ABSTRACT

Worldwide industries are using various tools and techniques like Total Productive Maintenance (TPM), Total Quality Management (TQM), Lean Manufacturing (LM) and Quality Systems like ISO 9000. All these are used towards improvement in productivity, quality, efficiency and reduction in cost and time and elimination of wastes.

During the implementation of LM, TPM, TQM and Quality Systems many tools are being used. Many of these tools are used in isolation.

Though many studies were carried out on the above areas, in this research, the studies were made focusing on the industries situated in Chennai, South India.

Initially, a study was carried out about the impact of TPM on the increase in Overall Equipment Effectiveness (OEE) and productivity in an Engineering Industry, which is situated in Chennai, South India, which produces hydraulic brakes and clutch actuation systems for both automotive and other applications.

Failure Mode and Effects Analysis (FMEA) was performed for the friction welding process used in the manufacture of Engine Valves at an
industry which is one of the leading manufacturers of Engine Valves at Chennai, South India.

Since Lean Manufacturing (LM) is one of the current manufacturing themes which has gained wide importance and applications, the next part of the research was on Lean Manufacturing. Lean manufacturing studies were carried out for the sections of seat belt assembly and rack and housing assembly for steering system at two industries which are situated near Chennai, South India.

During the course of the above studies it was realised that certain tools like FMEA and Quality Function Deployment (QFD) have certain things in common and an attempt was made to combine or fuse these two tools which may be called as QFD compatible FMEA (QFDCFMEA) and was applied to one of the components at an industry situated in Chennai, South India.

Implementation of LM needs certain steps to be carried out and some of these steps are also repeated for the implementation of ISO 9001 quality system. Hence an attempt was made to create a new model to integrate these two systems which may be called as Lean compatible ISO 9001 system or Lean compatible quality management system (LCQMS). This attempt makes Lean Manufacturing concept Leaner as the main objective of Lean Manufacturing is elimination of wasteful activities.