What is WCM ?

It is our "Continuous Improvement System"

Founded in TPM



What is World Class Manufacturing?

WCM is a mindset based on a continuous improvement approach

WCM has its foundations in the Total Productive Maintenance (TPM) a maintenance process developed in Japan for improving productivity by making processes more reliable & less wasteful



Kaízen

What is TPM ?

Total Productive Maintenance

Origins. 1970s in Japan. Developed by JIPM

A System emphasizing complete Care (Maintaining) of machines delivered dramatic results ...

$\mathbf{TPM} = \mathbf{WCM}$

Zero BDs, Zero Defect and Zero Accident.

Japanese Institute of Plant Maintenance JIPM

Established in 1969

Non-Profit, Government Organization linked to Ministry of Industry and International Trade.

Develops and promotes TPM.

Since 1971 auditing and presenting awards for TPM Achievement (since 1991 Internationally).

► Audits are a Stepwise process with a progression of awards levels (5 in total) from TPM Excellence Award to TPM World Class Award.

Consulting support via their "sister company" JiPM-S (Solutions) which is an independent consulting company.

External recognition for excellence JIPM Total Productive Maintenance Awards



The award system judges the results of a plant's TPM activities. On average, it takes about 10 years to go from the first to final level.

WCM Journey JIG 2015 2012 **JIPM World Class Award JIPM Advanced** 2010 **Special Award** JIPM Special Award 2008 JIPM Consistency Award <u>*"There´s no limit</u> <u>for our improvements</u> "*</u> 2005 **JIPM Excellence** Award 2001 **Kick off** ENVIRON MENT

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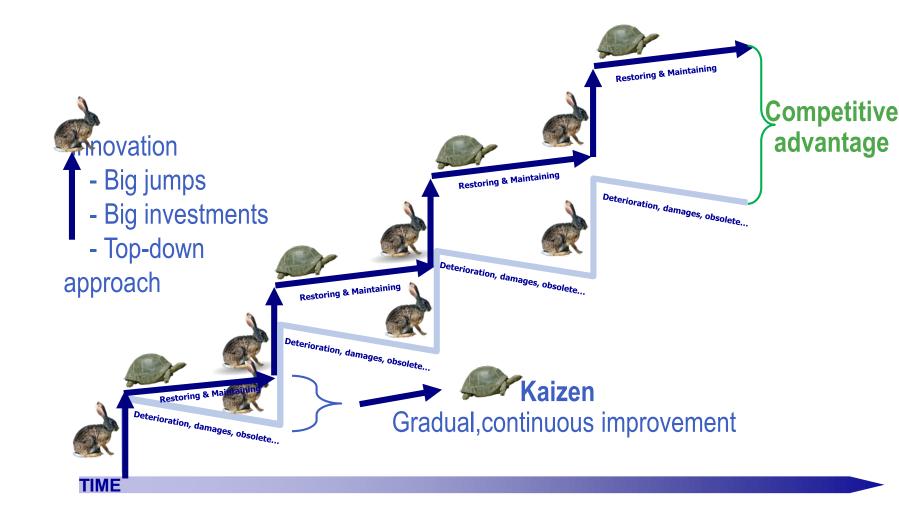
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WCM Principles

What makes WCM being different !

Innovation and Kaizen

WCM approach to gain the competitive edge



WCM basic principles



- Zero Accidents , Zero Breakdown,Zero Defects,Zero Scrap,
- Continuous improvement through loss eradication
- ► No type of waste is accepted
- Methods for improvements are applied strictly



- Voice of customer is heard to the last level in the organization
- People are the driving force of change
- Motivating environment
- ► All faults are visible

Our Mission

To add value to our Business and Customers by driving for a Zero Loss Organisation

HOW ?

