Warehouse Management

MMS Training

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Objectives

- To learn on how as maintenance personnel be able to contribute in the proper handling and storage of critical spare parts
- To benchmark best practices of warehouse management from other Holcim plants

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Agenda

- Virtual Warehouse visit
- What you can do
- Examples of Best Practices
  - Lubricants
  - Bearings
  - Electrical motors
  - Belts of conveyors
  - Tools
  - Consumables
- Warehouse related projects
  - Net Working Capital Optimization (NWC) projects
  - MASIMO
  - Examples
- Key Success Factors

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Virtual Warehouse Visit

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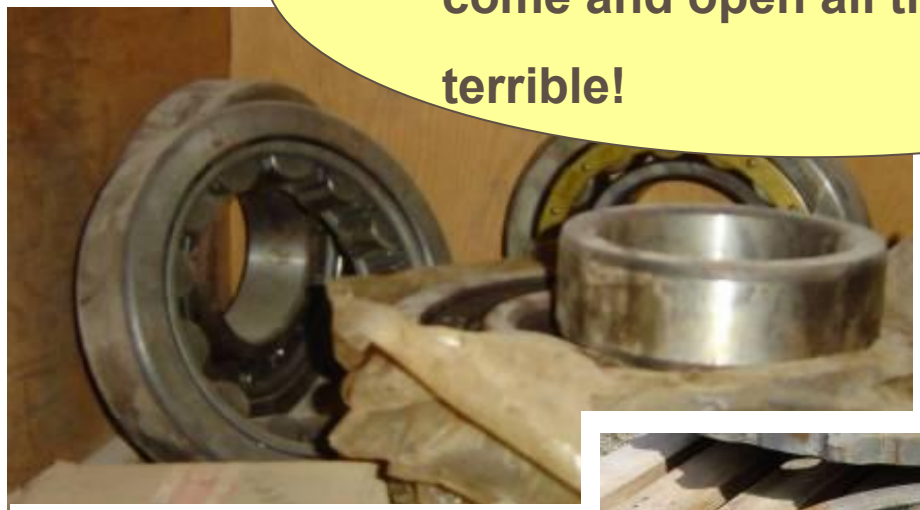
Bearings



Oh you know these maintenance guys always come and open all the boxes – terrible!

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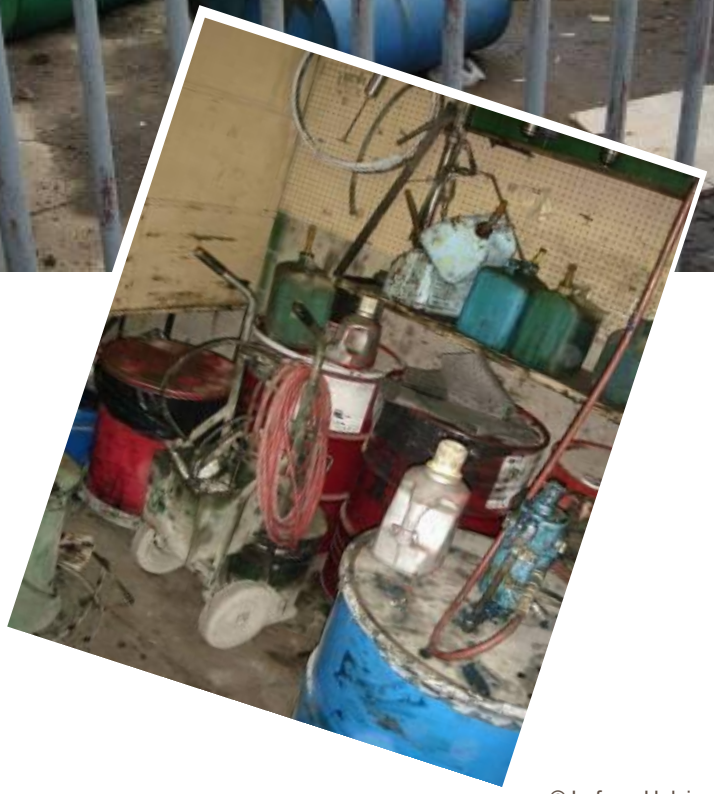
Lubricant storage

Since I've been in this place we always kept our lubricants like this. And we never had a lubrication issue.



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Electrical motors

Oh, I‘m sure you know the electricians – nice people but not very organized. Always the same!

