

ERADICATING CHRONIC EQUIPMENT FAILURES THRU' REVOLUTIONARY...

WHY-WHY & P-M analysis

...STEERING TOWARDS "ZERO LOSSES"

*No industry, today, can perform any operational processing without equipment!
In the ideal productive concern, equipment should be operating at
100% capacity 100% of the available time, producing value...*

JANUARY 22 - 24, 2007
Shangri-La, Bangkok



RESEARCHED &
DEVELOPED BY:



IN
ASSOCIATION
WITH:



TPM INDUSTRY CONSULTANTS, SINGAPORE - MALAYSIA, INCORPORATION NO. 52810500X

...BUT THE FACT IS;
an estimated 80% of \$300 Billion spent yearly on Plant Maintenance and Operations are expended to CORRECT CHRONIC FAILURES OF MACHINES, systems, and people that occur daily, even hourly, in plants across the world.

W H Y

Even after decades of shared knowledge in preventive maintenance techniques, downtime still occurs more than it needs to. Too often, maintenance professionals are called upon to fix equipment only after there is a problem. This reactive approach results in unnecessary work. You can **monitor it, measure it, log it, track it,** and **attack it**, but downtime won't go away until you eliminate the stresses that cause it. Had you prevented downtime in the first place, there would be more time for value-added pursuits.

Sporadic failures are dramatic deviations from operating norms. When they occur, they are readily apparent. When repaired, they restore the norm. Solving sporadic failures restores the status quo. Chronic quality defects and other chronic losses are hard to eradicate, because they typically have multiple, interrelated causes that vary with every occurrence.

P-M ANALYSIS....

was specially developed to overcome the weaknesses of traditional methods. It offers a rigorous 7-step method for ensuring that all possible factors are identified and investigated. Although not a cure-all, P-M Analysis has reduced chronic losses to zero and raised technological expertise in many manufacturing environments.

This drain on corporate assets is caused, in large measure, by a mindset that accepts these failures as routine and normal. It is a self-limiting paradigm that says machinery breaks, people make mistakes, and systems fail.

Too often, managers are more concerned with a rapid return to operations than with identifying the causes of chronic problems. **"HOW SOON"** is asked more often than **"WHY"**. Under this pressure, supervisors and workers are inclined to apply Band-Aid fixes. Quality thinking, craftsmanship, and analysis are sacrificed for speed. However, by challenging this belief and taking steps to eliminate unnecessary failures, managers can increase productivity, reduce downtime, and increase profit dramatically.

This illustrated interactive workshop provides a thorough step-by-step procedure for implementing P-M Analysis, along with practice exercises and graded examples. It is an unparalleled resource for anyone with a basic knowledge of TPM who is ready to fine-tune their loss-reduction activities.

Here, finally, is a revolutionary method that will help teams achieve the ultimate goal of

"ZERO LOSSES"

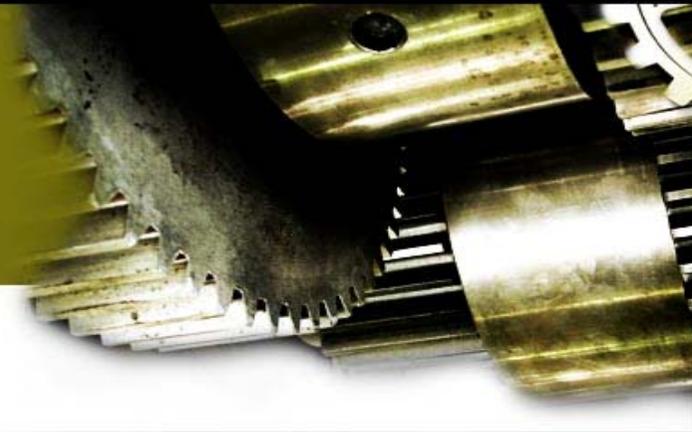
Eliminating Chronic Failures Can Cut Maintenance Costs Up to...

60%

IN THIS INTENSIVE, HIGH-LEVEL WORKSHOP, YOU WILL WALK AWAY HAVING POWERFUL GRASP OF PRACTICAL SKILLS TO:

- ▶ Understand and apply the Why-Why Analysis problem-solving tool for technical and administrative problems
- ▶ Understand and apply the P-M Analysis problem-solving tool for chronic-type of defects and equipment failure problems
- ▶ Achieve a skill-level of competence that will enable you to address your work-based problems using these two tools confidently
- ▶ Achieve better results in DoE applications for optimisation through appropriate use of the P-M Analysis methodology
- ▶ Dramatically reduce unplanned maintenance hours
- ▶ Maximise returns on critical manufacturing assets
- ▶ Leverage on Poka-Yoke concepts to leverage on mistake-proofing
- ▶ Slash change-over time significantly
- ▶ Benchmark your equipment performance and workforce agility in handling equipment operations against other industries
- ▶ Establish 5S amongst the non-production departments to deploy day-to-day functions that aims towards 'Zero Defects' and highest productivity
- ▶ Enhance plant and equipment effectiveness to achieve optimum life cycle of production equipment
- ▶ Obtain an increase in production quality, improvement in Overall Equipment Efficiency, and worker efficiency
- ▶ Marginally decrease production costs, loss time, emergency dispatches, unplanned maintenance schedules and downtime
- ▶ Strategically plan out production capacity to align with customer demand through proper performance measurement tools
- ▶ Successfully grasp the "state-of-the-art" P-M principles in order to perform at world class level
- ▶ Intertwine the Technology, Business and People aspect of the manufacturing world through a breakthrough methodology

