



Improving productivity in SMEs through lean manufacturing practices: the cluster approach

There are 48 million SMEs in India contributing to 45% of industrial output and 40% of exports, while creating 1.3 million jobs every year. This is bound to increase with the rapid economic growth envisaged for the country. The government intends to utilize this potential and make India a major manufacturing hub of the world. With this objective, the national manufacturing policy was developed by the government with a corresponding program called the National Manufacturing Competitiveness Programme. The program has 10 distinct schemes for improving productivity, quality, design, energy efficiency, etc. in SMEs. One scheme is the Lean Manufacturing (LM) Competitiveness Scheme, for which the National Productivity Council (NPC) of India has been made the implementing agency.

The scheme involves a cluster approach in which eight to 10 units interested in participating in the scheme form a "special purpose vehicle (SPV)." The NPC has empanelled qualified, experienced consultants on LM exclusively for this scheme. The SPV selects a consultant from the list based on suitability and competence. The government pays 80% of the consultant's fee, with the remaining 20% paid by the units. The selected consultant first carries out a diagnostic study of each unit and obtains the baseline data on quality, delivery times, productivity, machine utilization, customer complaints, housekeeping, inventory, etc. The consultant then prioritizes

the areas to be tackled and prepares an action plan giving details of LM techniques to be deployed for each area, relevant training required, and the targeted result over a timeline. This action plan is reviewed by each unit's management and the NPC and becomes the basic document for the project. The consultant then undertakes training and consultancy in implementing LM techniques following the action plan. The project continues for one to one and one-half years during which the consultant oversees four separate projects under which LM techniques are applied. The NPC carries out periodic audits to assess the status and progress. If the action plan is followed successfully, the NPC releases the consultant's fee.

As a pilot project, the scheme was initially applied in 100 clusters starting in 2010. After an extensive campaign, 112 SPVs were formed covering 25 sectors. A sample case study from one unit that implemented LM practices is given below.

Case study: 5S implementation in M/s Berry's Auto Ancillaries (P) Ltd.

M/s Berry's Auto is a manufacturer of auto components located in the Uttar Pradesh State Industrial Development Corporation Industrial Area, Amausi district, Lucknow. The company is owned by Mohit Suri, has been in existence since 1975, and is ISO 9001 certified. The major customer is TATA Motors. It employs 65 in six departments. The owner volunteered to

participate in the LM scheme to improve the manufacturing capability of the unit, with the following rationale: "When I heard about the Lean Manufacturing Competitiveness Scheme of the Ministry of SMEs, I immediately opted to participate because many of my customers are implementing this concept and as part of their vendors' development, they were also encouraging me to adopt lean practices. The scheme came to us at a very appropriate time."

Problem identification: The LM consultant identified 5S as the starting point for Berry's Auto in the diagnostic study report. It was noted that baseline housekeeping was poor and the 5S score was only 20%. Some observations were: awareness of 5S was lacking and no institutional mechanism was in place to practice it; the shopfloor was cluttered with material; materials were not arranged in an orderly fashion; machine layout was not efficient; and there were unnecessary movements of material.

Methodology: As a first step, a 5S organization was established led by the plant head, with leaders and facilitators in each department. The plant area was divided into 33 zones. Training in 5S along with 5S audit methodology was provided to all employees. A 5S project schedule was prepared to implement various components of 5S along with 5S audit methodology over a 10-month period. All employees were encouraged to give suggestions on improving housekeeping. Useful ones were recorded on a kaizen idea sheet for documentation and replication. Such suggestions were received from all zones, and housekeeping improved throughout the plant.

Results achieved/benefits: The company achieved four main tangible results: 1) the 5S score increased from 20% to 80%; 2) 115 m² of space was saved; 3) annual savings of US\$9,250 were achieved; and 4) cash flow increased by US\$6,740 through reductions in inventory.

The tangible results of the overall pilot project are summarized in Table 1. A compendium of select case studies from the pilot scheme is available on the NPC website (www.npcindia.net).

Some of the qualitative benefits derived by the units participating in the pilot project were: capacity building among employees; opportunities to identify and solve problems; fostering teamwork; delegation of work/improvement initiatives; development of platforms for creativity and innovation; improved work environment; increased customer confidence; building a competitive spirit through internal and external benchmarking; and improved work culture and attitude. The critical success factors for implementing LM in SMEs were identified as:

- Commitment of owners/top management;
- Valuing long-term vision over short-term gains;

Table 1. Results of overall pilot project.

No. of clusters attempting LM	89
No. of clusters successfully adopting LM	62
No. of SMEs (sectors) in the project	900 (25)
Annual savings from LM	US\$9.52 million
Salvage value of scrap from 5S activities	US\$0.47 million
Increase in production capacity without capital expenditure	20%
Space reclaimed for productive work	10%
Reduction in inventory	25%
Reduction in manufacturing lead time	5–30%
Improvement in overall equipment effectiveness (model machines)	15%
No. of kaizen activities generated	>7,500

- Commitment to customers;
- Delegation from owners/entrepreneurs to employees;
- Competence and performance of LM consultants;
- Strict adherence to schedules;
- Proactive role of nodal officers;
- Effective monitoring by implementing agency;
- Taking an action-oriented approach to make visible improvements; and
- Effective training of employees.

Based on the success of the pilot project, the scheme has been scaled up to cover 500 clusters in the next four years.

A congratulatory function was organized for the best-performing units and consultants during the visit of APO Secretary-General Mari Amano to the NPC on 20 April 2015. During his remarks, he appreciated the efforts of the NPC in taking productivity initiatives to the vast SME sector in India. 🌐



M.L. Suryaprakash was previously the Deputy Director General of the NPC, India. He had over 31 years of experience in the field of productivity in various capacities at different NPC locations. His fields of expertise include industrial engineering, quality management, business excellence, etc., in which he has carried out over 150 consultancy assignments and training programs. His final position in the NPC was head of the National Monitoring & Implementation Unit for the Lean Manufacturing Competitiveness Scheme of the Government of India.