



CAR Master training

Syllabus of face-to-face workshop

Day 1

Topics:

Total Productive Maintenance

Production process basics



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1 INTRODUCTION

Project CAR Master, No. 2021-1-CZ01-KA220-VET-000033332, is a European Project which is supported by ERAMUS+ – KA2 Cooperation for innovation and the exchange of good practices, Strategic Partnerships for VET education.

The project is mainly focused on blended learning educational program CAR Master and on creating an online platform as a tool for innovative methods which educates masters. The aim of our project is to identify current qualification requirements of CAR Masters in the European automotive sector.

40 % of the education is available online in the CAR Master program, and this tool is supported by face-to-face training, which consists of 60% of the whole learning content. Online learning platform provides modern and attractive methods of education – MOOC, microlearning, gamification etc.

In order to achieve this objective, CAR Master intends to create a standardized non-academic knowledge base with the learning material to spread out the information about the benefits and challenges of blended learning in Europe. More specifically, the project results are the following:

Result 1: Definition of key skills of masters

Result 2: CAR Master Curriculum

Result 3: CAR Master Learning experience platform

Result 4: Face to face study

Result 5: Accreditation CAR Master

Result 6: CAR Master xlearning platform - finalization

This workshop syllabus is part of the result 4– Face to face study. We are using the flipped classroom methodology, when the target group will be supported by a face-to-face workshop to successfully graduate the whole learning sessions, including the learning materials in Results 2 and 3.

The workshop syllabus is a very detailed document for the teachers and trainers, including the schedule, goals, and teaching methods of working with the target group during the face-to-face sessions.

Consequently, the Erasmus+ project CAR Master aims at the following activities:

- To define the competence framework of production managers
- To improve the combination of hard and soft skills of production managers (masters)
- To develop open education and innovative practices in a digital area and face-to-face (blended learning)
- To create an online platform as a tool for innovative methods which educate masters.

This **workshop syllabus** was **established for adult educators** working in production companies with masters, foremen, team leaders or productive managers. The main objective is to develop the competencies that productive managers need for daily practical work in industrial companies. It gives an overview of the objectives, the target group, and the contents of the learning materials. In addition,

it provides adult educators with ideas on how to include these contents in their teaching and how to deliver them to their learners.

1.1 Face to face workshop

CAR Master methodology consists of 10 learning units in MOOC:

Unit 1: Total productive maintenance

Unit 2: Production process

Unit 3: Quality control methods

Unit 4: Digital Competences

Unit 5: Economical and organizational knowledge

Unit 6: Professional communication

Unit 7: New technologies

Unit 8: Environment and green skills

Unit 9: Health promotion and Risk prevention

Unit 10: Leadership role of masters

All content units have in the online platform the sections self-assessment tool, MOOC with quizzes, gamification and microlearning.

Face-to-face workshop consists of 5 days to support the self-study during the learning session through the CAR Master Learning experience platform. The workshop syllabus follows the 7 units from the whole learning content as follows:

- Day 1: Total productive maintenance (4 hours) and Production process (4 hours)
- Day 2: Quality control methods (4 hours) and Economic and organizational knowledge (4 hours)
- Day 3: Digital Competences (8 hours)
- Day 4: Professional Communication (8 hours)
- Day 5: Leadership role of masters (8 hours)

We, therefore, support using the **flipped classroom principle** with self-assessment tool, MOOC, microlearning, and gamification (PR3) primarily for theoretical parts of courses that do not require intensive student-teacher interaction. This frees up discussion between the teacher and the student within the direct teaching subsidy - in a face-to-face meeting, there is more space for critical topics, deeper explanations or confrontation of expert opinions and their defence.

One day/8 hours will be focused on the above-mentioned 7 topics – in total 5 days.

That document is primarily addressed to adult educators: teachers, trainers or some persons realizing the training with adults in production companies. It is a detailed syllabus with the proposed time

schedule, which can be modified according to the needs of the trainers and especially of the workshop's participants.