....through the continuous development of:

- ✓ People
- Processes
- Organization



Our Strategy

> Develop People

- -Training
- -Coaching
- -Empowering people for self learn

> Develop Processes

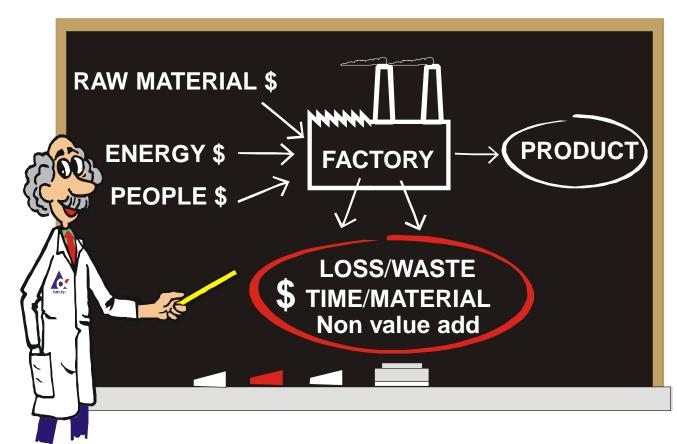
- -Standardize and align methods and tools
- -Transfer WCM knowledge sharing best practices

> Develop Organization

- -Promote WCM people integration
- -Keep WCM community alive

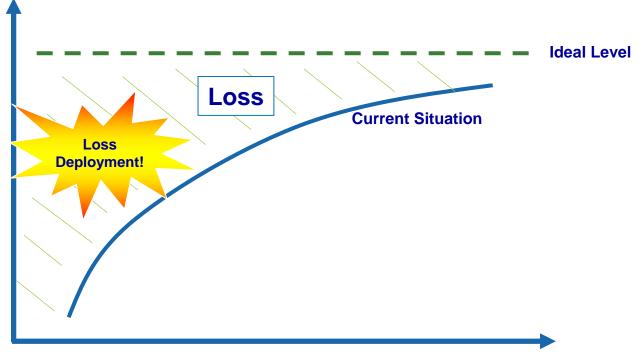
What is a Loss?

- Something we do that doesn't add any additional value to the final customer's product
- It is often perceived as inevitable
- It can be eliminated ... for the most part



What is a Loss – specifically ?

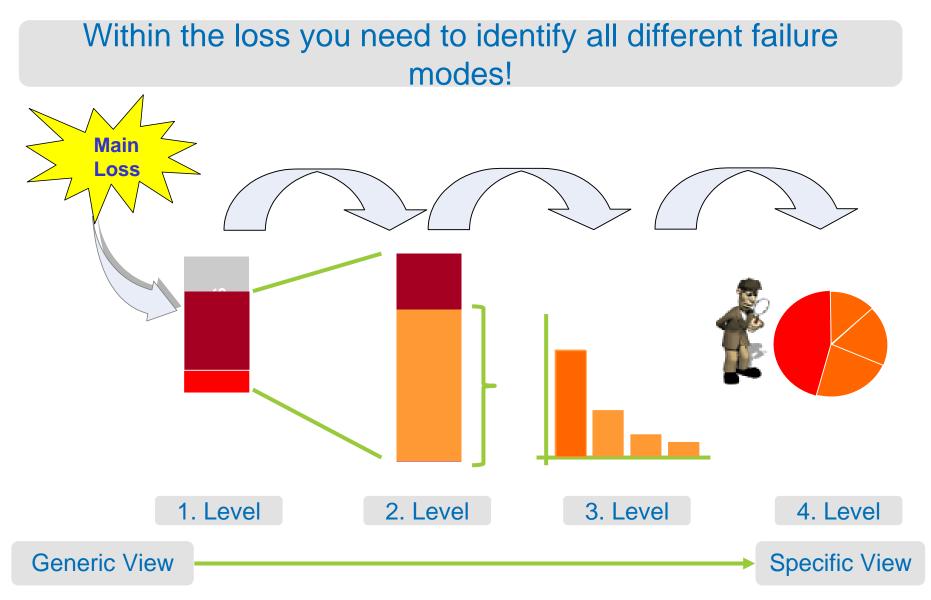
It is the difference between the current situation and the ideal situation



