TOTAL PRODUCTIVE MAINTENANCE & LEAN PLANT/ASSETS MANAGEMENT

FOR HIGH/MIDDLE-LEVEL MANAGERS

11-13-15 July 2011 – Malta Enterprise – San Gwann - Malta

COURSE TIMETABLE

DAY 1

- What is "Maintenance" – definitions and classification of Maintenance operations
- Overview of main Maintenance Operations: ***Reactive Maintenance*** (Breakdown Maintenance) – ***Preventive Maintenance*** (Scheduled routine Maintenance) – ***Predictive Maintenance*** (Condition-based Monitoring) – ***RBI*** (Risk Based Inspection) – ***RCM*** (Reliability Centred Maintenance) – ***IPF*** (Instrument Protective Function) – ***Shut-down Maintenance*** - ***Outage 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)* 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 2

- 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 3

- 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 Project and 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 Plant & 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.
- ***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*"?

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