



LEAN MANAGEMENT ACADEMY

The Lean University

by L&M Consulting

Driving World-Class Operational Excellence based on
Automotive Standards & Best Practices of Lean Management

- ◆ **LEAN Learning** / Knowledge & Expertise / Editable Training Presentations / 16 Modules
- ◆ LEAN Tools & Techniques for Process Improvement / (*MS Excel*)
- ◆ Standard Work / Templates / Forms / Charts

The LEAN University / Outline

Knowledge & Expertise / Editable Training Presentations / 16 Modules

LEAN & MEAN
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World-Class Standards & Best Practices of Operational Excellence

LEAN Management Academy

Training Program / Knowledge Transfer

No.	Training Presentation	Session duration
01	Lean Thinking. Lean Philosophy & Culture. LEAN Simulation: LEAN Factory	1/2 Days
02	Lean Value Stream Mapping & Analysis	1/2 Days
03	Kanban Pull Flow System	1 Day
04	Production Control & Logistics. Material Flow Organization	1/2 Days
05	Production Leveling. Creating Continuous Flow	1/2 Days
06	5S and Safety. For High Workplace Productivity	1 Day
07	Visual Management. Visual Controls, Metrics and Displays	1 Day
08	Kaizen. The Continuous Improvement Way	1 Day
09	Standard Operations. Standard Work & Process of Standardization	1 Day
10	Improving OEE. Eliminate Losses, Optimize Capacity	1 Day
11	TPM. Strategy for Effective & Productive Maintenance	1 Day
12	Autonomous Maintenance for Operators	1 Day
13	SMED. Quick Setup Method + SMED Simulation Game.	1 Day
14	8 Types of Waste. Identifying & Eliminating MUDA	1 Day
15	Problem Solving. PDCA, 5WHYs, Ishikawa, Pareto, Histogram, etc.	1 Day
16	Lean Leaders. Management & Leadership System for Lean Company	1 Day



Lean Thinking

Lean Culture & Philosophy

Including Lean Simulation Game: LEAN Factory

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Module 1. Lean Thinking / Introduction to Lean Culture and Philosophy. Lean Simulation Game

Description:

Lean Thinking is a passionate belief that there is always a simpler better way! Since Lean is a management philosophy aimed at eliminating everything that does not bring value from customer point of view, we focus on value stream as a primary work unit looking for continuous improvement. Lean Thinking constitutes a huge paradigm shift. Breaking through to sustainable change in the way we think, we behave and we work is the key to success. How to approach it you will learn from the LEAN Thinking sessions.

LEAN Factory Simulation Game. This is the best way of implementing a LEAN Philosophy and Culture. This is a universal game, entirely reflecting real life production conditions by offering a lot of fun. The simulation includes such processes like planning, manufacturing process, changeovers, materials flows, warehouse, shipping, supplier & customer issues, etc. The primary objective of the game is to lead a seamless transformation from a traditionally managed company to a LEAN factory. As a result of developing solutions for improvement and implementing LEAN techniques, participants will be directed towards the main goals of the game: achieving a 100% customer satisfaction and making the company “rightsized” to obtain operational profitability.

Recommended audience:

Every member of the organization, from C-level to team leaders and operators since ultimately everyone should participate in the system.

Methodology:

Multimedia presentation, short lectures, individual exercises, group activities and discussions and Q&A . Simulation and game exercises!

Learning Objectives:

- „Eyes opening” session. Why do we need Lean? How to switch to Lean Thinking?
- Explain the benefits of being Lean and how Lean improves business performance.
- Define value and waste.
- Define the critical success factors in sustaining a Lean culture.

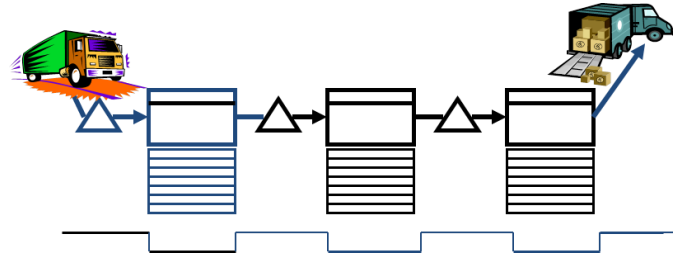
Program Outline:

Lean Thinking (2-3 hours).

- Understanding Lean Philosophy
- Becoming Lean Thinker
- Lean Principles and Approach to Creating Customer Value

LEAN Simulation Game (5-6 hours):

- 15 active game participants. More can participate as alternative observers.
- In four rounds you will lead the organization to Lean Factory.
- Using Lean Thinking and all Lean tools & techniques you will run brainstorming and implement solutions to achieve the objectives.
- You will learn and practice such Lean techniques as Kanban Pull Flow, Continuous Flow, SMED, Process Balancing, Process & Organization Streamlining, Reducing Waste
- You will measure all KPI after each round, incl. Customer service rate, WIP inventory level, unit cost, productivity and profitability!



