dependent methods. People take different directions to move forward to make progress. Some people use Lean to start. Some people use Six Sigma to start.

"Lean focuses on streamlining processes to identify the wastes. Six Sigma starts with an opportunity and then does whatever is needed to achieve that dramatic improvement. The opportunity is related to the profitability up front so the visibility of the profitability is not lost."

Morris says Peterson Spring is utilizing a Lean philosophy. "Every year we have objectives to meet to reduce our costs internally, and we work with our suppliers to reduce their costs. Lean is the biggest contributor in saving money anywhere. You're looking at your efficiencies, you're looking at your scrap and you're looking at your purchasing power. You're looking at everything internally in your organization."

Even simply following the guidelines for becoming ISO 9000 2000 certified is a quality-enhancement measure, says Betts. "It keeps people within boundaries. People have the tools right there and understand the parameters of what they need to do. The team members in your company know what they need to do to be successful. You don't have to go out there and say, 'Hey, you're not supposed to do this, and you're not supposed to do that.' A lot of people think ISO is burdensome and a lot of bureaucracy. But it helps you run your business better by putting the systems in place."

According to Betts, if things don't change soon, most manufactured products are going to be made



overseas. “Many U.S. manufacturing jobs continue to move to low-labor-cost countries. Together, as springmakers, we have been struggling with this issue for years. How do we entice people into the industry? It’s a real problem.”

Competition from low-labor-cost countries, especially China, is having a major impact on the business. “With costs being driven down due to low-cost imports, attracting top talent into our industry continues to pose a problem. Will the playing field level out again? Can we find other competitive advantages? Can U.S. springmakers further diversify into other areas? Obviously, we are going to have to find some solutions if we are going to continue to manufacture in this country – not just springs, but just about anything that’s mechanical. It’s a serious problem,” says Betts. “Manufacturers have never faced this type of competition before. Countries like China don’t have the laws or the liability of running a business that we do. They don’t have our workers’ compensation costs, they don’t have our health care costs, and they don’t have our litigious society.”

No matter what the fates of economic forces, technological advances and who knows what other factors (including wars), the rules of the game will remain the same: The more adept companies will survive – despite the playing conditions.

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