Steps to have a good losses understanding:

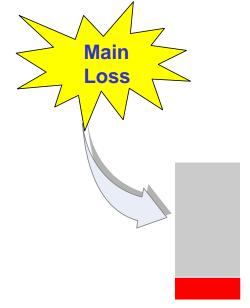
- Clear measurement (KPIs and Data Collection)
- Clear definition for the ideal situation (Zero Loss Level)
- KPI Loss Tree (Different Levels of losses more details)
- Clear understanding of biggest losses (Launch teams)





Concept of the Small Steps

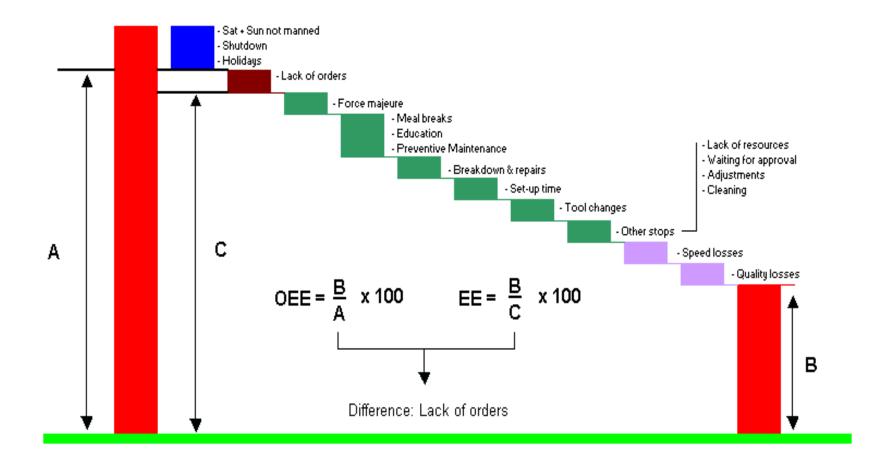
Within the loss you need to identify all different failure modes!



