

# Lean machine

[By Terril Yue Jones](#) Forbes Magazine March 8, 1999

The reflection hasn't always been a pretty one for Donnelly Corp., the world's largest manufacturer of automobile mirrors, when it looked at itself over the past 15 years or so. In fact it had found a good way to smear that image: bring in a series of Japanese-inspired consultants, give them free rein -- and don't pay attention to what they're doing.

Things got so chaotic that on more than one occasion Donnelly had to charter planes to make its frequently late deliveries. "It was drowning in waste," says Art Smalley, a former Toyota manager hired in 1996 to help develop a manufacturing strategy based on the vaunted Toyota Production System. Factory floors were so cluttered that a company car once got lost amid the debris and was reported stolen.

In short, Donnelly became, from the 1980s through the mid-1990s, the gang that couldn't shoot straight. "You'll fall in love with them, and they'll break your heart," Honda officials told James Womack, a former MIT professor and co-author of *The Machine that Changed the World*, the 1990 landmark book on lean production. Earnest intentions and hard working employees only led from one disappointing experiment to another.

"Like Sunday shoppers, they've gone through years and years of chasing basically every management fashion," says John Shook, director of lean manufacturing programs at the University of Michigan's Japan Technology Management Program.

Having lost much of its business with No. 1 customer General Motors, and faced with the same prospect with Honda and Toyota, Donnelly finally got religion in 1996. No more piecemeal, half-cocked consulting ideas.

From top to bottom it instituted a lean production system borrowed from Toyota. Yes, it's another trendy strategy. But it seems to be working.

Defects have plummeted, morale among employees has surged and earnings are improving. The lesson: The most heralded factory systems won't work unless managers keep a tight watch.

Donnelly has 95% of the North American market for rearview mirrors.

Based in Holland, in western Michigan, Donnelly also produces fixed windows, interior lights, door handles and overhead consoles. This now-94-year-old firm was greatly admired for giving employees wide latitude in decision-making. But starting in the early 1980s production quality slipped in the face of intensifying Japanese competition. Thus began Donnelly's shaky experiments with changing its factory floor.

The first experiment, beginning in the late-1980s, instituted a General Motors program called "GM Synchronous." The idea was meant to ensure that materials flowed smoothly through plants. Good idea, except that Donnelly failed to supervise it, so that parts of the plants followed it and others didn't. Blown deadlines and defects remained high.

Enter Honda, which wasn't too pleased with Donnelly's nagging quality problems either. Donnelly shook up manufacturing again, introducing a Honda system known as "best practices." The outcome was less than best: Paint jobs on the backs of mirrors too often cracked and bubbled.

In the early 1990s Donnelly instituted yet another dandy plan: "empowering" work teams and encouraging them to work independently to arrive at creative solutions to problems. A fine notion, but the result was chaos. Workers on one paint shift would adjust the machines to increase their yield -- only to foul up the strict quality controls required for all three shifts. "With standardized work, that's absolutely verboten," recalls Chief Executive J. Dwane Baumgardner.

"You're not supposed to twiddle the knobs yourself."

Finally, three years ago, Baumgardner brought on Smalley and Russ Scaffede from Toyota. What they found was "a pretty traumatized organization" and "extremely skeptical workers," says Scaffede, the 49-year-old senior vice president of global manufacturing.

They also saw plants (Donnelly has 15) dotted with conflicting workplace strategies. So the pair devised a company wide plan, implementing methods they had learned working with Toyota's powertrain operations. They set about establishing "standardized work," or clear standards so that best processes are identically repeated to ensure quality. Straight assembly lines were changed to U-shaped areas to save space and require fewer people to do the same operation.

This time around, everything is monitored and documented. Big matrix boards vividly follow the progress of each team's defects or lost work time. Says Jim Brodie, manager of two factories in Holland: "If it's important we make it visible."

Donnelly's 5,500 workers still have the freedom to suggest changes, but they can't implement them on their own yet. One example: After viewing a videotape of their injection-mold workstation, a group of four employees devised a way to get the job done with only two. These are nonunion plants, so there were no work rules to prevent the productivity gain.

The changes are beginning to show. Baumgardner says profit for the second half of fiscal 1999, which ends June 30, will exceed analysts' projections of 65 cents per share. Sales for fiscal 1999 are estimated to be more than \$800 million, surpassing the previous year's \$763 million.

Prior to 1996, defective parts soared to 5,000 parts per million.

Since then, defects fell from an average 1,290 PPM to 92 PPM in 1998; Scaffede's gold standard is 10 PPM which he hopes to achieve by 2002.

Strong performance in North America will compensate for continuing losses at Donnelly's European mirror and window operations. Now Donnelly is setting its sights on its European operations, which lost around \$4.7 million last year, and has sent Scaffede to Germany for a couple of years to work his miracles there.

To expand its global reach while there were still players to acquire, Donnelly purchased Germany's troubled Hohe GmbH & Co. in 1995. Based in Collenberg and Dorfprozelten, Hohe was Europe's largest exterior auto mirror supplier. Around the same time Donnelly's Irish operations in Dublin and Manorhampton came under heavy pricing pressure from Asian mirror producers. Losses in Germany and Ireland, 75% of Donnelly's European business, dragged down global earnings to a \$2 million loss in the first quarter.

Donnelly is closing one of Hohe's two main plants and consolidating production in the other. It also plans to sell off unrelated German divisions that electroplate coffee pots, irons and other products.

Unions -- which don't exist in Donnelly's American plants -- remain a barrier.

In Germany, "they're not an adversarial type of union, but it's not always easy to make the changes we think are necessary. It takes a lot longer than we'd like," Baumgardner says.

Scaffede is now training an entire generation of European managers and workers in lean production from scratch. "They're probably just as willing to understand we have big problems, but they don't even understand the term 'lean,'" he says.

Not all of Europe is shaky. Smaller Donnelly operations, such as mirror production in Spain and a window factory in France, are making money. Now if Scaffede can bring about the miracles on European operations that he and Smalley have in the U.S., Donnelly will soon see its darkest days receding in its rearview mirror.