2 WORKSHOP SYLLABUS

2.1 Goals

The aim of this workshop series is to help the adult learners to become more effective in their daily work of master/productive manager. They will practice the knowledge from the self-study with many practical examples, case studies with the support of the trainer and in the team.

- Adult learners will be able to use the theoretical knowledge in practice.
- Adult learners will be able to use the theoretical knowledge in team cooperation.
- Adult learners will understand the consequences of the appropriate topics in practical use.
- Adult learners will learn to share the obtained skills with your colleagues and teacher.

2.2 Session Goals

The following session goals follows the learning objectives of online study and are addressed to the adult educators to understand the learn objectives of each topic. The session goals for workshop's participants are stated in the attachment Nr. 1 (Syllabus of full-time workshop for adult learners) and should be share with the participants before workshop or on its very beginning.

2.2.1 Total productive maintenance

After completing the session "Principles of Total Productive Maintenance" the participant will know and be able to:

- the basics around maintenance
- describe maintenance strategies
- the economic importance of maintenance
- describe typical weak points
- the most important basics of Total Productive Maintenance (TPM)
- the 8 pillars concept of TPM
- goals of TPM
- the 5S method

- the most important basics of people management under TPM
- the concept of autonomous maintenance
- how to introduce the concept of TPM to employees
- how to delegate tasks
- the concept of autonomous maintenance

2.2.2 Production process

In this learning session, the participant deals with the most essential basics of the production process. The participant will learn:

- important elements and instruments around work and process planning
- planning strategies and planning methods
- coding and numbering
- the tasks of scheduling
- how the lead time is made up
- the most important terms of capacity and materials management
- methods and goals around material planning as well as working time organization
- the objectives of capacity management
- material requirements planning
- the basics of working and operating time organisation
- the principles of Lean production and associated tools
- the basics of the value chain and how to fundamentally reduce waste along it
- how the KANBAN system works

2.2.3 Quality control methods

To understand the important and cross-company aspect, the participant will

- Know what quality planning involves
- Able to name the levels of quality planning
- Know quality characteristics

- Able to describe internal and external advantages of quality management systems
- Know the objectives, principles, and benefits of quality management systems
- Know the continuous improvement process (CIP) approach to product, process and service quality
- Able to name the phases of CIP
- Know the differences between CIP and Kaizen
- Four important quality management tools and their use in the automotive industry (Ishikawa/fishbone diagram, 5 Why method, Poka-Yoke, 8D method)

2.2.4 Economic and organizational knowledge

In this session the participant will learn about:

- the sub-areas of accounting
- the principles and tasks of controlling
- definitions the terms income and expenses
- definitions the term costs
- name the objectives of human resource planning
- definitions qualitative human resource planning and describe the procedure in qualitative human resource planning
- definitions the terms payment system and remuneration
- the European minimum requirements of working conditions
- the EU regulations to improve work-life balance
- questions they are allowed to ask during a job interview

2.2.5 Digital Competences

In this session the participant will:

- understand the basic characteristics of data security.
- understand the terms cybercrime and hacking.
- be able to recognize malicious and unsolicited emails.
- know measures to physically secure computers and mobile devices.

- know the important mathematical and statistical functions of Excel.
- be able to visualise the data adequately.
- be able to create a pivot table.
- understand the basic characteristics of data security.
- understand the terms cybercrime and hacking.
- be able to recognize malicious and unsolicited emails.
- know measures to physically secure computers and mobile devices.
- know the important mathematical and statistical functions of Excel.
- be able to visualise the data adequately.
- be able to create a pivot table.

2.2.6 Professional Communication

After completing this unit, the participant will have the following knowledge to:

- understand how communication processes are structured.
- explain how communication works according to the sender-receiver model.
- know possible reasons for communicative misunderstandings.
- explain which goals can be pursued with questioning techniques.
- explain when a conflict exists and what the basic characteristics are.
- name the basic characteristics of an escalation.
- know the basic patterns of conflict resolution.
- know potential subjects of dispute which can further lead to conflicts.
- know tools for difficult communication situations.
- explain possible meeting objectives.
- know the rules of meeting preparation.

