

# Lean Maintenance and Lean Plant Management



## LEAN MAINTENANCE OVERVIEW

To compete in today's global economy & to increase profits, many factories are moving to "Lean Maintenance & Management for Lean Manufacturing". Others claim "lean" but hedge on the concept with hidden WIP inventories because they fear what they've seen in the past, when critical path machines go down for a "maintenance break." The underlying problem is equipment reliability & uptime /maintenance reliability. Lean Maintenance is a practical & most cost effective methodology that help you avoid malfunctions, failures, unscheduled downtime, scrap parts, re-work, missing delivery schedules, etc. & get the near 100% reliability, repeatability, yield & uptime needed to increase profits. It aims at protecting against the real causes of equipment downtime, not just their symptoms

## WHO SHOULD ATTEND THIS EVENT?

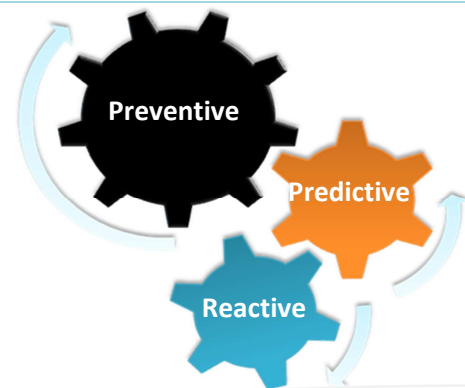
- ✓ Assets & Materials Management Managers
- ✓ Engineering Managers or Chief Engineers
- ✓ Electrical Engineers / Technicians
- ✓ Facility Maintenance Managers / Supervisors
- ✓ Maintenance Planners, Schedulers & Controllers
- ✓ Mechanics & Instrumentation Mechanics
- ✓ Millwrights / Craftsman / Tradesman /Artisans
- ✓ Operations, Maintenance & Production Directors
- ✓ Operations Managers, Maintenance Managers
- ✓ Plant / Site / Engineering Managers
- ✓ Project & Shutdown Managers / Leaders
- ✓ Project & Shutdown Planners / Coordinators
- ✓ Project System Engineers / Risk Managers
- ✓ Technical Service Manager/Foreman
- ✓ Reliability Engineers, Production

## WHY YOU SHOULD ATTEND?

- ✓ So as to realize that the machines & computers are productive employees of the company just as much employees as the humans. Each is paid a per hour wage based on their value to the companies' products & services. Usually the machine's wages are much higher than human wages. When they take a break, make a mistake, or take a day off, the company loses profits
- ✓ Circuit board failures, hydraulic system failures & other malfunctions are only symptoms, not the underlying cause of unscheduled equipment downtime
- ✓ This course is equally beneficial for all industrial sector which include Manufacturing, Continuous Process, Construction, Service Establishments, Engineering and Public or Governmental

## KEY BENEFITS FOR ATTENDING THIS EVENT INCLUDE THE ABILITY TO:

- ✓ Understand the basics of modern Maintenance & Plant Management, & the Lean Thinking philosophy, performance goals & critical success factors
- ✓ Understand the real reasons of failure of maintenance operations managed planned with a "traditional" style
- ✓ Trigger a different thinking mechanism suited to focus onto crucial issues of the planning process
- ✓ Use lean ideas to see maintenance works as "waste-less flow processes" & to think about improvement of the whole maintenance function
- ✓ Equip your toolbox with lean planning tools, tips & techniques
- ✓ Ensure Maintenance work of any size/scale is accomplished in time, within budget & with overall satisfaction
- ✓ Understand the difference between traditional Plant Management & Lean Plant/Assets Management
- ✓ To transmit lean concepts to your own people & to external parties such as maintenance sub-contractors
- ✓ Implement strategies to increase Plant Performance through lean-thinking people while assuring their job satisfaction



Find solutions to fill the gap  
determining what solutions you need

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## Description

Maintenance has been officially invented and structured as a plant management discipline over 60 years ago. Technically, it has gone through many and major changes: maintenance techniques have been improved, modified, widened and new maintenance techniques have been discovered over the last 2 decades. Organisationally, however, maintenance has only somewhat changed with the advent of Nakajima's TPM – Total Productive Maintenance. Today, maintenance is changing again. Today, we discover that "maintenance" does not always deliver what it promises: plant, machinery and equipment operating efficiently and effectively along their entire lifecycle and at the least possible total cost.