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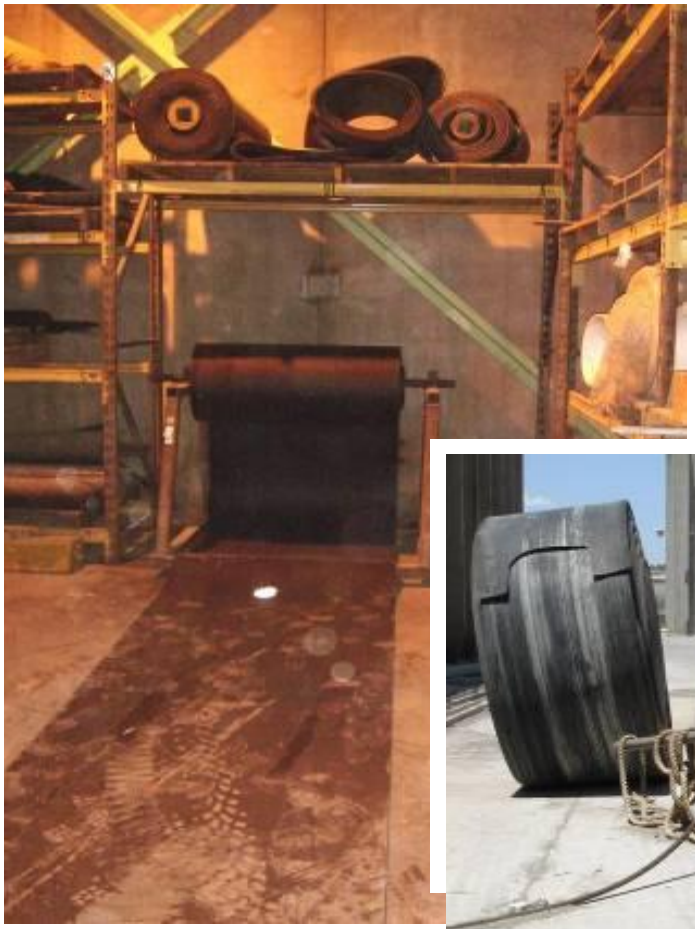
Belts of conveyors

See what happens when you have contractors on site – they always leave a mess behind them!



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(Bag) Filters

Oh, you know sooner or later these filters anyway get exposed to dust.

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Outdoor storage yard

Oh, well. If you would have come a week later, you would have found this place nicely cleaned up! I was just about to start.

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Just in case….

We haven't actually used these parts for the last 20 years – but you never know…

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Bye-bye!

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What can I do?

- Always remember: the parts kept at the warehouse are **YOUR** parts!
- Do periodic “walk-by inspections” in the warehouse using common sense and a basic check sheet
- For detailed information check the “Inventory Management Recommendations“ booklet (Chapter 9)

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Lubricant Storage

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Storage Room - Overview

Spacious and very clean room

Breather on drum

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Cans for Lubricant handling and Fire Extinguishers

One separate can for each lubricant type

Fire extinguishers

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Lubricant Storage - Points to be highlighted

- Spacious room with proper illumination
- Excellent housekeeping:
  - Cans kept very clean
  - Floor without any dust or dirt
  - Proper tools for handling of drums
  - Proper tools for execution of work (e.g.one grease gun for every type of grease!)

  ➔ Optimal working environment
- Lubricant drums stored horizontally
- Drip trays under lubricant drums
- Fire extinguishers available

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Electrical Motors

Heating system for big electrical motors

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Electrical Motors – Points to be highlighted

- Motors stored in a clean and dry room out of any vibration source, Temperature 5 to 35°C
- Motors stored on wooden pallets ➔ easy handling
- Motors bigger than 500 kW equipped with a heating system
- PMR for turning shafts of motors at least twice per year in place

