How to Optimise Shutdown Management

Course Duration

The duration is 2 days, unless more time is requested for the syndicate exercises.

Audience Profile

Asset Owners, Managers, Engineers, Planners, Supervisors, Operators, Finance Managers, Safety Officers, Contractors and all those who contribute in their roles of first-line (operators and maintainers) and second-line (engineering, designers, logistics, admin, workshops, etc) to asset management and decision making and who are eager to achieve sustainable improvement in productivity and return on investment..

Course Objectives

To equip those active in the management of productive and infrastructure assets with the knowledge, skills and attitudes needed for maximising return on shutdown investment. The course will combine theoretical concepts and practical considerations to refine the understanding of:

- the need for a shutdown
- the tasks in the various phases of a plant shutdown
- planning, scheduling, organising, controlling
- linking scope, duration, quality and cost
- shutdown review or lessons learned system in preparation for the next shutdown.

The value of the course will come from implementing the practical techniques presented in this course.

What makes this course different?

The course totally traces the life of a shutdown and is shutdown-specific, rather than being just another project management course.

Main Topics – Day 1

- **Shutdown Management Explained**
  - Towards most effective shutdown management
  - What is shutdown management?
  - What are the objectives and goals of shutdown management?
  - How does shutdown management link to asset management?
  - Definitions and acronyms
  - What are the benefits of improved shutdown management?
  - Why should you consider improving shutdown management?
  - What is the shutdown management process?
  - How should you implement improved shutdown management?
- **Is A Shutdown Required?**
  - How does asset management drive shutdown management?
  - What are the business drivers?
  - What are the business and asset management objectives?
  - Conflicting business objectives
  - Why should you develop an Asset Management Plan?
  - Tools for developing an Asset Management Plan
  - What is Asset Output Optimization?
  - What is Reliability Driven Asset Management?
  - What are the effects of fault types?
  - Why are shutdowns not the logical outcomes of asset management analysis?
  - How can you minimise the need for shutdowns in all phases of the asset life cycle?
  - What classifies as a shutdown?
- **What Do You Need for Shutdown Management?**
  - What are the shutdown objectives?
  - How do you manage the shutdown?
  - How do you plan a shutdown?
  - How do you organize a shutdown?
  - How do you control a shutdown?
  - How do you review a shutdown?
  - What is the format of the shutdown process?
  - What are the shutdown initiation and feasibility study?
  - How to plan the scope of the shutdown?
  - What affects the quality of the shutdown?
  - What is a quality management plan?
  - How can you expand the stages with Value Methodology?
  - How do you prepare for the shutdown?
  - How do you execute the shutdown?
  - How do you terminate and review the shutdown?
  - Who is part of the shutdown organization?
  - Who is the process owner or shutdown sponsor?
  - Who are the stakeholders
  - What is the shutdown strategy team?

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Course Description

- Who is the shutdown manager?
- What are the tasks of the shutdown team?
- Do you need role descriptions?
- Is team building easy?
- What shutdown management tools can you use?
- CAMS Functionality
- How do you establish a shutdown management communications network?
- What are the goals of a communications network?
- What are the benefits of meetings?
- Which shutdown management reports are necessary?
- Which shutdown manuals do you need?
- How to report the shutdown?
- What is the importance of documentation control?
- What is the shutdown closure and review report?

Syndicate Exercise regarding the need for a shutdown, minimizing the need for shutdowns, developing procedures for planning, organizing, controlling and reviewing the shutdown.

- **How to Perform a Shutdown Feasibility Study?**
  - Why do you need a feasibility study?
  - How do you initiate a shutdown?
  - What are the shutdown objectives?
  - What are the work scope and deliverables?
  - What is the milestone plan?
  - How important are cost estimates?
  - How do you establish risk, opportunities, constraints and assumptions?
  - What are constraints?
  - What are risks?
  - What are stakeholder risks?
  - What are opportunities?
  - Why do you need to record assumptions?
  - What are the shutdown success factors?
  - Decision making

Syndicate Exercise about shutdown needs, objectives, justification, involved parties, functions, cost, benefits and risk, resourcing, costing, management,

- **How to Plan the Shutdown?**
  - How to develop the work scope?
  - How do you identify task details?
  - What is the work breakdown structure?
  - How to allocate responsibilities?
  - What are quality needs?
  - How to ensure shutdown safety?
  - How do you plan the shutdown?
  - What is scheduling?
  - What is the importance of scheduling?
  - What scheduling constraints exist?
  - Which shutdown task timing do you select?
  - what job estimating and scheduling techniques are available?
  - How to estimate budgets?
  - Cost estimating and work requests
  - Develop cost-benefit curves
  - How do you manage shutdown risk?
  - What are the outcome acceptance criteria?
  - Why sign-off on the scope of work?
  - Why is document control important?