The signals are clear and well known: major breakdowns still materialise in spite of excellent preventive maintenance and even autonomous maintenance practices – minor breakdowns, minor stoppages, idling, reduced-capacity operation, quality defectiveness and other malfunctions are still present in the majority of factories and plants world-wide in spite of efforts and investments to reduce them considerably – maintenance costs are still too high for the level of competitiveness required nowadays – waste (of maintenance manpower, of materials, of operation time) is at un-acceptable levels – large maintenance works and yearly shut-down projects are seldom completed in time and within budget – outage maintenance often becomes panic management.

There is a common denominator to all signals above: inadequate project management and inadequate planning – that is, inadequate thinking. Most maintenance works – even routine, scheduled maintenance activities – ARE project works by their own nature and as such should be handled. However, project management practices are only dedicated (when it so happens!) to large-scale maintenance works and with doubtful effectiveness. Project Management and, even less, Lean Project Management, are hardly known to maintenance people at ALL levels. That's what is lacking. The real revolution in the maintenance world is taking place only now. Under the Lean Thinking philosophy, lean principles can and should be deployed also in maintenance activities and made known to all those concerned, including maintenance technicians and workers.

This course will be a shocking course for many of you. Because it demystifies all traditional principles of the first industrial revolution on which the majority of enterprises, still today, are built or around which they operate. By presenting in rather great detail the philosophy of the second industrial revolution applied to the maintenance world and the main tools and disciplines readily available to all enterprises to perform in an "excellent" status, this course is a door-opener to lean maintenance practices for whoever is: ready to listen to message – prepared to abandon obsolete principles, formulas and approaches – willing to get to "lean" status. By showing that "thinking" is what must change at all levels in the maintenance domain, this course will prove that higher levels of performance can be achieved if you create the right conditions.

## About the Facilitator

### Seminar Director:

#### **Dr Carlo Scodanibbio** (*Doctor Degree in Electrical Engineering*)

Dr Carlo Scodanibbio, born in Macerata, Italy in 1944, holds a doctor degree in Electrical Engineering from Politecnico di Milano in 1970. He has over 40 years of experience in Plant Engineering, Plant Management, Project Engineering and Project Management, as well as Industrial Engineering and Operations Management.

He has been an Independent Industrial Consultant and Human Resources Trainer since 1979 and has worked in a wide spectrum of companies and industries in many countries including Southern Africa, Italy, Cape Verde, Romania, Malta, Cyprus, Lebanon, Mauritius, Kenya, Saudi Arabia, Malaysia and India. His area of expertise lies in World-Class Performance for Small and Medium Enterprises in the Project, Manufacturing, and Services sectors.

He has co-operated, inter-alia, with several Italian Chambers of Commerce and Industry, the Cyprus Chamber of Commerce and Industry, the Cyprus Productivity Centre, the Malta Federation of Industry, the Mauritius Employers' Federation, the Romanian Paper Industry Association, the United Nations Industrial Development Organisation, the Federation of Kenya Employers and the University of Cape Town.

His courses and seminars, conducted in English, Italian and French, have been attended by over 15.000 Entrepreneurs, Managers, Supervisors and Employees. They feature a very high level of interaction, and are rich in simulations, exercising and real case studies. The approach is invariably "hands-on" and addressed for immediate, practical application.



## Workshop Program:

### DAY 1

- Definitions & classification of Maintenance operations
- Overview of main Maintenance Operations:
  - *Reactive Maintenance* (Breakdown Maintenance)
  - *Preventive Maintenance* (Scheduled routine Maintenance)
  - *Predictive Maintenance* (Condition-based Monitoring)
  - *IPF* (Instrument Protective Function)
  - *RBI* (Risk Based Inspection);
  - *Shut-down Maintenance*
  - *Outage Maintenance*;
  - *RCM* (Reliability Centred Maintenance)
- The impact of the TPM (Total Productive Maintenance) discipline in the Maintenance domain
- "Traditional" TPM goals - today's TPM goals
- The *6 Big Equipment Losses*
- Measuring *OEE (Overall Equipment Effectiveness)* under the TPM angle of view
- Equipment Ranking
- Specific *TPM tools: SOCO (5S) & Workplace Management*
  - Establishment of Equipment *Optimal Conditions*
  - The *PM Analysis*
  - Tools to fight equipment *Minor Stoppages & Reduced Speed*
  - Tools to fight inadequate *output Quality & Start-up Yield Losses*
  - Tools to fight "*accelerated*" *deterioration* & for prevention of *breakdowns*
- The difference between traditional equipment overhaul/refurbishing & *TPM Equipment Restoration*
- TPM as "integration" system between all organisational areas that deal with plant & machinery
- *TPM Autonomous Maintenance*: the heart of TPM
- TPM programs for the Maintenance & for the Production/Plant Operation Departments
- *Maintainability Improvement & Maintenance Prevention*: new horizons under the TPM Plant Management philosophy.
- *Standardisation and Equipment Maintenance Standards*
- *Maintenance Planning & Maintenance Records*
- *Spare Parts Management*
- *Plant Management Economics*:
  - Maintenance Budget Management;
  - Maintenance Budget Control
  - Minimising Equipment *Life-Cycle Costs*
- Measuring TPM Effectiveness;
- A TPM Implementation Case-Study