Color code indicating position of shaft for PMR

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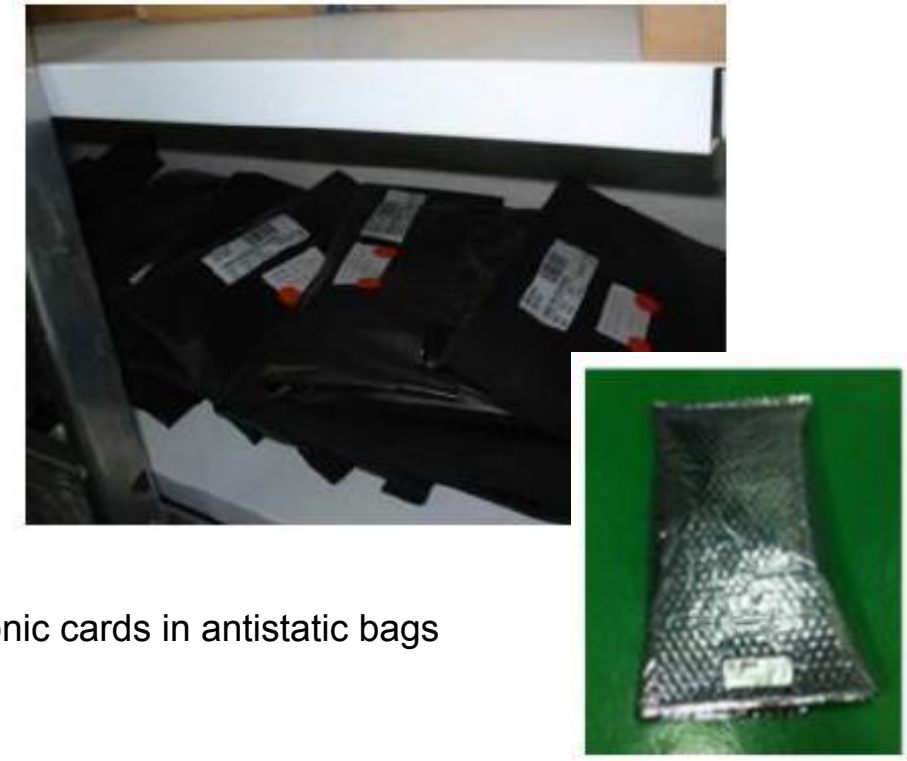
Electronic parts

- Electronic parts (e.g. cards) should be kept in a separate room, which is either pressurized or air-conditioned.
- The temperature range should be between 5 and 35°C, and humidity should be non-condensing.



Electronic cards in antistatic bags

Grounding straps, as provided by PLC suppliers, must be used

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Belt Conveyors

- Big belts suspended on steel bars
- Ensure easy access with forklift or crane
- Keep out of direct sunlight in a dry place
- Vertical storage of narrow, short belts

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Gearboxes

- Gearboxes should be filled with the lubricant as recommended by the supplier and periodically checked for leaks.
- In order to prevent corrosion, all surfaces need to be covered with an anti-corrosive layer.
- Shafts have to be turned from two to four times a year. Rotation should be for 360° to secure all teeth are fully covered in grease followed by a quality inspection

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Kiln Rollers & Girth Gear

Surfaces should be protected with an anticorrosive agent and periodically checked.

To prevent corrosion, it is advisable to protect it with an anticorrosive agent.

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Kiln Shell

- To be stored horizontally in order to prevent any deformation under their own weight
- It is important that crossbars are mounted, so the shell is kept in shape.
- If long-term storage is foreseen, it is vital to protect the shell with an anticorrosive layer/paint or a solid plastic cover

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Refractories

- Magnesia products, refractory lightweight bricks and all unburnt chemically-bonded grades of bricks to be stored in dry and well ventilated spaces

In order to avoid any excessive edge pressure on the bricks, pallets stacked on top of one another should always bear over their entire area

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Cables, Chains and Hooks

Hooks

Various short lifting cables

Chain blocks

Cable reel for long cables

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Gas Cylinders

- Gas cylinders not to be stored for excessive periods of time
- Full and empty cylinders are separated, and warning signs are in place
- The storage place has to be clearly marked – including appropriate warning signs (e.g. “no smoking”) and fire extinguishers have to be available

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Filters and Bag Filters

- Filters should be stored in a very clean place and in their original packaging
- Cages for bag filters must be stored vertically and protected against crushing hazards

