

CORRECTIVE MAINTENANCE 4.0 SCENARIO

ACTIVITY SUMMARY

The overall activity is conducted as a challenge between two groups to perform corrective maintenance for a 4.0 production line using technologies and applying the diagnostic and repair approach.

TEACHING APPROACH



HANDS-ON
EXPERIENCE



ROLE-PLAYING
GAME



CHALLENGE



INTERACTIVE
TEACHING

LEARNING OBJECTIVES

Knowledge

- Identify and describe three Industry 4.0/5.0 technologies and their application in maintenance.
- Explain the fundamental principles of CMMS and MES
- Understand the role of maintenance

Technical skills

- Utilize CMMS skills to read work request by phone, initiate work orders, and complete Report
- Access technical documentation via AR
- Diagnose and investigate the causes of breakdowns using 4.0 technologies and IHM

Interpersonal skills

- Employ team skills to collaborate effectively with colleagues in a production environment.
- Apply collaborative skills with machines or cobots to optimize production processes
- Understand the importance of vigilance in safety matters during production operations..
- Describe the importance of critically evaluating human value in the workplace

MATERIELS

ASSEMBLY LINE WITH COBOT

ASSEMBLY LINE WITH ROBOT

MES WORKSTATION

CMMS

2 AR TABLET

STANDARD TOOLBOX

RESPONSABILITY

- Operator 4.0 acts as a supervisor of automated production, utilizing enhanced monitoring systems.
- The maintenance operator 4.0 can take responsibility for managing maintenance interventions by interacting with the HMI.
- The maintenance operator 4.0 can take responsibility for managing the CMMS, reporting corrective failures, and assisting the maintenance team in data analysis and implementing predictive maintenance.
- The maintenance operator 4.0 can take responsibility for participating in the configuration of AR content necessary for diagnostics as well as repairs.

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SPECIFICATIONS OF THE ACTIVITY

AWAKEN TRAINEES CURIOSITY

Recommended duration : 45min

Allow students to immerse themselves in VR experiences. Present two scenarios: the first one simulates a comforting environment akin to being in a mountain villa, offering a serene and relaxing setting; and the second involves performing basic maintenance tasks like donning PPE, reviewing maintenance logs, and tightening screws.

ASKING STUDENTS ABOUT THEIR PERCEPTIONS OF VR. RAISE AWARENESS ABOUT THE IMPACT OF VR ON HUMANS, INCLUDING BOTH ITS POTENTIAL BENEFITS AND THE CHALLENGES AND RISKS IT PRESENTS.

CONVEY THE FUNDAMENTAL KNOWLEDGE

Recommended duration : 30 min

Begin by showcasing a video illustrating the evolution of Maintenance 4.0 and the significant transformations it has brought about. Follow this with In interactive PowerPoint slides outlining the different types of maintenance, emphasizing the shift towards Maintenance 4.0 practices.

Additionally, provide a review of the communication network between various departments facilitated by CMMS and ERP systems. Conclude with a reminder of the key indicators utilized in maintenance.

ENCOURAGE STUDENTS TO CONSIDER THE IMPACT OF MAINTENANCE 4.0 ON INDIVIDUALS. INVITE THEM TO DISCUSS BOTH JOB DISPLACEMENT AND NEW EMPLOYMENT OPPORTUNITIES. STIMULATE CREATIVE IDEAS FOR ENSURING TECHNOLOGY ALIGNS WITH HUMAN MAINTENANCE NEEDS.

ENABLE TRAINEES TO APPLY THE KNOWLEDGE

Recommended duration : 60 min

The class is divided into two groups, each led by a team leader. The challenge involves a role-playing scenario among a production operator, a maintenance team leader, and a maintenance operator, addressing a similar detected malfunction in two assembly lines. The leaders receive work requests via CMMS mobile phones to manage the malfunction. The teams must carry out diagnostic and repair procedures.

During these stages, the groups will use augmented reality (AR) and the human-machine interface (HMI).

POSE REFLECTIVE QUESTIONS ABOUT THE ADVANTAGES OF BOTH COLLABORATION BETWEEN HUMANS AND MACHINES, AND OF AR. DISCUSS THE ADVANTAGES IN AIDING PROBLEM-SOLVING, IMPROVING WORKING CONDITIONS, WELL-BEING, AND EFFICIENCY OF MAINTENANCE PERSONNEL.

STIMULATE TRAINEES' REFLECTIONS ABOUT THE TRAINING, AND FOSTER LIFELONG LEARNING AND CONTINUOUS IMPROVEMENT

Recommended duration: 15 min

At the end of the training, Provide trainees with tools for lifelong learning, such as available MOOCs, micro-certifications, attending trade shows, webinars, and joining networks focused on maintenance

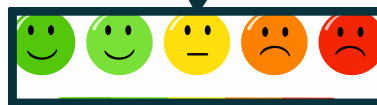
SENSITIZE ABOUT CONTINUOUS TRAINING IS ESSENTIAL IN INDUSTRY 4.0 TO KEEP PROFESSIONALS COMPETITIVE IN A RAPIDLY EVOLVING TECHNOLOGICAL LANDSCAPE. IN SUCH TRAINING ENSURES EMPLOYABILITY AND FOSTERS A SUCCESSFUL DIGITAL TRANSITION, BENEFITING BOTH INDIVIDUALS AND ORGANIZATIONS..

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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 related to Industry 4.0



Perception assessment

- This evaluation will explore the trainees' perception of the training methodology, allowing them to express their opinions and feelings.
- Feedback will highlight aspects they appreciated and areas they found less favorable.
- Trainees will also have the opportunity to suggest improvements or adjustments they'd like to see in the training.