

# Autonomous and Planned Maintenance

## PICTURES BEFORE

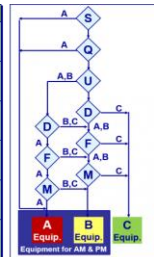


Poor condition of equipment, resulting in instable efficiency results

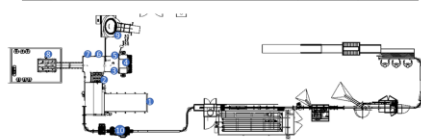
## PICTURES AFTER

Evaluation criteria	Level A	Level B	Level C
<b>S</b> Safety & Environment	Failure would cause serious safety and environmental problems	Failure would cause some safety and environmental problems	Failure would neither impact safety nor environmental problems
<b>Q</b> Quality & Yield	Failure would lead to defective products or seriously reduce yield	Failure would lead to reduced quality or reduce slightly yield	Failure would neither impact quality nor yield
<b>U</b> Utilization	24h Operation	7 - 14h Operation	Irregular utilization
<b>D</b> Delay Rate	Failure would require shut down of complete equipment	Failure would lead to partial shut down	Failure would be covered by redundant system
<b>F</b> Frequency	Failures occur regularly (once or more times a year)	Failures occur sometimes (about once a year)	Failures occur rarely (less than once a year)
<b>M</b> Maintainability	Time for repair < 4h Cost for repair > \$1500	Time for repair < 4h Cost for repair \$350 - \$1500	Time for repair < 4h Cost for repair < \$350

Classification of equipment



IA2		Autonomous Maintenance			
Sensors		Visual	Tools	Instructions	Machine Status
7	Sensors	Visual	Visual	Check that are not loose	WORKING
8	Cylinders	Visual	Visual	Check that are not loose	WORKING
9	Opening pistons	Food Machinery	Lubricate pistons	Lubricate pistons	WORKING
10	General Equipment	Rags, Alcohol, Visual	General cleaning of equipment, check for air leaks	General cleaning of equipment, check for air leaks	STOPPED
Routes	Route	Priority	Equipments	When	Duration (min)
A1	1, 2, 3, 4, 5	+	6, 7, 8, 9, 10	Monday - Wednesday 1 Thursday - 1 Friday	48,5



Autonomous Maintenance Routes

## Problem

- Low productivity amongst maintenance teams
- Lengthy stoppage times due to excessive MTTR
- Complete dependence on maintenance teams to solve every equipment issue

## Root causes

- Poor knowledge sharing between production and maintenance teams
- Interventions on the equipment done with an isolated approach, with no standard or historical information
- High volume of corrective interventions over planned interventions

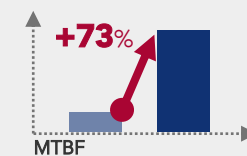
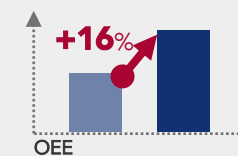
## Solution approach

- Classification of equipment according to their criticality: risk of employee injury, equipment without replacement, unstable OEE and high percentage of breakdowns
- Implementation Autonomous Maintenance processes on the critical equipment, with a standardised process to train all team members and assess their knowledge
- Creation of a planned maintenance schedule, where the high-frequency activities were passed on to autonomous maintenance
- Development of work instructions for planned maintenance activities, with yearly training calendar for the maintenance team

## Benefits

Payback Period  
5 months

Savings  
874 K€/year



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