Lean Value Stream (VSM)

Mapping & Analysis

Creating End Vision and Roadmaps for Driving OpEx

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Module 2.

Lean Value Stream / Mapping & Analysis / Tools & Method Creating End Vision & Roadmaps for Driving OpEx

Description:

“Whenever there is a product (or service) for a customer, there is a value stream. The challenge lies in seeing it.”

VSM is probably one of the most underestimated Lean tools. In fact, we could say it's a waste not to use it. VSM ties together all Lean concepts and techniques. It makes it easier to visualize and truly understand the process at multiple level. Providing a common language for process analysis it enables us to see the flow and the sources of waste, which is crucial for succeeding in Lean transformation.

This workshop provides a step-by-step instruction to help participants create current state and future state value stream map. It identifies opportunities to achieve a future state that has the greatest impacts on the business as well as customer value. You will learn how to create the end vision which is the baseline for developing Roadmaps for achieving ultimate success.

The true value is understanding the necessity of making maps. This is not only 'art for art's sake'. There is much to gain, and VSM leads us directly towards the goal.

Recommended audience:

Lean champions, continuous improvement specialists and managers, Middle level management, supervisors, Lean practitioners and staff

Methodology:

Multimedia presentation, short lectures, individual exercises, group activities and discussions and Q&A

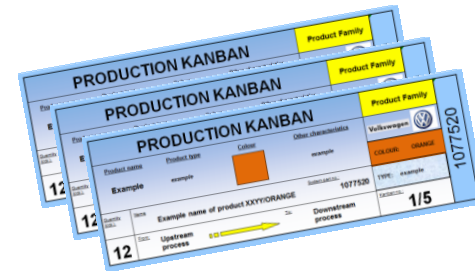
Learning Objectives:

LEAN Value Streams (1-2 days).

- Review of the concepts, techniques and tools of Lean Management.
- Understanding of the waste and identification of its sources.
- Identification of the Value Stream in business.
- Step-by-step approach towards value stream visualization (Current State and Future State Maps)
- Evaluation of the added value and waste
- How to make use of VSM for planning improvement actions (Continuous Improvement)
- Determining the Roadmaps (strategies of implementation)
- Determining the Implementation Plan and the resources for its accomplishment

Tools / Templates / Methods:

- **Creating VSM Maps.** A template for creating the VSM maps containing basic symbols, shapes and instructions for the step-by-step actions, incl. examples of the maps.
- **Product Family Selection Matrix.** The selection of families is essential, because the VSM map covers just one product family. This template is included in the presentation.



Kanban Pull Flow

**Sizing Kanban Loop & Shop-stocks / Setting System
& Daily Operational Management**

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Module 03.

Kanban Pull Flow System / Sizing Kanban Loops & Shopstocks Setting Daily Operations & Management System

Description:

Theoretically **Kanban System** is a set of simple rules to follow: to produce or provide only what customer wants and when he wants it. This rule requires to have right information at right time. That is exactly the function of Kanban to control and manage the information flow.

In practice, setting the **Pull Flow System** that works really effectively is a challenge. One of the main reasons companies fail is they find it difficult to adjust to the principles of Kanban. The knowledge of the system is generally not a problem. There are also many other good practices available in the market... So what is missing and preventing us from succeeding.

Our experience shows that, in most cases, companies are missing the right tools and the appropriate approach to effectively manage them. The right tool means to possess the capability to easily adjust the system to fluctuating demand. The right approach means to follow Kanban philosophy and to be very consistent and... patient!

This module of the LEAN Academy, apart from expertise provides the necessary tools and templates to successfully launch the Kanban System. The package offers a comfortable work experience and expected satisfaction while using the system every day.

Recommended Audience:

Lean Leaders, Production and Logistics management and operations staff

Methodology:

Multimedia presentation, short lectures, individual exercises, group activities and discussions and Q&A

Learning Objectives:

Kanban Pull Flow System (1 day).

- Review of the existing knowledge about the Kanban Pull Flow system.
- Understanding the operational principles of the Pull Flow System within the production (Production Kanban) and material flow (Transportation Kanban)
- The function of the Waiting Queue in the Production Kanban.
- Principles of sizing the supermarket or shop-stocks
- Learning about a Sequencer, or Heijunka
- Visual management in the Pull Flow system.
- Presentation of the Kanban Toolkit.

Tools / Templates / Methods:

- **Calculation of the loop size in the Production Instruction Kanban.**
A complete tool in MS Excel spreadsheet to establish the Pull Flow system between two processes. The tool calculates the right number of cards (or signals) in the loop per each part number which is covered by Kanban system. This is an advanced data base to adjust easily the size of Kanban loops to the changing production conditions, especially taking into consideration the variability and fluctuations in the customer forecast and demand.
- **OPTION: A tool for printing the Kanban cards.**



Production Control & Logistics

**Material Flow Management & Organization /
Production Planning Strategy (PC&L)**

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Module 4.

