Special Report: Manufacturing in Mexico Lean Strategies, Production Efficiencies Get a Foothold

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Efficient production methods are slow to be accepted in Mexico, but surveys show that progress is being made.

The application of the so-called "Toyota Production System" began in America several years ago. It all started when the American automotive industry, in an effort to survive, decided to adopt the system developed by the Japanese. Naturally it had to be renamed, and the term Lean Manufacturing was chosen, meaning: more strength, less weight; more muscle, less fat.

Although the application of this kind of discipline was not immediately generalized, now, globalization and progress in information systems have contributed to speeding up the process. Consequently, these disciplines are used with increasing frequency in Mexico. According to a survey of 32 Manufactura plant-manager readers during April, 88% reported that personnel training processes have been conducted in both maintenance and quality control.

Not surprisingly, the percentage in this limited study is higher than what is found in more broad-based surveys. According to the National Education, Training and Employment Survey, for example, which is jointly conducted by the National Statistics, Geography and Information Institute (INEGI) and the Ministry of Labor, only 36% of all manufacturing workers (1.5 million out of the 4.2 million total) took training courses in 1999. It is a cause for concern that in many cases, the training is superficial and that more than half of this group received less than 50 hours per year. The same survey shows that courses associated with maintenance and repair were taken by 430,000 workers, but half of this group accumulated less than 50 hours in the year.

In Mexico, it is still necessary to make a huge effort to promote lean manufacturing practices. In the Manufactura survey, only 40% claimed to be aware of the concept, though the majority knew of its disciplines: 44% knew about Total Productive Maintenance (TPM); 78% knew about quality administration; 60% applied repetitive-fault analysis; 28% conducted exchange analysis, and 50% had developed or were developing process engineering.

The survey uncovered varying levels of progress nationwide:

&#149 16% of participants use production cells 100%

&#149 9.4% of the participants fully apply TPM

&#149 3.1% have completed the application of fast set-up

&#149 3.1% fully operate the just-in-time process; 28% have implemented just-in-time to a level of 70%

&#149 3.1% use kaizen procedures for waste reduction

&#149 More than half (52%) of those who implemented an efficiency procedure say they recovered their investment in two years or less. Savings were as high as 40% in some cases.

Progress in action

The sugar industry. Mexico's sugar industry, which dates to the 1500s, has applied the basic strategies of autonomous maintenance, the core of TPM, for hundreds of years. This activity has followed an interesting pattern, given the natural production cycle governed by the cultivation and harvesting of sugar cane.
Sugar mills offer a good example of total resource exploitation, because everything related to the cane - the juice, fiber and impurities (earth attached to the sugarcane) - is used. During production months, sugar-mill personnel are engaged in either production or maintenance. When production ends, followed by a deserved rest period, all personnel concentrate on repair procedures. These consist of a careful check of all bearings, bushes, turbines, pumps, engines, valves, pipes, boilers, filters, evaporators, electric installations and other systems.
During the repair period, all workers receive in-depth knowledge of the equipment. During the production stage, they are frequently involved in checking the same machinery. This makes then feel like the owners of the equipment, and they often propose and effect improvements in their areas. Skilled engineers work shoulder to shoulder with workers from the most diverse academic and social backgrounds in order to improve the conditions of the plant every year. There is a common factor in all sugar mills: harmonious coexistence and the enthusiastic collaboration of all, irrespective of their hierarchical positions.
Electrical-parts manufacturer. A small company that manufacturers electrical parts in Tijuana suffered from high monthly rate of personnel turnover, as is common in the region. The 25-worker factory would lose six or more employees each month, due largely to the fact that they had no sense of loyalty to the company, and would just as easily work for one company as another. Despite concerns that training efforts might not result in improved loyalty, the company decided to implement TPM in a high-activity pilot cell. One week later, the workers were proud of their cell, their names and photographs were on the information board, together with reports on their performance. After five months, personnel turnover had been significantly reduced. Instead of losing six workers per month, the company lost only five workers over five months, two of whom were to return.
Truck assembly plant. A truck assembly plant in Cuautitlan, State of Mexico, implemented an automated and simplified setup process that permitted considerable savings in time and unnecessary maneuvering in the airtight testing system. Previously, it had been necessary to test all vehicles of one type, and then make changes to adjust the equipment to a new type. This was done three or four times a day, representing the work of two mechanics for at least 15 minutes each time. The problem was solved with the implementation of the Single Minute Exchange of Dies (SMED) concept. Vehicles are now tested as they roll off the assembly line, and the equipment is adjusted in just a few seconds, whatever the mix of vehicles in production. The savings can be measured in thousands of dollars per month. The investment made to achieve this paid for itself in less than two months.
Electronic parts manufacturer. In Monterrey, a plant manufacturing electronic parts was operating deficiently because a fault in one of the vibrator devices that loads minute electronic parts on special frames. The defect meant that the frames were entering the process loaded to 85% of their capacity, or less. When the operator was asked why the pieces were not being loaded correctly, she said the vibrator

was not properly adjusted, but she did not know how to fix it. The plant manager found an expert who could adjust the vibrator, but instead of asking him to adjust it, he asked him to give the operator a detailed explanation of how to do it. The adjustment was so simple that it took no longer than three minutes to learn. The operator was then able to teach the process to other operators. The immediate direct savings could be counted on many fronts: the many hours operators would spend going to look for an expert; the expert's time to come and adjust the device; and the half-empty frames which led to a performance well below the possible 99%.
Unfortunately, many Mexican companies continue to operate with conventional processes and poor performance that is accepted as normal. Some of them are even considered successful. Consequently, they do not understand the importance of making changes. As the economy changes even more dramatically, however, it is evident that more companies in Mexico and in other Latin American nations are showing increased interest in managerial and production trends that will help them compete more effectively in the global marketplace.
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