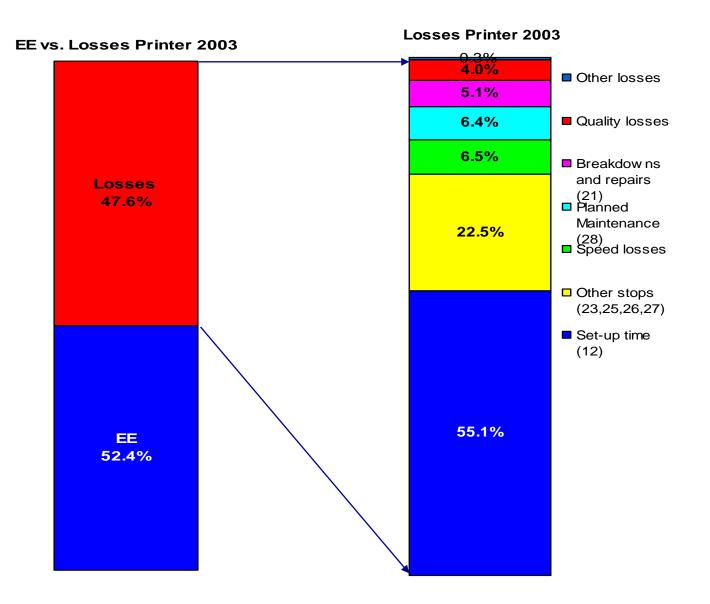


Generic View

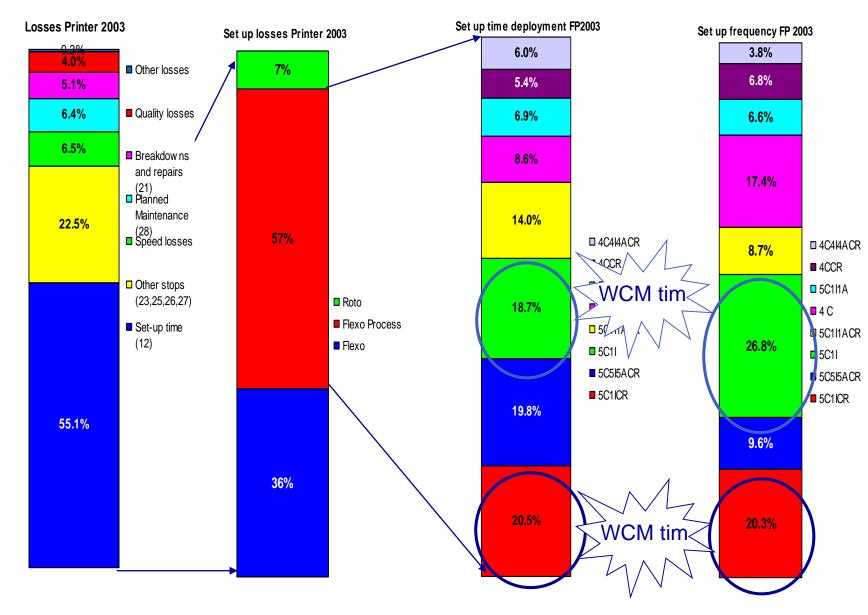
Equipment efficiency



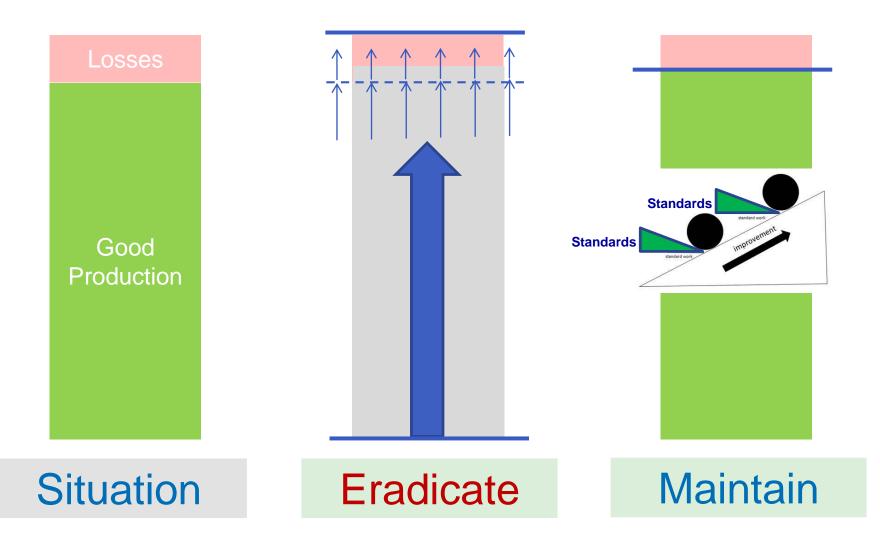
Print - deployment of losses - example



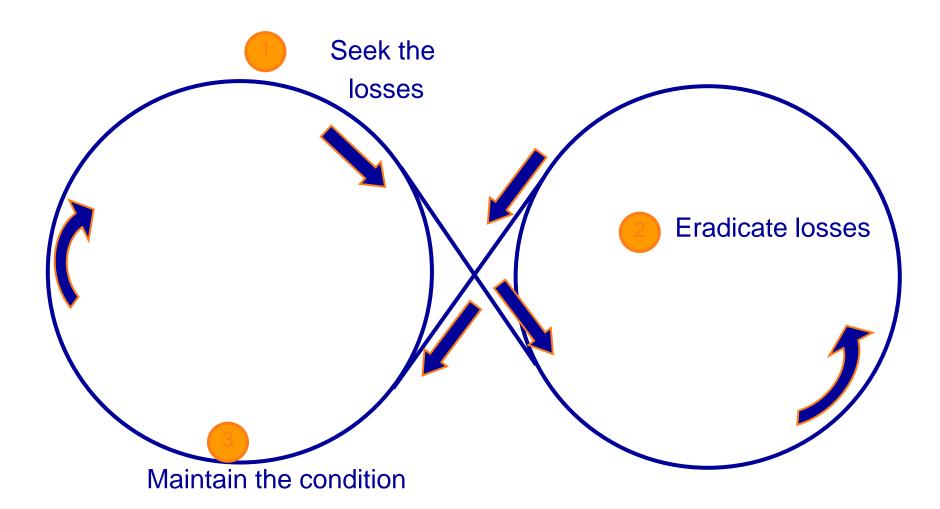
Print - deployment of set up time



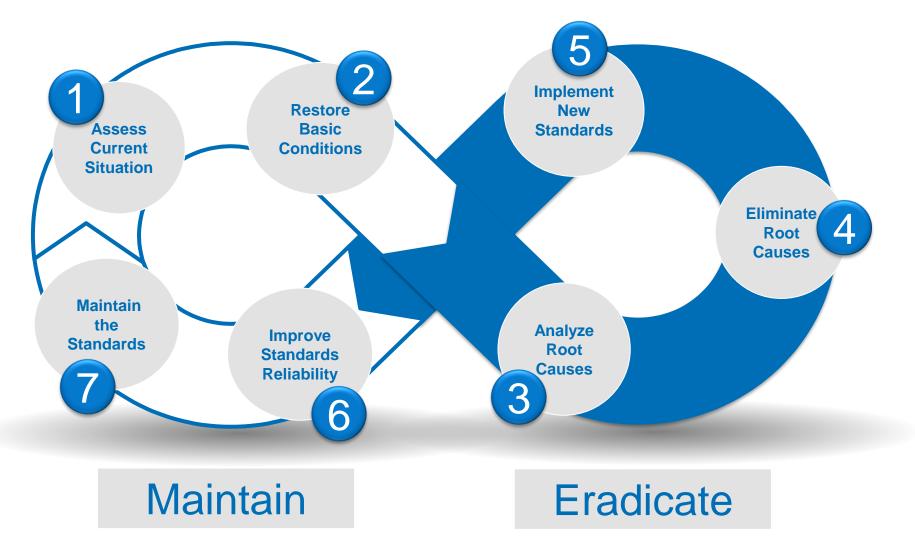