Production Control & Logistics / Material Flow Management Production Planning Strategy (PC&L)

Description:

Logistics and material flow management have been an age-old issue in driving operational improvement. Compared with manufacturing, there are not too many tools that could be effectively used. On the other hand, there are many proven models, standards and best practices, 'baptized by fire', which is the topic of this part of the LEAN Academy.

A particular place in the 'logistic challenge' is taken by Production Control, or production planning. Nowadays, companies are faced with high variability in customer demand and are requested to be highly responsive to any changes that may happen at any time. This often causes tremendous cost to the organization. Because of this the expectations to control production resources and ensure stable production are continuously growing.

In this module we will become familiar, amongst other things with the rules of production. Levelling to secure optimum planning and utilization of manufacturing resources over a defined period. Thereafter, creating the MPS: Master Production Schedule – a short term (weeks) tactical and operating plan Followed by the S&OP: Sales & Operations Plan which is the medium-term (months) strategic plan to drive all the manufacturing resources to be used as effectively as possible.

Recommended Audience:

Logistic and Production management staff, schedulers, LEAN leaders.

Methodology:

Multimedia presentation, short lectures, individual exercises, group activities and discussions and Q&A

Learning Objectives:

Production Control & Logistics (1 day).

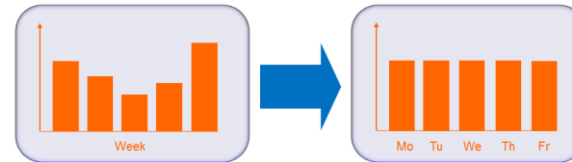
- Why is understanding of the Logistics function and role so important?
- Getting to know the best practices in the field of material flow: from the inbound area, through supplying the production line, to the outbound area (TPA).
- Production line feeding system and internal transport by small train
- How Kanban system supports the overall material flow organization (incl. Sequencer / Heijunka)
- MPS and S&OP in the planning and production control strategies
- Supply management optimization, incl. "Milk-run" instruction
- Standardization and continuous improvement of the PC&L processes.

Tools / Templates / Methods:

• Sales & Operations Plan.

An example of a template that reflects most typical approach to planning in a medium-term time horizon (6-12 months). It covers the section of volumes and calendar as well as the critical resources and income forecast which may be juxtaposed with the budget.

This template is very helpful to level production volumes and becomes a baseline for setting the Master Production Schedule.



Production Leveling

And Creating Continuous Flow

OPTION: How SAP System supports Leveling in MPS and S&OP

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Module 5. Production Leveling / Creating Continuous Flow / How SAP system can support leveling in MPS and S&OP

Description:

Why **Production Levelling**? Good planning and following the production schedule are not enough. Certainly not. Unless the customer's demand is always stable, repeatable, fully predictable and not variable. Such a case is rare. In most cases, customers provide variable forecasts and orders with many changes in not just volumes but in the product mix. In addition, another negative factor may be the seasonal character of the demand...

Levelling is aimed at building a production schedule which – in the longest possible time horizon - will guarantee the optimum utilization of production resources, especially people and available machines. Production does not like variability, simply because it makes painful losses in productivity. It can also result in both quality deterioration and difficulty in resource planning. Thus, levelling equals production stability.

This part of LEAN Academy will also tell us that production levelling means not only levelling of the volumes, but also levelling of mix, people and flows (4 aspects). We will also learn how to transmit a levelled plan to the production lines in a way which will secure the effectiveness of both production and logistics processes.

Recommended Audience:

Schedulers, planners, Logistics and Production staff, Lean Leaders. Optionally finance ,controlling and the Plant Management.

Methodology:

Multimedia presentation, short lectures, individual exercises, group activities and discussions and Q&A

Learning Objectives:

Production Leveling & Creating Continuous Flow (1-2 days).

- Why is Leveling so important at the production planning?
- Characteristics of “unleveled” production
- What do we level? Learning the 4 aspects of leveling.
- Practical examples of the production resources leveling.
- Takt-Time vs. the principles of leveling
- How to create the MPS and the S&OP plan.

COMMENTS!

- **Do we use the SAP system within the organization? An expanded version of this module contains a detailed description of transactions and applications of the SAP's basic functionalities (not customized!) for supporting leveling, both MPS and S&OP.**
- **OPTION: deployment of the SAP system for supporting the leveling process!**

Tools / Templates / Methods:

- **Process Analysis.** A standard chart for work measurements and analysis
- **OBC (Operator Balance Chart) or Yamazumi Chart.** Operator Balance Chart in relation to the Takt-Time and Target Cycle Time
- **Machine Balancing.** Effective machine cycle time calculations and machine effectiveness in relation to Takt-Time.



5S & Safety

Promoting High Workplace Safety & Productivity

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Module 6. 5S and Safety / Promoting High Workplace Safety and Productivity / 5S Formal System

Description:

5S is just about the best known and applicable LEAN tool. No wonder, because the methodology is not complex and excellent effects are obtainable within a short time. Nevertheless, there is a fundamental problem in sustainability which means maintaining daily regular and routine 5S actions (the problem is related to the 5th 'S'). As usual, in such cases failings are internal discipline and problems with setting priorities.

