

## LEAN BLACK BELT - LEARNING WORKSHOPS

### 1. Introduction

The lean black belt is a full-time lean programme facilitator within the organisation. His/her role, in consultation with plant management, includes the design and development of a lean programme that will fulfil or exceed the organisation's operational and strategic goals; the development and delivery of appropriate training programmes; the selection of personnel for training; the prioritisation of problems to be resolved by the training; and the mentoring of lean personnel during lean programme implementation. He/she is also actively involved in leading process improvement projects.

### 2. Learning Objective and Deliverables

At the end of this workshop participants will be enabled to:

- develop a multifaceted lean programme that will fulfil organisation objectives
- implement a 5S lean foundation programme
- lead a team of process operators, administrators, team leads, supervisors and managers, in identifying, scoping and implementing robust solutions to problems
- implement robust solution to process problems in a planned fashion throughout the plant, in accordance with business goals
- train process operators, administrators, team leads, supervisors and managers, in problem solving techniques

Module	Topic	Duration	Content	Learning Objective: Following this workshop, participants will.....	Sample applications in the organisation
1.	5S	3 days	<ul style="list-style-type: none"> <li>• Sort, Set-in Order, Shine, Standardise, Sustain</li> <li>• Spaghetti mapping</li> <li>• 5S implementation</li> </ul>	..... be equipped to lead a 5S implementation in any area within the organisation, and will be knowledgeable on a range of sustaining mechanisms to ensure 5S becomes and remains embedded in people's behaviour.	<ul style="list-style-type: none"> <li>• The entire site, including production, offices, canteen, laboratory, services and external grounds.</li> </ul>
2.	Value Stream Mapping, Lean programme design and development	3 days	<ul style="list-style-type: none"> <li>• Business strategy &amp; the role of VSM,</li> <li>• Preparation, audience &amp; deliverables</li> <li>• Current &amp; future state mapping</li> <li>• The role of VSM in lean programme design</li> </ul>	.....have sufficient knowledge of the role of VSM and VSM tools to facilitate a 3-day VSM workshop; be able to derive a body of work (list of projects) to be completed over the coming year as part of the lean transformation effort, and will have agreed the priority of those projects with the management team. The workshop is facilitated using live company data. In addition participants will learn how to use the VSM activity as a launch pad for the lean transformation programme, and how to design an appropriate support structure for lean implementation in the organisation.	<ul style="list-style-type: none"> <li>• One key product in main production area</li> <li>• Customer and supplier communication processes, planning processes, database maintenance processes and manufacturing processes</li> <li>• Lean programme design applies to the whole organisation</li> </ul>

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3.	<b>Data Collection, Data Representation, Measurement System Analysis (MSA),</b>	2 days	<ul style="list-style-type: none"> <li>• Data collection</li> <li>• Data representation <ul style="list-style-type: none"> <li>○ Basic bar &amp; line charts</li> <li>○ Pareto</li> <li>○ Run charts</li> </ul> </li> <li>• MSA</li> <li>• Attribute &amp; gauge R&amp;R</li> <li>• Variable gauge R&amp;R</li> </ul>	.....know how identify what should be measured & why; how to set out & execute a data collection plan; how to represent data such that decisions can be made; how to determine if current measurements are appropriate for the task in hand; how to set-up appropriate process performance measurements in relevant areas; how measurement error contributes to invalid decisions; how to assess the validity of their measurement systems and establish systems that are robust & provide repeatable & reproducible data.	<ul style="list-style-type: none"> <li>• Process performance measurements on all lines &amp; major processes</li> </ul>
4.	<b>Poke Yoke, The Visual Workplace, Standard Work,</b>	2 days	<ul style="list-style-type: none"> <li>• Human response to problems</li> <li>• Poka Yoke exercise</li> <li>• Error Proofing (Poka Yoke)</li> <li>• Principles of form design</li> </ul>	..... be enabled to implement Poke-Yoke (error-proofing) methods such that recurring process problems are reduced or eliminated, and will understand the principles of good form design. A real organisation problem will be addressed in the course of the workshop.	<ul style="list-style-type: none"> <li>• Laboratory assay analysis</li> <li>• Weigh points</li> <li>• Data entry points</li> </ul>
5.	<b>Basic statistics, Statistical Process Control (SPC), Process Capability Analysis (PCA)</b>	2 days	<ul style="list-style-type: none"> <li>• Data populations</li> <li>• Histograms</li> <li>• Run charts</li> <li>• Basic control charts</li> <li>• Measures of deviation</li> <li>• Process capability analysis</li> </ul>	.....understand population statistics and measure of deviation such as sigma; will know how to establish appropriate control measurements for organisation processes; measure the capability of processes versus the required process performance parameters, and be able to demonstrate effective use of control charts and PCA to establish plans to address variation in selected processes.	<ul style="list-style-type: none"> <li>• All major product lines</li> <li>• All major transactional processes</li> </ul>
6.	<b>Team Building Change Management/</b>	1 day	<ul style="list-style-type: none"> <li>• Team leading &amp; membership</li> <li>• Change management</li> <li>• Communication &amp; motivation</li> </ul>	.....understand the dynamics of change; be enabled to anticipate potential resistance and bring about a positive attitude towards a changing environment; will understand the importance of clear and frequent communication, and will be able to develop a communication plan appropriate for the change process in hand.	<ul style="list-style-type: none"> <li>• All areas in the organisation where any type of job or process change is taking place</li> </ul>