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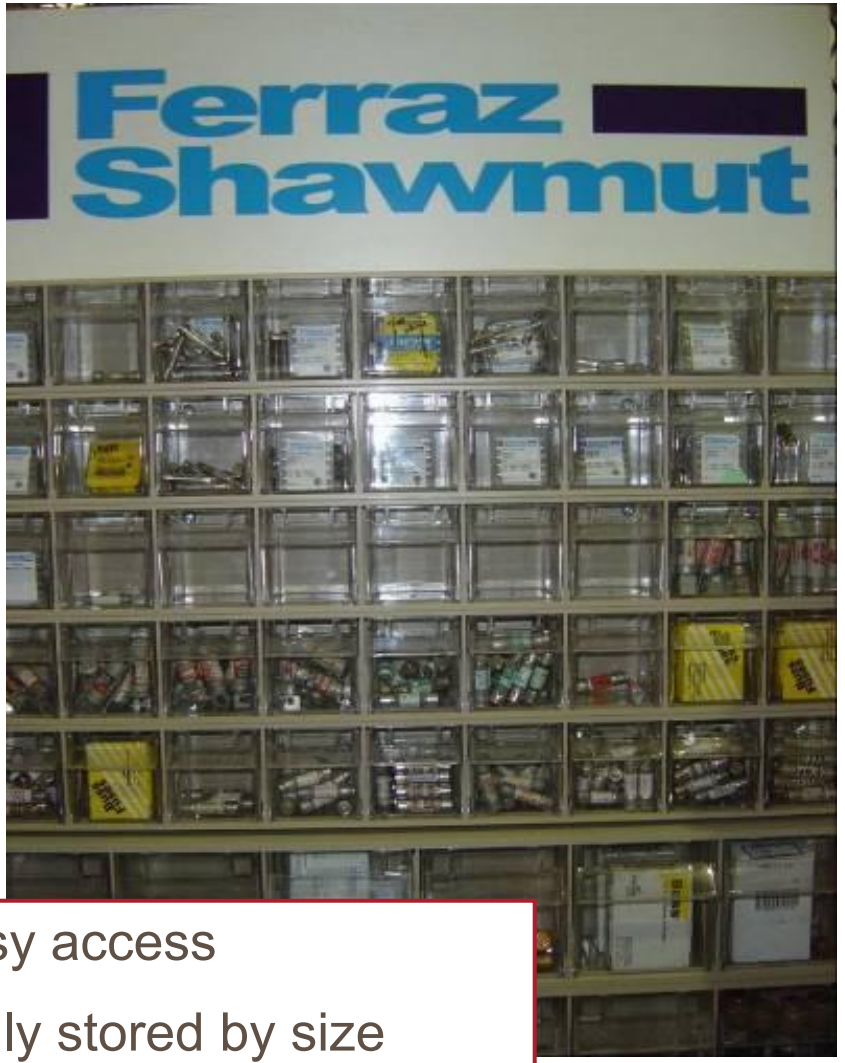
Consumables



- Fast and easy access
- Systematically stored by size

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Tools

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Tools – Points to be highlighted

- Tools systematically stored (e.g. by size)
- All tools kept orderly and clean
- Fast and efficient access
- Elimination and replacement of any damaged or worn out tool

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Net Working Capital Optimization Projects

- Objectives: Develop and implement a Program for the optimization of working capital through…
  - … improving the way procured inventory is managed whilst ensuring and maintaining the plant availability
  - … optimizing the payment terms
- Projects so far were carried out in more than 30 plants

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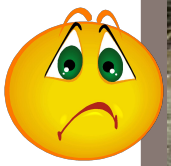
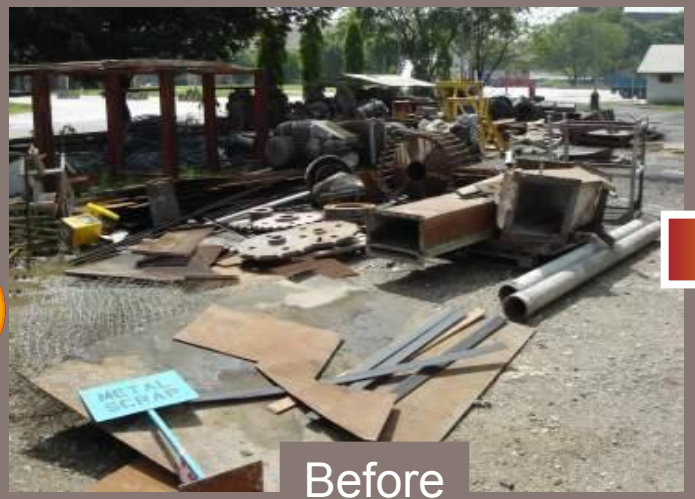
MASIMO (Master Data Standardization and Inventory Management optimization)

- Objectives
  - **Definition and implementation of standard Policies and Procedures** for material, vendor and services Master Data management
  - **Cleaning and Standardization of Master Data** with common naming convention
  - **Define and enforce stock strategies** for optimal inventory levels and critical spare parts for better plant process efficiency and reliability

MASIMO aims to standardize Master Data and optimize inventory management in the EMEA region

Outdoor storage yard – Evolution





Before

Intermediate

After

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Main Warehouse – Evolution

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Example Warehouse Evolution

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Example Warehouse Evolution

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Key Success Factors

In order to build up a proper warehouse and sustain it maintenance has to…

- …use a systematic process to determine spare parts need (quantity, quality etc.)
- …have a basic understanding of how the different spare parts should be kept
- …have a common understanding of the processes between warehouse, procurement and maintenance ➔ build up a solid relation of trust and confidence
- …provide the warehouse support in execution of PMR‘s (as far as required)
- …jointly with the warehouse staff identify obsolete parts on a regular base (once per year)
- …help maintaining proper housekeeping in and in the surroundings of the warehouse
- …report **under all circumstances** to the warehouse whenever a part has been issued after working hours

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Questions

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