"LOSSES" are the Key The Base of the Continuous Improving in WCM



The WCM Infinity Loop

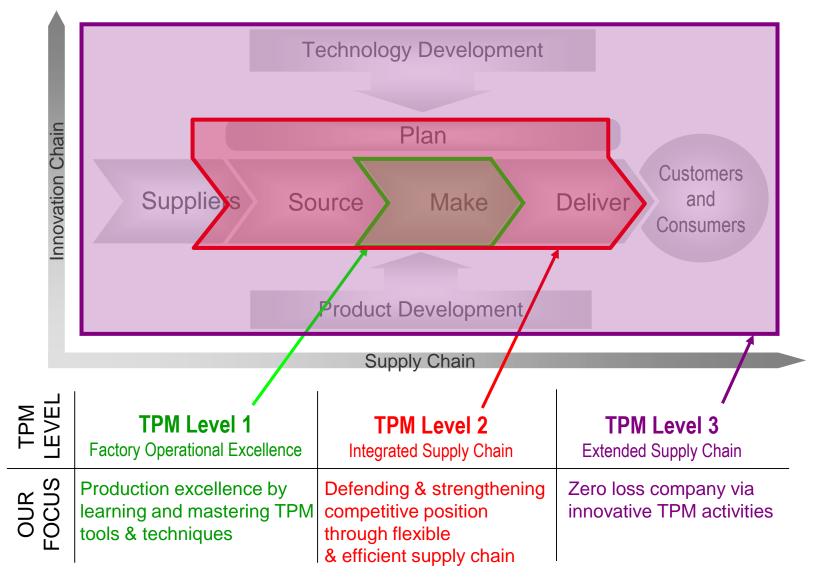


The Infinite Loop The Base of the Continuous Improving



The three TPM Award levels

Linked with business as a whole in a logical expansion





Each Pillar

- Focuses on Common Themes/ Losses
- with Expertise in specific Methods and Tools