Before proceeding to “soft “ people related improvement methods, let us make sure that we have all the indispensable system elements. Simple and user-friendly standardized forms of 5S Area Audit, Routine Checklist, definition of Levels of Achievement, Communication Zone / Board and other Standard-Work-related issues. All of this is offered in this part of the LEAN Academy.

5S also stands for Safety at Work. Each Standard Template includes a safety issue to be taken into consideration. 5S is not just a cleaning! We need to keep in mind that this is a formal and structured system aimed at improving the productivity of our jobs. Therefore, everybody participates in the system!

Recommended Audience:

Leaders, managers and LEAN specialists and wider admin staff within the organization.

Methodology:

Multimedia presentation, short lectures, individual exercises, group activities and discussions and Q&A

Learning Objectives:

5S and Safety (1 day).

- Understanding the benefits from the work in clean, well-organized and safe workplaces
- 5S + Safety in basic steps, everything what is needed for successful implementation or improvement of the actually working system.
- Focusing on typical problems, which cause constraints on the effectiveness of the system.
- Getting to know the Standard Work in the 5S system, templates, documents and methods of the visual management.
- Full methodology of the 5S system, step-by-step implementation instructions
- Visualization and Communication
- Solving problems through the 5S effectiveness.

Tools / Templates / Methods:

- **Standard 5S + Safety Audit Questionnaire**
- **Routine Checklist for the Operators / Office/ 5S Areas**
- **5S Levels of Achievement (World-class)**
- **Levels of Achievement Audit**
- **5S Red Tag**



LEAN MANAGEMENT ACADEMY



Visual Management

Visual Controls, Displays & Metrics

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Module 7. Visual Management / Visual Control / Metrics / Displays / Visual Communication

Description:

We believe that **Visual Management** really works when visiting a factory or company you can immediately get most or at least some top priority information, without asking or exploring the sources of the information. At a glance, all defined information is visible and updated. This is the ideal case of the Visual Factory standard.

Why is this so important? Well, because we want to know how we operate, whether we are on or behind schedule and whether the work standards are respected or not. We need to know the actual status of operations under performance, production progress (schedule), quality situation, safety level etc. What for? To be able to react in real time, fast and effectively before it is too late and a potential loss has become reality.

At this stage of the LEAN Academy we will become familiar with types of **Visual Management**, with division into areas related to the information displayed on an ongoing basis (Andon) or as a summary of a day – **Visual Controls**. Indicators, charts and graphs displaying a trend or progress in the plan / assignments – **Visual Metrics**. The elements related to visual transmission of information (e.g. vertical, horizontal markings, instructions, zoning, posters, boards etc.) – **Visual Displays**.

Recommended Audience:

Leaders, managers and LEAN specialists and wider admin staff within the organization.

Methodology:

Multimedia presentation, short lectures, individual exercises, group activities and discussions and Q&A

Learning Objectives:

Visual Management (1 day).

- Understanding how Visual Management promotes the safety and „Zero“ accidents and incidents policy
- Understanding that Visual Management is an integral part of the LEAN transformation and Continuous Improvement
- Learning the methods of instant information transmission – visually. Just one look and the status is instantly known.
- Acquisition of knowledge and practice in obtaining stabilization of the processes, reduction of volatility and fluctuations in the processes and achieving increased efficiency.
- Learning to respond to visual signals in real time, here and now, before it is too late.

Tools / Templates / Methods:

- **One-Point-Lesson**. A standard one-page template for a description of a reference solution to the problem so that it has become the standard for all, or a problem description given to be displayed for everybody to see so that it can be avoided and not duplicated.
- **A3 Storyboard**. A visual tool for solving problems using a visual approach to the methodology of PDCA. A very effective transfer of good practices and an effective tool for solving complicated and complex problems.



LEAN MANAGEMENT ACADEMY



Kaizen

**The Continuous Improvement Way /
Philosophy & Management System**

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Module 8. KAIZEN / The Continuous Improvement Way / Philosophy & Management System

Description:

Kaizen is commonly known as a philosophy of continuous improvement. However, it is not so commonly known that a philosophy may be effective only within a formal and well-organized system. Kaizen approach refers to many LEAN concepts and techniques. All of them, when working together within the frames of a formal system, will bring the desired results of waste reduction and effective problem solving.

Kaizen involves everybody in the Company. Its philosophy is like a friendly spirit enveloping the entire organization. Kaizen assumes that the final result of all improvement is a sum of numerous, small steps resulting from strong involvement of the entire staff, especially of the operators and their leaders. Mature Kaizen attitude means to react when seeing waste, to open the mind and bring ideas of how to proceed rather than explaining why things cannot be done. If we continue to follow that philosophy, Kaizen will root well in the way we think, work and behave. It will become our second nature, which will lead to unconscious competence in driving improvements.

