

Submitted for recognition as an American National Standard

Identification and Measurement of Best Practice in Implementation of Lean Operation

1. **Scope**—SAE J4000 is a tool to identify and measure best practice in the implementation of lean operation in a manufacturing organization. Implementation of lean operation is defined as the process of eliminating waste exhibited in an organization's value stream. Best practice in this process is Level 3 conduct as described in the standard's component statements. A description of the levels of implementation is:

Level 0 The component is not in place at all or there are major inconsistencies in implementation.

Level 1 The component is in place but there are minor inconsistencies in implementation.

Level 2 The component is fully in place and effectively implemented.

Level 3 The component is fully in place, effectively implemented and exhibits improvement in execution over the past 12 months.

A procedure for evaluation and scoring of each component will be included in the SAE J4001 Implementation of Lean Operation User Manual.

2. **References**

- 2.1 **Applicable Publication**—The following publication forms a part of this specification to the extent specified herein. Unless otherwise indicated, the latest version of SAE publications shall apply.

2.1.1 SAE PUBLICATION—Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096-0001.

SAE J4001—Implementation of Lean Operation User Manual

- 2.2 **Related Publications**—The following publications are provided for information purposes only and are not a required part of this document.

2.2.1 SAE PUBLICATION—Available from SAE 400 Commonwealth Drive, Warrendale, PA 15096-0001.

SAE AS9000 Aerospace Standard

2.2.2 ISO PUBLICATION—Available from ANSI, 11 West 42nd Street, New York, NY 10036-8002.

ISO 9001:1994, Section 4 Quality System Standard

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2.2.3 OTHER PUBLICATIONS

The Toyota Production System, International Public Affairs Division and Operations Management Consulting Division, Toyota Motor Corporation; Copyright Toyota Motor Corporation, 1992
KANBAN Just-in-Time at Toyota, Management Begins at the Workplace, Edited by Japan Management Association, English translation; Copyright Productivity Press, 1989
Industrial Engineering Handbook, H.B. Maynard, Editor-in-Chief, Copyright McGraw-Hill, 1963
LEAN ENTERPRISE MODEL (Top Level Architecture), Version 1.0; Copyright Massachusetts Institute of Technology, 1997

3. Each component statement is associated with one of six implementation elements:

- Element 4 Management/Trust
- Element 5 People
- Element 6 Information
- Element 7 Supplier/Organization/Customer Chain
- Element 8 Product
- Element 9 Process/Flow

Each component weighs equally. An element's relative importance to successful organizational lean implementation is reflected in the number of component statements testing that element.

4. **Management/Trust**

- 4.1 Continuous progress in implementing lean operating methods is the organization's primary tool in pursuing its strategic objectives.
- 4.2 Structured policy deployment techniques are used to plan the organization's lean deployment actions.
- 4.3 Lean progress targets are defined and have been effectively communicated.
- 4.4 Knowledge of the philosophy and mechanics of lean operation has been obtained and effectively communicated.
- 4.5 The organization's senior managers are actively leading the deployment of lean practices.
- 4.6 Lean progress is reviewed by senior management against planned targets on a regular basis.
- 4.7 Meaningful incentives that reward organizational lean progress are in place.
- 4.8 Individual managers' performance is evaluated and rewarded relative to lean progress.
- 4.9 A non-blaming, performance oriented, process-driven organizational atmosphere exists.
- 4.10 There is regular, direct personal involvement by senior managers with the operating workforce concerning lean practices.
- 4.11 Consistent policy for disposition of individuals made surplus by lean progress is in place and followed.

4.12 No employee has reason to perceive their livelihood to be jeopardized by contributing to organizational lean progress.

4.13 Management has chosen to adhere to lean principles in the face of short term operating objectives inconsistent with lean progress.

5. People

5.1 Adequate training resources are provided and paid employee training time is made available.

5.2 The training syllabus includes training in the lean-specific tools and measurables suitable to the organization's needs, at all levels within the organization.

5.3 Training is conducted as scheduled, records of training are kept and training effectiveness is regularly evaluated.

5.4 Organization is structured to correspond to the structure and sequence of the value chain through the enterprise.

5.5 Each employee participates in the structure as corresponds to his work role.

5.6 Labor and employment policies and agreements are in place which allow lean progress within the organization.

5.7 Team authority level and accountability level is clearly defined.

5.8 Employee development through Quality Circles/Continuous Improvement teams is encouraged and supported at all levels.

5.9 Team is accountable for continuous improvement in its segment of the value chain.

5.10 Team decision-making authority and authority to act corresponds to the level of team accountability.

5.11 Management does not supersede team decisions and actions when within the team's authority.

5.12 Management supports team decisions and actions with required resources, consistent with good business practices.

6. Information

6.1 Adequate and accurate operating data and information is available to members of the organization as needed.

6.2 Knowledge is shared across the organization.

6.3 Data collection and its use are the responsibility of the individuals most closely associated with that part of the process.

6.4 The operating financial system is structured to present correctly the results of lean progress.

7. Supplier/Organization/Customer Chain

- 7.1 Both suppliers and customers participate at the earliest possible stage in the organization's undertaking of a product/process/project.
- 7.2 Both suppliers and customers are appropriately represented on the organization's product/process/project teams.
- 7.3 Both suppliers and customers participate in regular reviews of product/process/project progress.
- 7.4 Effective incentives for supplier, organization and customer are in place that reward shared performance improvements or cost reductions.

8. Product

- 8.1 Product and process design is conducted by fully integrated teams with team representation by all stakeholders.
- 8.2 Cost, performance and attribute specifications for product and process are unambiguous, measurable and agreed to by all stakeholders.
- 8.3 Product and process design is conducted from a life-cycle systems approach, fully adhering to DFM/DFA principles and consistent with lean principles.
- 8.4 Product design and process capability parameters are set to be as robust as possible, consistent with good business practice.
- 8.5 Provision is made for continuity of team knowledge for duration of product/process launch.
- 8.6 Lead times for product and process design are measured and being continually shortened.

9. Process/Flow

- 9.1 The work environment is clean, well organized and audited regularly against standardized 5S practices.
- 9.2 An effective planned preventive maintenance system is in place with the appropriate maintenance conducted at the prescribed frequencies for all equipment.
- 9.3 Bills of material are accurately catalogued and standard operations are accurately routed, timed, and have been value engineered.
- 9.4 Value stream is fully mapped and products are physically segregated into like-process streams.
- 9.5 Production sequence is load-smoothed to customer pull, and demand is leveled over the manufacturing planning period.
- 9.6 Process flow is controlled by visual means, internal to the process.
- 9.7 Process is in statistical control with capability requirements being met and process variability continually reduced.
- 9.8 Preventive action, using a disciplined problem solving method, is taken and documented in each instance of product or process nonconformance.