Pillar Activities

These are the typical activities carried out by all Pillars

Deployment

Potential gains

Planning teams

Evaluation resources

➤Training

>Support

≻Audits

Monitoring results

Pillars Support on Three Levels



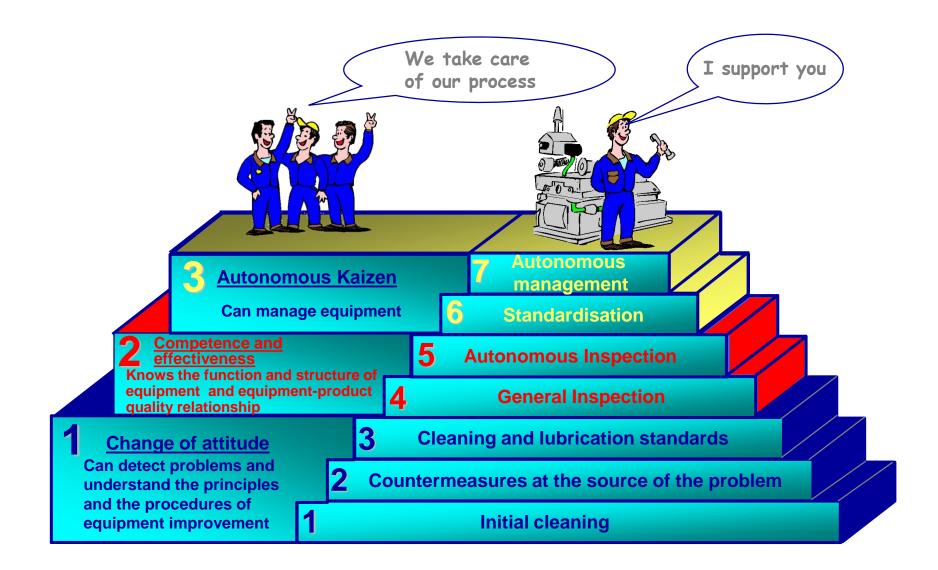
Seek the Loss Investigates the losses that are having an effect on the KPI's. Develops a master plan that identifies improvement actions and teams.

Supports the improvement teams Eradicate the Loss Supports the improvement team and identifies training and development needs. Implements the audit schedule.

Maintain the gains - Building Systems -

Maintain the Condition Develop systems to prevent the losses.