In this module of LEAN Academy we will learn on how to master this uneasy skill and have our organization develop efficiently the idea of Continuous Improvement!

Recommended Audience:

Leaders, managers and LEAN specialists and wider admin staff within the organization.

Methodology:

Multimedia presentation, short lectures, individual exercises, group activities and discussions and Q&A

Learning Objectives:

Kaizen: The Continuous Improvement Way (1 day).

- Understanding the most important concepts in the Kaizen philosophy.
- How to make Kaizen become an effective way to eliminate waste and to solve the problems
- Kaizen as a system and standards of continuous improvement.
- Definition of the Kaizen teams and methodology of their actions
- What is the Kaizen Event (Blitz) workshop? Methodology of planning and conducting effectively organized workshops to improve or solve complex problems.

Tools / Templates / Methods:

- **PSD 8D Complete Tool-Set.** A complex problem solving tool including A3 Storyboard, Ishikawa Diagram, 5 Why's and 8 Disciplines . In a very visual way the PSD tool helps manage solving any problem, especially those related to quality management.
- **5 Why's Template.** A simple but effective tool to run the exercise of 5 Whys that is essential to identify root causes of any problem that has been previously depicted. It works well with Problem Solving, PDCA, and while creating FMEA.



LEAN MANAGEMENT ACADEMY

STANDARD

Standard Operations

Standard Work & Process of Standardization



M O T I V E S

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Module 9. Standard Operations / Standard Work / Process of Standardization

Description:

Each work or process is strictly defined as to content, sequence, time and expected outcome. Therefore, this is a ground for creating a formal **Standard Work** practice which defines the best, easiest and safest method of doing work. Standards constitute the benchmark for work evaluation, inspection and diagnosis. Process of standardization should ultimately lead to satisfy the customer's requirements (stake of satisfaction).

Standards are standards. Are factual, simple and clear. They cannot be flexible, nobody can interpret and/or modify them or 'take shortcuts' at his discretion. If there are better methods for executing the same work, they must be first checked, confirmed, described and formally implemented as a new and streamlined standard.

In such a way we create good practices for Standard Work. Why is it so important to standardize operations? In order to give basis for maintaining current levels and development. To constitute a basis for training to achieve a targeted level of multi-skilling, to guarantee the process stabilization, prevent mistakes and minimize variability. Finally, to preserve knowledge and competence.

In this part of LEAN Academy we will learn about all steps required to create Standard Work Practices and/or to improve already existing ones.

Recommended Audience:

Leaders, managers and LEAN specialists and wider admin staff within the organization.

Methodology:

Multimedia presentation, short lectures, individual exercises, group activities and discussions and Q&A

Learning Objectives:

Standard Operations / Standard Work / Standardization (1 day).

- Understanding how important work standardization is in the LEAN-type production system.
- Getting to know the method of creating the standards for continuous productivity improvement (Operational Standard) and effectiveness of the management (Management Standards)
- How standardization helps maintain stability at the level of the process and quality
- What the common mistakes are that accompany the creation of work standards.
- Presentation of the best practices of the Standard Work on an example of the automotive industry.

Tools / Templates / Methods:

Effective tools and templates for creating the Standard Work and continuation of the Standardization Process:

- **Standard Process Capacity Table.**
- **Standard Work Instruction**
- **Standard Work Combination Table**
- **Standard Work Chart.**



LEAN MANAGEMENT ACADEMY



Improving OEE

Eliminate Losses, Optimize Capacity

Enhance Operating at Cost-Effective Rates



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Module 10. Improving OEE / Eliminating Losses / Reducing Cost / Enhancing Operating at Cost Effective Rates

Description:

OEE - Overall Equipment Effectiveness – illustrates the level of productivity of machinery and production lines; it is also a determinant for real production potential (capacity). It is expressed in % where a 100% OEE should be understood as a non-stop production status, without any stoppage or downtime, setups and breakdowns, micro-stoppages and speed losses, with no need of maintenance and without any quality defects. Actually, a 100% OEE is simply not possible because... such machinery has not been invented yet.

In module 10 of the LEAN Academy we will become acquainted with all indispensable details required for appropriate understanding of OEE rules and its components: Availability, Performance and Quality. If correctly calculated, the OEE index provides a lot of valuable data. First of all, **how ineffectively** the machine is operated and what exactly causes productivity losses (**NON-OEE**). We will learn the factors that cause losses in Availability and Performance. The NON-OEE findings will allow us to target with more accuracy our actions for improvement. This will help to eliminate or reduce such losses. Consequently this will help make the OEE productivity improve. This module also provides a powerful tool to track OEE.

Recommended Audience:

C-Level, Production management staff, leaders, managers and LEAN specialists and wider management staff.

Methodology:

Multimedia presentation, short lectures, individual exercises, group activities and discussions and Q&A

Learning Objectives:

Improving OEE / Eliminate Losses / Reduce Cost (1 day).