QUALIFY
your team **NOW!**
for this **SPECTACULAR EVENT**



“It is said, ‘Accidents do not happen, they are caused’. The same is true for equipment breakdowns. They are due to human reasons - negligence, ignorance, attitude, etc. There is always a human factor behind any equipment failure.”

A G E N D A

MODULE 1: WHY-WHY ANALYSIS PROBLEM SOLVING TOOL

- The five-steps in Why-Why Analysis
- What is root cause definition in Why-Why Analysis
 - *Step 1: Verifying the 3 actuals*
 - *Step 2: Express the problem statement in phenomenon form*
 - *Step 3: Asking Why? Five times*
- Correct and wrong questioning techniques
 - *Step 4: Finding the root cause (Man is root cause)*
 - *Step 5: Generating corrective actions and preventive action (Mistake proofing)*
- Case studies in teams

MODULE 2: INTRODUCTION TO P-M ANALYSIS

- Definition and nature of chronic defects and chronic equipment failures
- The interactive nature of chronic problems
- The overview of 7-steps in P-M Analysis

MODULE 3: LEARNING P-M ANALYSIS THROUGH A PRACTICAL HANDS-ON SIMULATED MECHANISM

(Each team will be given the simulated mechanism with a chronic problem)

- ▶ **Step 0: Physical Analysis to understand background of problem**
 - Process and mechanism perspective
 - Proper operation to avoid the phenomenon.
 - Identify operation step where/when the ‘mis’-operation took place
- ▶ **Step 1: Phenomenon statement of problem**
 - Facts of what, where, when, who
 - Avoidance of how and why
 - The one-sentence guideline
 - Focusing on the physical place of ‘mis’-operation
 - Defining the necessary conditions for no ‘mis’-operation

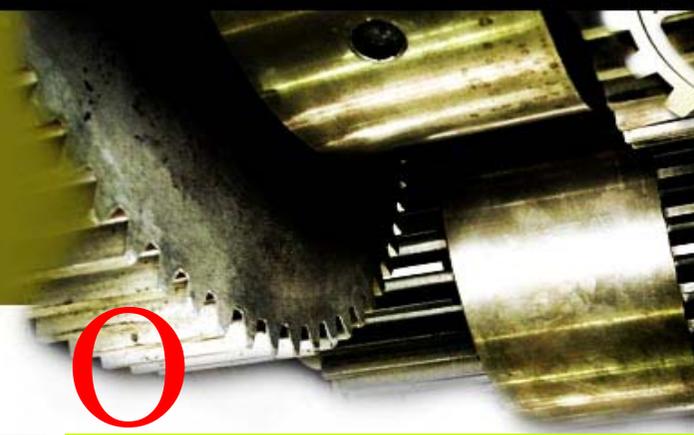
- ▶ **Step 2: Physical View (Hypothesis) of problem**
 - Getting the whole picture of the ‘mis’-operation
 - Tips to proposing the Physical View (hypothesis)
 - The one-sentence guideline
- ▶ **Step 3: Contributing conditions and possible interactive relationships**
 - Confirming the necessary conditions
 - Tips on identifying the contributing conditions
 - Usual range of number of contributing conditions
 - Defining and determining the Temporary Decision Criteria (TDC)
 - ⇒ *Why Initial TDC range should exceed current range slightly*
 - Defining and improvising of measurement methods and tools
 - ⇒ *Study sub-assembly producing the contributing condition*
 - ⇒ *Explore direct and indirect ways to measure TDC parameters*
 - ⇒ *Tools used affected by available technology and accessibility*
 - Conventions used in the P-M Analysis format
 - Meaning and usage of terminology like TDC, OK, NG
- ▶ **Step 4: 1st level 4Ms, 2nd level 4Ms, 3rd level 4Ms..... etc.**
 - Recognising assembly and sub-assembly relationships
 - Identify areas of interaction and perform optimisation
 - Learning to recognise potential interactions
 - ⇒ *The suspected interaction parameters had not been optimised*
 - ⇒ *Was OK when equipment was new, but now equipment has deteriorated*
 - ⇒ *Changes of materials, replacement parts had taken place without proper optimisation studies*
 - Practical and useful rules for designing an optimisation experiment based on Taguchi methods and principles
 - Coupling DOE with P-M Analysis for effectiveness
 - ⇒ *Why DOE often produces contradicting results for the same problem*
 - ⇒ *Why DOE factors should be at the same mechanism levels*

