

"An excellent course, one of the best I have ever attended in many years."

*Danisa Malope
Maintenance Manager, Eskom*

"An excellent course, more than I expected. This was the most informative and best course I ever attended. Thank you very much."

*Sanet Flooks
Senior Systems Planner, Matla Colliery, Exxaro*

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Lean Maintenance & Lean Equipment/Asset Management

Modern approach in maintenance operations and equipment/assets management to tackle challenges in the new century

15 - 17 March 2016, Lagos, Nigeria
4 - 6 April 2016, Johannesburg, South Africa



Introduction

This course is very interactive and supplemented with abundant practical exercises and case studies. This course is beneficial for all Industrial Sectors (Manufacturing Industry, Continuous Process Industry, Construction Industry, Service Establishments, Engineering) and for Public/Governmental and semi-Public Bodies and Institutions active in all sizes Maintenance works.

Who Should Attend

- Heads and Directors of Operations, Maintenance and Production
- Operations Managers, Maintenance Managers
- Reliability Engineers, Production Managers and Engineers
- Maintenance Supervisors, Maintenance Planners, Schedulers and Controllers
- Plant / Facility / Assets Managers
- Engineering Managers / Chief Engineers
- Project and Shutdown Managers / Leaders / Planners / Coordinators

Benefits of Attending

- Understand modern Maintenance and Equipment Asset Management and the Lean Thinking philosophy, performance goals and critical success factors
- Understand the real reasons of failure of maintenance operations managed and 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 "wasteless flow processes" and to think about improvement of the whole maintenance function
- Equip your toolbox with lean planning tools, tips and techniques
- Ensure Maintenance works of any size / scale will be accomplished in time, within budget and with overall satisfaction
- Understand the difference between traditional Equipment / Asset Management and Lean Equipment / Assets Management
- Transmit lean concepts to your own people and to external parties such as sub-contractors
- Optimise performance through lean-thinking people while assuring their job satisfaction

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Message from Dr. Carlo Scodanibbio

Dear Delegates,

Maintenance. It has been officially invented and structured as a plant management discipline over 65 years ago. Technically, it has gone through many major changes: maintenance techniques have been improved, modified, widened and new maintenance techniques have been discovered over the last 3 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 worldwide 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 experience 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: A) ready to listen to message; B) prepared to abandon obsolete principles, formulas and approaches; C) 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.

I hope to see you there. Best regards,

Dr Carlo

ABOUT INFOCUS

Infocus International is a global business intelligence provider of strategic information and professional services for diverse business communities, designed to provide insights and assist our clients on the global stage.

Infocus International recognises the clients' needs and responds with innovative and result oriented programs. All products are founded on high value content in diverse subject areas, and the highest level of quality is ensured through intensive, accurate and in-depth market research from local and international insights.

COURSE CERTIFICATE

Upon the successful completion, you will receive a Certificate of Attendance. It will testify your endeavour and serve towards your professional advancement.

PRE-COURSE QUESTIONNAIRE

We would like to customise the workshop based on your specific learning needs. Pre-Course Questionnaire will be sent prior to the workshop for the Course Director to analyse in advance and address during the course.

Day One

- Definitions and classification of Maintenance operations
- Overview of main Maintenance Operations and Disciplines
- **Reactive Maintenance** (Breakdown Maintenance)
- **Preventive Maintenance** (Scheduled routine Maintenance)
 - Main features and prerequisites
 - Standardisation & Planning
 - The importance of Recording
 - The pro's and the con's
- **Predictive Maintenance** (Condition-based Monitoring): a major breakthrough
 - Features and prerequisites for deployment
- The **FMEA** (Failure Mode and Effects Analysis) in Maintenance:
 - Identifying and defining the concepts of Risk and Failure
 - Identifying the Effects of Failures and their consequences
 - Why FMEA is to be considered the starting point of more sophisticated Maintenance Disciplines, such as RBI, RCM and IPF
- **RBI** (Risk Based Inspection)
 - Main features
 - In which cases it can be beneficially deployed
- **RCM** (Reliability Centred Maintenance): new horizons in the Maintenance domain
 - Understanding Equipment and Machinery Failure Patterns
 - The RCM approach
 - The RCM project: features and prerequisites. The degree of specialisation required. Areas of applicability of RCM. The pro's and the con's.
 - A simplified approach for deploying RCM principles in all technology-intensive industries
- **IPF** (Instrument Protective Function)
 - Main features and areas of applicability
- **Shut-down Maintenance**
 - The traditional approach vs. the Lean approach
 - Main features, tools and techniques for assuring smooth Plant shut-down, turnaround and revamping operations
- **Outage Maintenance**
 - "panic" maintenance or rational outage management? The Lean input
- The impact of the **TPM (Total Productive Maintenance)** discipline in the Maintenance domain. The origins of Lean Maintenance.
- "Traditional" TPM goals vs. today's TPM goals
- The **6 Big Equipment Losses**
- Measuring **OEE (Overall Equipment Effectiveness)** under the TPM angle of view.
- Group Exercising
- Equipment Ranking
- Specific **TPM tools**: **SOCO (5S)** and **Workplace Management**
 - Establishment of Equipment Optimal Conditions
 - The PM Analysis
 - Tools to fight equipment Minor Stoppages
 - Tools to fight equipment Reduced Speed
 - Tools to fight inadequate output Quality
 - Tools to fight Start-up Yield Losses
 - Tools to fight "accelerated" deterioration and for prevention of breakdowns
- The difference between traditional equipment overhaul / refurbishing and TPM Equipment Restoration
- TPM as "integration" system between all organisational areas that deal with plant and machinery