- Understanding the basic concepts and philosophy of TPM, whose the most important KPI is the OEE.
- Learning the OEE calculation methods and the ways of implementation.
- Explanation how the OEE gives the picture of the waste levels in the process and how it affects the plant capacity and output.
- Learning the methodology and the approach to the OEE improvement
- How to make use of the OEE for planning the production performance
- What is the influence of the OEE on the financial results aspect.

Tools / Templates / Methods:

- **OEE Calculations and Reporting Systems.** It is a complete and ready-made tool to start measuring OEE and its key elements: Availability, Performance and Quality. The tool provides an easy way to keep statistics and graphs, so that we can analyze the trend for each of the OEE components. An excellent tool for management and analysis.
- **OEE Tracking Board.** An example of a visual management tool to track OEE results, actual Availability, Performance and Quality status as well as the key types of losses, e.g. breakdowns, setups, planned and unplanned breaks, etc. An excellent tool for daily management meetings.



TPM

Strategy for Effective and Productive Maintenance



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Module 11. TPM – Total Productive Maintenance / Strategy for Effective and Productive Plant Maintenance

Description:

TPM is a long term strategy aimed at ensuring the maximum availability and reliability of machines and production equipment. Since availability is the key factor influencing the productivity level (OEE), we need to track production running time to capture all losses caused by breakdowns, setups, planned and unplanned maintenance, programmed breaks and any organizational issues, e.g. idling reasons. If the measurement of these losses is accurate, we can finally calculate the level of micro-stoppages and speed losses which affect Performance – the second element of the OEE calculation method.

Effective **TPM** maintenance strategy is focused on preventing breakdowns, micro-stoppages and speed losses. The key element, apart from Autonomous Maintenance, is to set Planned Maintenance to prevent machine failures and breakdowns. This will result in Focused Improvement to reduce micro-stoppages and losses that effect efficiencies.

Module 11 of Academy presents the complete **TPM** strategy and its components in a friendly way. In particular, we will learn about the new role for maintenance technicians and production operators (AM, referred to in Module 12)

TPM is also a philosophy and way of thinking concentrated upon the general rule of preventing instead of reacting to a problem.

Recommended Audience:

Production and Maintenance management staff, Leaders, managers and LEAN specialists and wider management staff.

Methodology:

Multimedia presentation, short lectures, individual exercises, group activities and discussions and Q&A

Learning Objectives:

TPM. Strategy for effective and Productive Maintenance (1 day).

- Review of the strategy and philosophy of TPM.
- How TPM interacts with the 5S and the Kaizen system.
- Understanding the TPM tools so as to constructively identify the types of losses and take steps to effectively eliminate them.
- Setting Planned Maintenance, Predictive Maintenance and Focus Improvement activities. Training and Education Plan for operators.
- Understanding the methodology of the TPM implementation.
- Review of the TPM indicators, e.g. OEE, MTBF, MMTR and others.

Tools / Templates / Methods:

- Calculating **MTBF** together with **MTTR** and **MTTF**. It's a smart Excel tool in one file that supports production and maintenance with tracking all the indicators as well as printing the charts. In a very visual and user friendly way this tool ensures a high quality data for the management.
- **TPM One-Point-Lesson**. A standard template of the Good Practices Chart in relation to the TPM. Increases the efficiency of eliminating waste and of the training of the production personnel.



LEAN MANAGEMENT ACADEMY



Autonomous Maintenance

**Best Practices and Operational Standards for
Operators**

World-Class Standards & Best Practices of Operational Excellence



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Module 12. Autonomous Maintenance for Operators

Description:

Autonomous Maintenance (AM) is dedicated to Operators. It is a great idea of TPM strategy to make operators directly involved in improving machines availability and enhancing TPM overall efficiency. Since “Total” means the involvement of all and everybody in a continuous improvement and waste elimination (MUDA), the role of Maintenance evolves from reactive to preventive, and most of the daily inspections are shifted to operators.

In short, a new definition of the roles in Maintenance means that technicians and engineers focus on preventive & predictive maintenance, while production operators do the autonomous maintenance. Technicians are obliged to deal with breakdowns and restore the production, while operators are involved in eliminating micro-stoppages. Since both parties know well their machinery and equipment, the list of AM activities should arise from their common experience.

Finally, operators need to be well trained and then they can be provided with checklists to perform the tasks assigned.

This module of LEAN Academy will tell us that there are two levels of AM: level 1 – routine checks, and level 2 – specific actions e.g. lubrication, replacement of parts, cleaning etc.

Recommended Audience:

Production and Maintenance management staff, Leaders, managers and LEAN specialists and wider management staff.

Methodology:

Multimedia presentation, short lectures, individual exercises, group activities and discussions and Q&A

Learning Objectives:

Autonomous Maintenance for Operators (1 day).

