Trinity Case Study

Integrating two facilities: Technically and culturally

Combining lean thinking and organizational change techniques provided a powerful and effective approach to this company's merger woes. In three months they went from worst to first in almost all performance measures.

Company Profile

This specialty chemical manufacturing company produces about four million pounds of finished material per year, with annual sales of $37 million. Its product lines include one and two-part epoxies and resins, used in aerospace, electronics and other extremely demanding applications. Products are made in 8,600 batches per year, varying from a few gallons to a few thousand gallons per batch. It employs 90 non-union people in one shift in a single 100-year old facility.

The Business Challenge

Over its 50 year history, this company had been acquired, merged and divested enough times to have lost sense of its original product lines and culture. With its latest acquisition, two manufacturing sites were merged physically into one with the other site closed. Though this resulted in the desired operational cost savings initially, it also caused significant confusion and disorganization – enough to reduce productivity and morale, and increase safety, quality and delivery problems. Over time, these issues became significant enough to eat away the cost savings and erode customer confidence, endangering the business' long-term profitability.

Trinity's Approach

Trinity's consultants found a disorganized, dirty facility filled with skilled but frustrated employees. The recent merger had moved all of the material and equipment into the new building but hadn't organized it into an integrated production system. Trinity consultants felt that to be successful quickly and to "earn the right" to make longer-term changes, the improvement activities had to begin with whatever was causing the most frustration among the most employees. This meant the initial improvement activities would be identified, prioritized and accomplished by the employees. Though much of the management team was skeptical at first, the facility's general manager was an active supporter and participant throughout the process. Trinity worked with plant management, operators and support department to develop and implement a four-phase improvement plan:

Phase 1: Understand and commit to change. Trinity met with groups of managers, professional staff, administrators and operators over the course of a week to discuss their situation, explain Lean manufacturing and develop the topic for the Phase 2 meeting: "What would Lean manufacturing look like here and where should we start?"

Phase 2: Trinity conducted its Search! workshop to assess current capabilities and agree on the initial steps. Trinity facilitated a two-day, cross-functional meeting of 40

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employees that identified a steering committee and 12 initial projects. Trinity was asked to assist with three of these projects: 1) Organize the finished goods warehouse (to speed up filling orders), 2) Organize one of the production areas (to improve operator productivity), and 3) Reduce the order entry leadtime (to gain production time and reduce late shipments).

Trinity applied the Lean techniques of muda-reduction, visual management and "5S" to organize the finished goods warehouse. We taught "5S", cell design and the concept of takt time and balanced work to help organize the production area. And we taught process mapping and the concepts of "muda" and "internal customers" to reduce the order entry leadtime. These projects were completed within 10 days of the agreement meeting.

Phase 3: Establish a foundation and deploy work teams. Because of the fast pace of change, the second cross-functional meeting was held only 30 days after the initial meeting to report results and identify the second round of projects. The steering committee decided to launch a 5S project in every department in the facility and to further explore Lean – especially "pull scheduling" — in a second production site. Trinity was asked to assist with three projects: 1) developing a "focused factory" with pull scheduling, 2) developing a "self-managed work team;" and 3) developing internal, "5S" facilitators. These projects were completed in two months.

Phase 4: Expand on the foundation. Driven by the plant manager and managed by the steering committee (with very little involvement from Trinity):

- "5S" has been implemented throughout the facility. It has reduced office space, lab space and warehouse space to make way for additional production equipment. The "5S" concepts were also used to trim the product line from over 3,000 products to 1,800.
- Initial experiences were used to plan and implement a new Lean production area and self-managed work team. This area represents the prototype for all future production.
- Lean requirements for suppliers have been negotiated into agreements where small, frequent shipments and consignment inventories are the norm.
- The facility has a yearly improvement plan that specifies projects to be conducted and their expected results.

Resources and Results

After 29 consulting days from Trinity and 11 improvement projects over three years, the plant achieved the following results:

Measurable	Project Start	3 Years Later
Safety, Health & Environmental:		
OSHA Recordables	11/year	0/year
Hazardous waste produced	7,675 lbs./year	2,900 lbs./year
Quality:		
Batches right first time	89%	96.4%
Customer issues per million	400	150
Productivity:		
Batches per operator per year	154	238
Number of operators	48	44
Delivery:		
On time in full shipments	92%	97.4%
Order to delivery leadtime	15 days	5 days
Financial:		
Working capital as a % of sales	21.3%	6.9%
Inventory turns	4.5	16.9