- TPM **Autonomous Maintenance**: the heart of TPM
- TPM programs for the Maintenance and for the Production / Plant Operation Departments
- **Maintainability Improvement** and **Maintenance Prevention**: new horizons under the TPM Plant Management philosophy.
- Standardisation and **Equipment Maintenance Standards**
- **Maintenance Planning** and **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 Two

- **Lean Maintenance**: the new millennium Maintenance philosophy
- ALL Maintenance Works are Project Works! As such, they must be planned and managed accordingly.
- "Traditional" **Project Management** and **Project Planning**: overview of basics concepts and core principles.
- Planning, Scheduling, Controlling Projects: the "traditional" approach
 - Basic reasons for Planning
 - The traditional PBS (Project Breakdown Structure)
 - PERT and CPM: basics
 - The Project Program
 - Gantt (Bar) Diagram
 - The Earned Value method
 - Project Risk Management
- Analysis of the weaknesses and failures in traditional Planning
 - Why so many projects are completed late, with cost overruns and dissatisfaction?
 - Why "project performance" is often poor?
 - The root causes of poor performance date back to over 2 centuries ago. We have gone into the 21st century, with enterprises designed in the 18th and 19th centuries to perform well in the 20th. Is our Industrial DNA still polluted by those obsolete principles that gave birth to the first Industrial Revolution?

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 and in the Planning area.
 - Targets: elimination of waste & establishment of flow
- What is a **Lean Project** and **Lean Maintenance Project Management**
 - Where does waste hide in traditional projects
 - Where does waste hide in maintenance works and how to identify the main items of waste: idling, walking, talking, moving, excessive handling, double-handling, searching, un-necessary work steps, making errors and mistakes, fixing errors an mistakes, misunderstandings, trial-and-error approaches, overlooking, inadequate or excessive or un-necessary supervision/control, waste in paperwork, waste of materials, etc.
 - How to 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 and overlook that "something really important"? Why do we discover "unforeseen/s" and "surprises" during works executions?

Day Three

- The role of **Creativity** in planning
 - The relationship between *Creative Thinking* and *Lean Thinking*
 - The difference between traditional "automated", reactive thinking and "lean", proactive and projective thinking.
- **Lean Planning** operationally
 - The concept of the **Last Planner**: how to eliminate all waste in major Maintenance Projects and all 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 and Shut-down Maintenance operations
 - The **Concurrent Engineering** approach
 - **Lean Risk Management**, or deploying Risk reduction techniques to assure regular work-flow and 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? Open debate.
- **Lean Equipment & Assets Management.** Lessons learnt from the RCM discipline: the Assets Register and the Equipment / Assets Risk Analysis. How to prevent Failures in a rational, cost-effective mode.
- **Lean Equipment & Assets Management.** What has to be changed in the traditional approach: the focus must be on "process flow" and not in individual "efficiency"

Case Studies

- The "super-star-galactica" cul-de-sac in Plant Selection and Management. Methods first, then Technology – or how to maximise value added for equipment life.
- Team Exercising
- **Lean Planning, Lean Maintenance, Lean Plant Management and People.** A new breed of people is required in the modern maintenance world
 - The "multi-skill" and "multi-function" factors
 - The "empowerment" factor
 - Self-planning
 - Self-control
 - Should everybody be a "last planner"?

Your Course Director



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 45 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 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, Seychelles, Malaysia and India. His area of expertise lies in World-Class Performance for Enterprises in the Project, Manufacturing, and Services sectors. His favourite area of intervention is the greater Lean Management area.

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 Seychelles Chamber of Commerce and Industry, 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 19,000 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.

PROGRAMME SCHEDULE

08:30	Registration & tea
09:00	Course starts
10:30-10:45	Morning refreshment & network
12:30-14:00	Lunch
15:30-15:45	Afternoon refreshment & network
17:00	End of day

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