- Understanding the TPM’s concept of the division of roles in the Machinery and Equipment Maintenance.
- What the Autonomous Maintenance is and what the role of the production operators is.
- 7 standard steps to implement the AM at the production.
- AM levels and creating the checklists of the actions to be done.
- How the AM cooperates with the 5S on the operational level.
- The AM best practices for the Operators: the tools of visual management.

Tools / Templates / Methods:

AM Standard Templates for the Operators

- **Standard Routine Inspection, Cleaning and Lubrication Checklist.** A visual template for creating the instructions for the Operators related to regular inspection, cleaning and lubrication operations.
- **AM Standard Checklist for the Operators.** An example of a typical checklist for confirming the execution of certain actions by the operators and production leaders.



LEAN MANAGEMENT ACADEMY

SMED



Quick Setups Methodology

Including an Excellent SMED Simulation Game



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Module 13. SMED / Quick Setup Methodology / SMED Simulation Game: Breaking-through to Dramatic Setup Time Reduction

Description:

SMED as a quick setups methodology is nowadays widely used in LEAN environments. Methodology is not complex, well described, and many good practices are commonly available.

What does Module 13 separate from the rest of the pack?

Obviously, full SMED methodology in a user- friendly topical form and concise presentation. First of all, providing an excellent **SMED Simulation Game**. Its primary objective is breaking through to achieving a dramatic reduction of the overall setup time. A breakthrough takes place by changing the way of perceiving the setup process, especially the way to set targets.

The simulation gets started with a typical procedure of breaking the process down to internal and external operations. Through all of the three rounds of the game, participants are directed to go beyond the borders of typical reasoning to discover the true potential of **SMED** and find ways to achieve a dramatic improvement. The pioneering element is to set the objectives which at first sight may seem unreal, but they will become entirely feasible after an appropriate 'resetting' to the SMED approach.

SMED simulation include two identical sets for two teams to compete. It works perfectly!

Recommended Audience:

Process engineers, leaders, managers and LEAN specialists, Production leaders and wider management staff.

Methodology:

Concise presentation, short lectures, individual exercises, group activities and discussions and Q&A. **Simulation Game!**

Learning Objectives:

SMED / Quick Setup Methodology / Simulation Game (1 day).

- Learning the SMED concept: principles and aims of the method.
- Why reduction / optimization of the setup times is critical for the Availability component in the OEE productivity?
- How do we convert internal operations into external? And how to optimize the total time of the setup.
- SEMD Workshop, principles for the effective streamlining and standardizing of the process of changeover.
- A SMED Simulation Game: A breakthrough in the reduction of the setup time.

Tools / Templates / Methods:

- **SMED Simulation Game.** A very impressive and effective stimulation of making a breakthrough in the reduction of the total duration time of the setup. Two 3-person teams competing with each other are intended to discover a SMED method leading to a dramatic reduction of the time.
- **SMED Standard Work Combination Table.** An example of a typical standard in defining the operations (actions) to be performed during the setup, their sequence and duration. Necessary for the training of the production personnel.
- **SMED Standard Setup Reduction Worksheet.** Used during the SMED workshop.



8 Types of Waste

Identifying & Eliminating **MUDA**

Module 14. 8 Types of Waste / Enhancing Skills of Identifying & Eliminating MUDA

Description:

As early as in the 1950s, Taichii Ohno (Toyota Motor Company) identified and described in detail 7 Main Types of Waste (Japanese word: **MUDA**). In LEAN methodology, yet another type of waste appeared in the 1990s, which is unused Human Intellect, or the human potential for streamlining.

What purpose did Toyota pursue? By labelling each type of ineffectiveness and identification of places where they can be hidden. This resulted in an opportunity for taking up effective and system-based actions to fight MUDA. Examples of waste, perfectly described, typical places in which it may occur and its evident consequences. This causes rising awareness among both the management and direct labor, obviously on condition that all are appropriately trained in this field.

Module 14 of LEAN Academy provides an excellent opportunity to use this awareness to improve the skills of effective identifying well-hidden **MUDA**. Identifying its sources and understanding why it gets rooted so easily in our processes. This knowledge is absolutely indispensable for implementing effective methods of loss elimination as well as for improving the quality of standards and discipline.

Recommended Audience:

Leaders, managers and LEAN specialists, Process Engineers and wider management staff.

Methodology:

Multimedia presentation, short lectures, individual exercises, group activities and discussions and Q&A

Learning Objectives:

8 Types of Waste / Identifying and Eliminating MUDA (1 day).

- Presentation of the definition what a loss and waste is.
- Detailed description of the 8 Types of Waste in the processes and management.
- Definition of added value, what does not add value and the operations that do not add value, but which are necessary.
- How waste is getting rooted in our processes?
- How to eliminate the waste effectively? (MUDA Hunting!)
- Getting to know the methods of prevention loss and waste generation.

Tools / Templates / Methods:

- **MUDA Identification Template.** An example of a checklist for identification of the different types of waste during Kaizen workshops or during a Brainstorming session. It is also an excellent exercise for everyone to identify waste, with which they come into contact every day. (*this template is included in presentation*)



LEAN MANAGEMENT ACADEMY



Problem Solving

Techniques & Tools

PDCA, A3, 5WHYs, FTA, etc.

