



## Reduce costs and increased output.

- Reduced work-in-progress by 90% and saving \$1 million.
- Reduced total production space by 54%.
- Reduced lot sizes, which minimized rework and inventory risks.
- New layout increased employee awareness of any system problems, which enabled a faster response time.
- The company achieved a successful transition of employees from Sunnyvale to their new Diamond Springs facility.

*“With any fast growing company, employees are taxed handling day-to-day issues and it is hard to get around to projects of this magnitude. As a third party, the TEiM coaches helped pull the project together and increase participation of internal staff. The coach’s knowledge of how to set up world class manufacturing was invaluable and it was a pleasure to work with the TEiM coaches. Endwave reduced work-in-progress 90% and reduced the time to produce a unit by 56%.”*

*–Art Arrington, Director of Manufacturing*

### About the Company

Endwave Corporation, headquartered in Sunnyvale, was formed by the merger of Endgate and TRW Milliwave in 2000. Endwave is a leading supplier of radio frequency (RF) subsystems that enable the transmission and reception of data signals in broadband wireless systems for voice, data and video communications. Endwave’s major customers include Nokia Networks, DMC Stratex and Allgon AB.

### Challenge

In order to reduce operating costs and optimize their automated manufacturing capabilities, Endwave undertook consolidation of their manufacturing facilities by moving Bay Area operations to Diamond Springs, near Sacramento.

In addition, customer demand was increasing, putting additional pressure on existing production lines. In Endwave’s original facility, the volume manufacturing area was not designed with the flexibility to foster continuous improvement. It was difficult to improve product flow by fully integrating assembly and test operations because of the constraints of the older building.

## **Solution**

Endwave had previously worked with the coaches at TEiM on several projects, including modifying production lines to incorporate “Lean” or “World Class Manufacturing” techniques. Those projects were successful in increasing productivity and convinced Endwave to consider setting up its new production facility based upon modern lean manufacturing practices.

The goal of the project was to design the layout of the new building to optimize production. To achieve this goal, the TEiM coaches worked with Endwave employees to identify all process steps and times for every operation in the old facility. Next, they inventoried all the equipment and determined what was crucial in each workspace.

The product flow and overall manufacturing process at the old facility was captured using value stream mapping. After analysis of the data a new value stream map was created which redesigned the manufacturing process in the new building to achieve maximum productivity. This process “rationalized” every aspect of the production area to optimize efficiency.

A critical element in the success of this project was Endwave’s commitment to using World Class Manufacturing techniques. This required the company to move from manufacturing in batches to producing a “single piece flow.” The TEiM coaches also helped Endwave develop a visual inventory control system known as a “Kanban,” which prevents a build up of Work-in-Progress (WIP) and alerts the stores that materials are required.

In addition to redesigning the appearance of the facility, employees had to learn how to work effectively in the new environment. All of the employees participated in World Class Manufacturing training, including the management team.

“Our yield improved when employees learned how to watch for weak spots in the production flow and then troubleshoot to root cause,” says Art Arrington, Director of Manufacturing. “Morale is high because employees are actively involved in refining the manufacturing process.”