

PREVENTIVE MAINTENANCE 4.0 SCENARIO

ACTIVITY SUMMARY

The aim of the approach is to equip production employees to work with preventive maintenance solutions through theoretical content and a consecutive practical project.

TEACHING APPROACH



**PROJECT-BASED
LEARNING IN AN
INDUSTRY PROJECT**



**PERSONALIZED
LEARNING USING A
LARGE LANGUAGE
MODEL**



**DIGITAL
LEARNING**



**FLIPPED
CLASSROOM**

LEARNING OBJECTIVES

Knowledge

- Ability to understand the basics of preventive maintenance (PM)
- Ability to use basic PM models for maintenance

Technical skills

- Ability to assess data trends and model results
- Ability to use the results of PM models to improve processes

Interpersonnal skills

- Ability to organize interdisciplinary communication in a goal-oriented manner (maintenance, team management,...)

MATERIALS

TABLET OR COMPUTER

LARGE LANGUAGE MODEL

INDUSTRIAL MACHINING PROCESS

LEARNING SCRIPT

WHITEBOARD

RESPONSABILITY

- The operator acts as a supervisor of automated production, utilizing enhanced monitoring systems.
- The operator can take responsibility for managing maintenance interventions before an error occurs.
- The operator can communicate with different departments describing problems that occurred on a given machine.

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SPECIFICATIONS OF THE ACTIVITY

INTRODUCTION

Recommended duration : 45min

The first chapter introduces the learner to the concepts of the four industrial revolutions. It further outlines in what way operator working changes with the fourth industrial revolution.

THE LEARNER GETS TO KNOW THE CONCEPT OF INDUSTRY 4.0 AND SEES IN WHAT WAY WORKING REQUIREMENTS CHANGE

THEORY

Recommended duration : 120 min

The learner is introduced to basics of several maintenance strategies including advantages and disadvantages each. He also learns basics of data competences in manufacturing environments, including common problems during data collection. Thereupon he is provided with strategies for data and model evaluation. Lastly, he learns practical examples with use cases from industry.

LEARNERS GET IN TOUCH WITH THE BASIC CONCEPTS OF PREVENTIVE MAINTENANCE AND COMMON DATA IN MANUFACTURING.

QUIZ

Recommended duration : 20 min

Using ChatGPT the learner is asked basic concepts of the theory block. This serves as an entry test before the industry project.

INDUSTRIAL PROJECT

Recommended duration : 2 weeks

Upon finishing the entry test, learners are asked to transfer the concepts learned to their own manufacturing environments. For this, they have to implement a first PM use case, making use of predefined code.

TBD

LEARNERS TRANSFER THE KNOWLEDGE GAINED TO THEIR OWN INDUSTRIAL ENVIRONMENTS ENSURING A BETTER UNDERSTANDING OF THE CONTENT

REFLECTION

Recommended duration: 15 min

Using the method of flipped classroom, learners are asked to summarize basic concepts to the teachers.

LEARNERS EXPLAIN THE CONTENT LEARNED TO THE TEACHERS IN ORDER TO ENSURE KNOWLEDGE INCREASE.

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EVALUATION

Knowledge assessment

- This evaluation will focus on content and cognitive knowledge acquired during the training.
- It will be objective, measuring the trainees' cognitive skills.
- Questions will cover key concepts trained in the course.



Perception assessment

- This evaluation will explore the trainees' perception of the training methodology, allowing them to express their opinions and feelings.
- A second survey provided 6 months after completion will evaluate the outcome of the course.