World-Class Standards & Best Practices of Operational Excellence



Module 15. Problem Solving / Approach to Effective Solving Problems / PDCA / 5WHYS / Ishikawa Diagram / Pareto Diagram

Description:

The skill of **Problem Solving**, both in a group and individually, is absolutely indispensable in each and every organization, especially in a “Learning LEAN Organization”. This is the essence of Kaizen philosophy and the drive for Continuous Improvement.

Effective problem solving is an art which can be mastered through training in methodology, analytical and reasoning skills. However, first of all, by active participating in Problem Solving Groups. Although the sense of a need for solving problems is incontestable, the question is how effective we are in this field?

Basically, there can be two kinds of approaches to problem solving. A typical common sense approach using reasoning skills and the so-called ‘scientific’ one which also is known as the PDCA cycle. In both approaches we should have been supported by useful tools and proven methodologies on how to proceed.

In this module of LEAN Academy we will learn about how to reconcile both PDCA and common sense approaches. This will result in the Problem Solving Groups being successful. We will also meet all the necessary tools to make the problem solving assignments more likely to succeed.

Recommended Audience:

Leaders, managers and LEAN specialists, Process Engineers and wider management staff.

Methodology:

Multimedia presentation, short lectures, individual exercises, group activities and discussions and Q&A

Learning Objectives:

Problem Solving (1 day).

- Presentation of the principles and main concepts of the Problem Solving.
- Understanding the PDCA methodology, a step-by-step instruction how to ensure success in problem solving.
- Boards and A3 sheets (A3 Storyboard)
- Roles and tasks of the Problem Solving Teams / Groups
- Why the problem solving actions are not always effective? 10 typical mistakes made by the Problem Solving Teams
- Key success factors in problem solving.

Tools / Templates / Methods:

- **A3 Storyboard.** A visual tool for solving problems using a visual approach to the methodology of PDCA. A very effective transfer of good practices and an effective tool for solving complicated and complex problems.
- **PSD 8D Complete Tool-Set.** A complex problem solving tool including A3 Storyboard, Ishikawa Diagram, 5 Why’s and 8 Disciplines . In a very visual way the PSD tool helps manage solving any problem, especially those related to quality management.
- **5 Why’s Template.** A simple but effective tool to run the exercise of 5 Whys that is essential to identify root causes of any problem that has been previously depicted. It works well with Problem Solving, PDCA, and while creating FMEA.



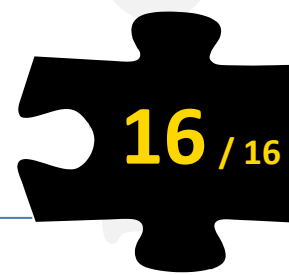
LEAN MANAGEMENT ACADEMY



Lean Leadership

& Management System For Lean Leaders

World-Class Standards & Best Practices of Operational Excellence



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Module 16. LEAN Leadership & Management System / Leader Standard Work

Description:

Most organizations driving towards LEAN Operational Excellence focus on the identification of waste, losses and any ineffectiveness. Once identified they move on to their elimination by using a full range of LEAN tools and techniques. However, many companies either lack or underrate the **LEAN Management and Leadership System**.

An incontestable fact is that a true LEAN Culture Organization actually originates from the solid and healthy foundations of the LEAN Management System. Only those organizations which can create capable leaders and follow LEAN Thinking in their management system will reap their benefits and succeed.

In the last part of the LEAN Academy, we will get to know about 4 fundamental pillars of the LEAN Management System. We will see that LEAN leaders ought to standardize their work based upon defined actions with hallmarks of Standard Work (at least 60-70 % of time). We will learn about visual tools to support Leaders in their assignments (KPIs, graphs, charts, Activity Boards etc.). Additionally we will see an approach to a **Leader's Daily Accountability** to lead daily meetings on the shop floor. These should include briefings and reports and finally involvement in Problem Solving. Eventually, we will learn about a few best practices related to creating discipline in leadership and management.

Recommended Audience:

LEAN leaders, Top Management, middle management, key specialists.

Methodology:

Multimedia presentation, short lectures, individual exercises, group activities and discussions and Q&A

Learning Objectives:

Lean Leadership & Management System (1 day).

- Understanding how important is the Management System and Leadership Standards in the long-term success strategy.
- 4 Pillars of the LEAN Management System
- Leader Standard Work
- Visual Management in the LEAN Leadership System
- Creating LEAN Leaders Daily Accountability
- How to promote functioning of the right discipline within LEAN Leadership and Management.

Tools / Templates / Methods:

- **Leader Standard Work**. An example of a standard template for defining the scope of standard work activities for LEAN leaders (mainly designed for production, but also other operational departments). This template covers best practices of the LSW for team leaders, supervisors, production managers as well as for the plant managers.