### DAY 2

- Planning & managing maintenance works as a project
- "Traditional" *Project Management & Project Planning*: overview of basics concepts & core principles.
  - Planning, Scheduling, Controlling Projects: the "traditional" approach
  - Basic reasons for Planning; - The traditional *PBS* (Project Breakdown Structure)
  - *PERT & CPM*: basics; - The Project Program
  - *Gantt (Bar) Diagram*; - The *Earned Value* method
  - *Project Risk Management*.
- Analysis of the weaknesses & failures in traditional Planning:
  - Why so many projects are completed late, with cost overruns & dissatisfaction?
  - Why "project performance" is often poor?

- The root causes of poor performance & *Industrial* case studies
- Today's key to *World-Class Performance* in all Industrial Sectors:
- Lean Thinking - Basic core principles.
- Deploying *Lean Thinking* principles in the Maintenance domain, in the Project world & in the Planning area. Targets: - *Elimination of waste*; - *Establishment of flow*
- What is *Lean Project & Lean Maintenance Project Management*?
  - Where does waste hide in traditional projects
  - Where does waste hide in maintenance works
  - How to identify the main items of waste & reduce waste drastically
  - Why maintenance works *don't flow*
- The starting points: how should maintenance project's processes be planned for subsequent, *lean* implementation - how to conceive and visualise *flow working processes*
- *Team Exercising*: traditional planning vs. lean planning - see the differences
- Analysis:
  - Why do we plan "by impulse"?
  - Why don't we have enough time to plan "lean"?
  - Is it really a matter of time or rather of "style of thinking"?
  - Why do we miss the "crucial" points & overlook that "something really important"?
  - Why do we discover "unforeseen/s" & "surprises" during works executions?

### DAY 3

- The role of Creativity in planning
  - The relationship between *Creative Thinking & Lean Thinking*
  - The difference between traditional "automated", reactive thinking & "lean", proactive & projective thinking.
- *Lean Planning* operationally. The concept of the *Last Planner*:
  - How to eliminate all waste in Project
  - How to Maintenance works.
  - How to make maintenance work *flow*, work-package after work-package
  - How to conceive "*realistic assignments*"
  - How to plan them - how to assure a high PPC (Percent Plan Complete)
  - How to improve the PPC even further by using the *5Why* technique.
- The "*lean*" approach to Preventive/Scheduled Maintenance works: why Maintenance Personnel should be Last Planners.
- The "*lean*" approach to large-scale & Shut-down Maintenance operations
  - The *Concurrent Engineering* approach
  - *Lean Risk Management* / deploying Risk reduction techniques to assure regular work-flow & respect of the time parameter: *FMEA* (Failure Mode and Effect Analysis)
    - *FTA* (Fault Tree Analysis) - *Markov Chain* - and others
- The "*lean*" approach to management of external maintenance sub-contractors integrating them in the works' *flow*.
- About Maintenance Planning Software: is it really beneficial? Under what conditions?
- *Lean Plant & Assets Management*. What has to be changed in the traditional approach: the focus must be on "process flow" & not in individual "efficiency" - case studies. The "super-star-galactica" cul-de-sac in Plant Selection & Management. Methods first, then Technology - or how to maximise value added for equipment life.
- *Lean Planning, Lean Maintenance, Lean Plant Management & People*. A new breed of people is required in the modern maintenance world - the "multi-skill" & "multi-function" factors - the "empowerment" factor - self-planning - self-control. Should everybody be a "*last*

Due to the interactive nature of this workshop limited seats are available please book now to avoid disappointment.

Registration for this course is at 08:00am with the course starting at 08:30am. Lunch is at 12:30 with the course concluding at 4:30pm. Please note that all timings are approximate due to the interactive nature of the course. To reserve your seat for this prestigious and highly effective course, please complete the registration form on the next page and fax back to 086 561 2502