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7.	<b>Take Time, Level loading, Pull (JIT) systems/</b>	2 days	<ul style="list-style-type: none"> <li>• Takt Time</li> <li>• Level loading</li> <li>• Implementation of JIT/pull systems</li> </ul>	.....understand the principle of takt time; have a clear understanding of demand vs. supply processes; be enabled to measure take time for the area; understand the importance of level scheduling and the consequences of lumpy scheduling; understand the contribution of pull systems to productivity and cost reduction, and be able to implement pull systems in their area.	<ul style="list-style-type: none"> <li>• Main manufacturing processes</li> <li>• Feeder processes in manufacturing</li> <li>• Paperwork flow processes</li> <li>• Lab supplies replenishment</li> </ul>
8.	<b>Design of Experiments (DOE)</b>	3 days	<ul style="list-style-type: none"> <li>• Intro to DOE</li> <li>• Identifying factors &amp; levels</li> <li>• Screening/interference</li> <li>• Full factorial experiments</li> <li>• Fractional factorial experiments</li> <li>• Interpreting results</li> </ul>	..... understand of the need for experimentation and different approaches to experimentation; be able to identify process parameters (factors) that influence customer critical to quality outputs; be enabled to use orthogonal arrays to minimise the amount of testing needed, and be enabled to establish process parameters settings that will provide optimal process yield for the product or process characteristic being reviewed.	<ul style="list-style-type: none"> <li>• Manufacturing processes with high levels of output variation</li> <li>• Laboratory tests with high levels of output variation</li> </ul>
9.	<b>Negotiation Skills</b>	1 day	<ul style="list-style-type: none"> <li>• Negotiation techniques</li> <li>• Bargaining positions</li> <li>• Dealing with breakdown</li> <li>• Win-win outcomes</li> </ul>	.....be enabled to persuade personnel to support project objectives, in particular to persuade personnel outside the organisation (e.g. suppliers and customers) of the need for change, and to participate willingly in change.	<ul style="list-style-type: none"> <li>• Situations where negotiation is likely to be necessary to ensure benefit to stakeholders</li> </ul>
10.	<b>Total Productive Maintenance</b>	1 day		.....will understand that in TPM routine maintenance tasks are carried out by the personnel operating the machine on a daily basis; will understand how the time and effort spent on maintenance is reduced; will understand how production time is optimised; staff safety is guaranteed, and equipment is maintained in constant good working order, in a TPM environment.	<ul style="list-style-type: none"> <li>• Any area of the plant using equipment and machines e.g. production floor and laboratory</li> </ul>
	<b>Total</b>	<b>20 days</b>			

**Lead Black Belt Certification:** Candidates who complete all 20 workshop days, and who complete predefined lean transformation work, will be eligible to apply for *lean black belt* certification.