AM Man - Machine development

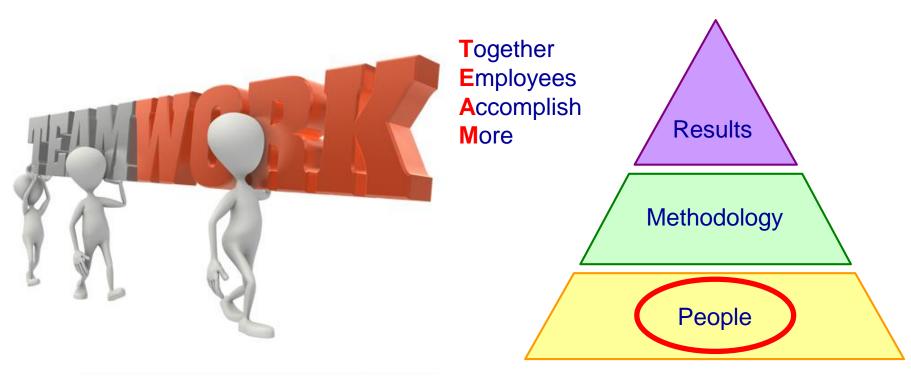


The route for Autonomous Maintenance

| Autonomous Management - Inventory of standards 2-Imporvement and Restoration 3-Standarization 4-Establishment and Succession 6-Update the job descriptions 7-Ensure cross training process 8-Establish Circle meeting Col 2.// 4. | Autonomous Inspections-Process ontrol Analysis abnormalities Integrate spar parts, jigs &tools, aterials, products, WIP, etc Text books operation skills Evalaution table for operation skills |
|---|---|
| 6 Standardisation 6.1 1.ECRS: Simplification of maintenance, safety, quality increasion 9.1 | List for problems point corrections Improve 5 conditions to 0 defect Component life span management Integration of defects analysis |
| | D.Speed losses analysis I.Setup anomalies analysis 1.Pneumatic &Hydraulic concepts on the job inspection 2.Drive, transmision and knetics system concepts & on the job inspection 3.Electric control systems (includes sensors) |
| 4 General inspection 7. Integrate near misses analysis | concepts & on the job inspection 4.Fasteners and equipment main body concepts & on the job inspection 5.Safety concepts on the job inspection |
| 3 Create and maintain cleaning, inspection & lubrication standards 4.CIL: Update inspection plan 5.Monitor results (AM effectiveness) | 6. General inspection: Update inspection plan 7. Visual Control: Promote visual management 8.Monitor results (AM effectiveness) |
| 2 Eliminate sources of dirt and difficult to clean & inspect areas | 1. 5 why analysis: Identify and analyse sources of dirt and difficult to clean areas |
| Safety awareness: safety to clean Initial cleaning Initial cleaning: in depht cleaning&tag exercises SS: sort out, set order, shine, standar sustain CIL: Introduction of first temporary sta Tagging: Spot equipment deterioration S sense: spot equipment deterioration | 3. CIL: Create and maintain cleaning and inspection standard 4. Monitor results andard on |

WCM is based on TEAM WORK

- People working together in teams following a common methodology to deliver results
- Sharing our experiences & a way of working across departments makes everything easier!



World Class Manufacturing

- 1. Data collection
- 2. Deployment / where are the losses ... /
- 3. Methodologies and tools / 5S, 4M, 5 Why, ECRS, /
- 4. Teams

Increase efficiency / productivity

Reduction of waste

Reduction of complaints and claims

Increase Safety

Motivation

... WCM is...

... the most complete...

as the practical realisation of the "Learning Organization" through the application of four basic concepts:

Committees organisation

> Teamwork

> Approach depth

Managing by Deployment







What WCM is about

Involving all the available resources



Involve people in a organized way Team Work

WCM is based on TEAM WORK. Nothing can be achieved if one works alone. But if we share our experience across departments, everything is EASIER!

Together Employees Accomplish More



Why Team work?

- More EFFECTIVE Problem solving
- Better decisions
- Better Results
- Through Teamwork we CREATE:
- ➤A sense of belonging
- ➤"Grow capability and skills" of WCM System.
- ≻A STRONG FOUNDATION.



How do we organize in Factories?

The three levels in sport and WCMtballIn the Factory

Football

The owners



The steering committee



The coaches



The pillar coaches

Pillar Coach for Improvement Team A



Pillar Coach for Improvement Team B

The players and the team



The players and the team



WCM must be a real change process Capable to maintain itself ...



If any of the steps are missing, we will not have sustainable change

World Class Manufacturing Just common sense?

•World Class Manufacturing opens minds and doors to new possibilities

> You don't know what you don't know

WCM is a one-way journey

It's not always easy. Sometimes it's even painful...but:

IN MARCE SIN

It works!

It makes the difference! It changed the way we do business!

Moving toward World Class

WCM – World Class Manufacturing "World Class Organizations need World Class People"