- ▶ **Step 5: Finding the root cause and action plans**
 - Zero-defects philosophy that all problems are man-made
 - ⇒ *Importance of problem ownership and cause and effect relationship with man as root cause*
 - ⇒ *Latent and apparent problems*
 - Poka Yoke concepts and practice
 - ⇒ *The Poka Yoke 5-step outline*
 - ⇒ *Defects, 4Ms, mistakes, mistake-proofing design concepts*
- ▶ **Step 6: Verifying the results**
- ▶ **Step 7: Standardisation and continuous improvement system**
 - Concept of a production system
 - ⇒ *Knowledge bank to capture know-how continuously*
 - ⇒ *Planned Maintenance standards*
 - ⇒ *Basic structure of a production system*
 - Concept of Autonomous Maintenance
 - ⇒ *Workers’ roles in Autonomous Maintenance*
 - ⇒ *Deployment of Autonomous Maintenance*
 - ⇒ *Sustaining of Autonomous Maintenance*
 - Concept of Planned Maintenance
 - ⇒ *All defects and breakdowns are preventable by keeping to basic machine conditions.*
 - ⇒ *Role of Planned Maintenance*
 - The basic machine conditions as the basis for sustaining improvements

QUALIFY
your team **NOW!**
for this **SPECTACULAR EVENT**

“Under Moses Tan’s TPM training and consulting, we have improved our Plant’s performance over several years. Now, we are confident and planning to invest and expand our capacity by 100%.”

- Ceramics Tiles Industry



M O S E S T A N



Moses Tan is the Principal TPM Consultant of ZenPower International. Being an experienced TPM expert since 1996, his professional experience in TPM consulting greatly emphasizes on implementation details and methods. With an extended 20 years of experience, Moses was previously a TPM Training Manager with a Japanese-owned semiconductor manufacturer, Silicon Systems, a subsidiary of TDK, Singapore.

As a manager, Moses was responsible for managing TPM Office, TPM Implementation and conducting TPM Training, 5S and Kaizen Employee Suggestion Secretariat and other technical skills related to TPM. Amongst his large clientele, which includes NEC Electronics, Carsem Semiconductor, Hitachi, SCI Manufacturing, NEC Semiconductor, Siemens, Sony Display Device, Sumitomo Bakelite, Infineon, Malaysia Newsprint Industries, Yamaha Motors, Hong Leong, Hitachi-Nippon Steel, Taiko Denki, Guocera, and the list goes on.

He has since consulted with the Processing and Discrete Industries that has significantly improved their ROI after his mentoring. His focus of expertise revolves around Autonomous Maintenance, Planned Maintenance, OEE Improvements, Quality Maintenance, Why-Why Analysis, P-M Analysis. Following a comment from his major client, Moses is recognised as an Expert in both the implementation know-how and methodologies. Moses has conducted numerous public and in-house trainings for MNCs and even prepared his client for the JIPM award. He occasionally contributes to TPM articles for the Productivity and Services Board of Singapore. He has also been recognised for his profession through awards like the **1989 National Training Award for Manufacturing Sector, Singapore; 1992 & 1994 National Training Commendation Award, Singapore; 1995 Essay Prize from Singapore Quality Association for his published article “TQM Implementation in Singapore MNCs”.**

Moses holds a Diploma in Education, Diploma In Electronics Engineering from Singapore Polytechnic, Bachelor in Information Technology from University of South Queensland and MSc in Training (major in TQM) from University of Leicester, UK.



Dear delegate (s),

I am excited about bringing our Why-Why & P-M Analysis workshop to Thailand. I have studied for over 20 years the best manufacturing companies in Asia, met most of the great geniuses and gathered and disseminated their information for international competitiveness. This interactive workshop will transform the traditional lecture into a real-world, hands-on experience combining the presentation of information, discussion, examples, and practical exercises like no other. This workshop will highlight proven techniques on improving Operations Excellence thru' Why-Why & P-M Analysis.

We GUARANTEE that you will leave this workshop with the knowledge and tools to truly revolutionize your quality and productivity journey!

See You Soon in Bangkok!
Moses Tan

Client Quotes...

Trainer is exceptionally experienced in TPM knowledge

- Infineon Technologies -

Very knowledgeable

- Cabot (M) -

One of the most practical workshop

I've attended

- Intel -

Who Will Benefit...

This workshop is exclusively tailored for Senior and Middle Level Management including CEOs, COOs, CFOs, EDs, Senior Vice Presidents, Vice Presidents, General Managers, Directors, Engineers, Managing Directors, Entrepreneurs, Executives responsible for...

- Plant Maintenance
- Production
- Continuous Improvement
- Lean Production
- OEM & OEE
- Reliability
- Supply Chain
- Operations
- Inventory Control
- Manufacturing
- Administration
- TQM
- Six Sigma
- Lean or Improvement Initiatives
- TPM
- Engineering
- Factory Operations
- Industrial Engineering
- Safety
- Quality Assurance
- Employee Reliability
- Equipment Rotation
- Equipment Reliability
- Employee Training
- Machine Operation
- Maintenance
- Plant Industrial
- Purchasing
- Finance
- Root Cause Analysis
- Production Planning
- Production Control

Speaker's knowledge on subject-matter is superb

- CCC Polyolefins Co, Thailand -