Syndicate Exercise on scope, work packages, safety analysis, acceptance criteria, constraints, risk, resource estimates

Main Topics – Day 2

- **How to Schedule With Gantt Charts And Networks?**
  - What are Gantt charts? constructing, use, benefits and limitations
  - How to use the Gantt chart for monitoring progress?
  - What are network diagrams?
  - What is the critical path method?
  - What are the critical path construction rules?
  - How to develop a critical path diagram?
  - How to calculate the early start and finish?
  - How to calculate late start, finish and float?
  - How to determine the critical path?
  - How to produce a Gantt chart from the network diagram?
  - How to use the CPM network diagram to monitor progress?
  - How to perform network compression?
  - How to link the shutdown plan to your CMMS?

Syndicate Exercise: develop network diagram, Gantt chart, duration reduction, cost

- **How to Organise the Shutdown?**
  - What resources do you need?
  - What resource limitations do you need to deal with?
  - What are human resource considerations?
  - How to do time-limited human resource scheduling and levelling?
  - How to do resource-limited human resource scheduling and levelling
  - How to tender and contract?
  - How to estimate materials and supplies?
  - How to estimate tools, equipment and utilities?
  - How to estimate support facilities?
  - Designing the work site
  - Pre-shutdown maintenance activities
  - Pre-shutdown operational activities
  - Pre-shutdown administration activities
  - How to develop a detailed cost summary?

Syndicate Exercise: resource estimates linked to network diagram, resource leveling

- **How to Execute the Shutdown?**
  - What is needed for a shutdown start-up?
  - How to appoint and develop the shutdown execution crew?
  - How to develop a successful team?
  - What is the importance of managing up?
  - How to ensure resource availability?
  - How do you claim the necessary space and support facilities?
  - Training of human resources when does the shutdown begin?
  - What is performance monitoring?
  - Controlling shutdown duration, resources and cost
  - How do you control the shutdown?

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- How do you solve problems?
- How do you manage scope change?
- What is the importance of communicating?

- **How to Terminate the Shutdown?**
  - What is shutdown termination?
  - How to recommission the plant?
  - Check operability and maintainability
  - The commissioning hazard analysis
  - Are there any final tasks?
  - Update asset register and database
  - Verify that all documents describe the plant as recommissioned
  - How to finalize administrative details?
  - Shutdown reporting
  - Sign-off and hand-over
  - What are the benefits of a lessons learned system?

All delegates will receive a textbook that sets new standards for industrial training materials that will reinforce the training experience for many years to come.

Seminar Leader – Emile Eerens

Emile Eerens holds a doctoral degree in Engineering and a Graduate Diploma in Business Management. Emile has experience in planning and managing shutdowns in power stations and mines in Australia and is extensively involved in "training for excellence" in the wider business of asset maintenance and management.
Emile has over 22 years experience as an Asset Maintenance and Management Engineer, Trainer and Consultant. In his career he worked in the Power Generation, Electricity Distribution, Mining, Health Facilities, Construction and Petrochemical Industries and has experience in Supervision, Design, Engineering, Research & Development, Training and Management.
He is in demand as a developer and presenter of various public and in-house Asset Maintenance and Management courses.

Emile is the author of the manuals:

- *Business Driven Asset Management for Industrial and Infrastructure Assets (2003)*
- *Business Driven Facility Management (2004)*
- *Improving Business Efficiency with Outsourcing the Asset Management or Maintenance Function (2004)*
- *Business Driven Maintenance Management (2006)*
- *How to Improve Asset Operability and Maintainability, 4th ed (2009)*
- *Improving Assets and their Management with Value Methodology, 3rd ed (2008)*
- *Asset Operations Optimisation, formerly Total Productive Maintenance, 3rd ed (2008)*
- *How to Optimize Shutdown Management,3rd Edition (2009)*
- *Reliability Driven Asset Management, formerly Reliability Centered Maintenance, 4th ed (2008))*
- *Basic Reliability Engineering, 4th ed (2009)*
- *Fault, Failure and Problem Prevention with Root Cause Analysis, 2nd ed (2010)*