2.2.7 Leadership role of masters

In detail, the participant should have the following knowledge after completing the course unit:

- define the leadership styles and list the competence of leaders.

- know the basic pillars of successful (team) leadership.
- know the definition of a team role.
- present different circumstances that have a motivating effect on employees.
- know the characteristics of ageing-appropriate work design.
- describe how age can influence the ability to work and behavioural prevention of work in old age.
- explain the term gender.
- explain the relationship between language and reality and use this to make arguments for gender-sensitive language.
- awareness that the unequal treatment of men and women is not only based on biological but rather on social factors.
- know what intercultural diversity is and can effectively support cultural diversity, promote cross-cultural communication and understanding.

2.3 Duration

The recommended duration of the workshop is 5 days, 8 hours per day and 40 hours in total. The recommended length for each of 7 learning session is stated above and can be changed according to the requirements of the particular company or participants. The workshop is designed to support the students in the whole process of blended learning:

- To explain the adult learners the complete methodology of CAR Master
- To prepare the adult learners for all phases of blended learning and be a supportive guide for them during the workshops
- To provide the adult learners with face-to-face support, interactive activities, and practical examples of the learning content
- To ensure the adult learners the various interactive methods in groups, pairs or self-study with the teacher's support in workshops

All proposed activities are specified in more detail and with an estimated time framework. But of course, the activity running or final evaluation discussion is directly proportional to the number and activity of the participants, and the planned time could be longer. It is up to the teacher or trainer to manage the activities and discussions to benefit all participants and to adjust the quantity and length of all proposed activities to the particular group of participants.

The mentioned duration and schedule of the whole workshop is only a recommendation. If the teacher/trainer feels that it would be useful to prolong the duration for more days using all proposed activities, it can be provided. The minimal duration of 5 days/40 hours should be kept reaching the required educational effect for the target group.

It is up to teachers and trainers to customize a proposed pool of activities to the national and local habits. The teacher or trainer is the most familiar with the needs of a particular group, so it is up to him/her to change the start of the workshop (f.e. from 9:00 to 8:00) or the duration of the workshop from 8 to 6 hours and plan more days to keep the recommended duration. The teachers and trainers can understand the proposed learning content as a pool of recommended activities, and their use and composition should strictly respect the needs of a particular group of participants and national/local habits.

1st day is recommended to realize before starting the whole study to obtain the appropriate information on how the whole learning methodology works.

The other days should follow the week (or more) after self-study of the appropriate unit/topic.

The recommendation for the total period of face-to-face workshop is 5 weeks (1 day per week), but the final decision on how to implement this workshop is up to the teacher/trainer. The workshop can also be realized as intensive training in 1 week, or the trainer can choose another division of 5 days.

2.4 Required texts, materials or equipment

Each activity proposed in the workshop design has its structure with a detailed description of the required texts, materials or equipment. The following items are generally necessary for successful workshop running in general.

For participants:

- link to learning texts for self-study: CAR Master platform registration, including the self-assessment tool
- notebook/tablet/smartphone for self-study sessions
- papers/pencils etc.

For trainers/adult educators:

- flipchart, board
- data projector for presentations
- notebook
- cards for participants

- papers, pencils
- dissemination material of the project (PR video, leaflets etc.)
- equipment stated directly in the description of each activity.

2.5 Target group

The target group we focus on is formed mainly by masters (foremen/production managers). They implement the management decision right into the work of operators. They have a direct impact on the quality of products and the effectiveness of the process. Right now, all industrial companies have a lack of educated employees for the position of managers. In general, CAR Master's target audience is:

- Industrial companies
- Masters and talents in industrial production
- Trainers, HR experts
- Educational institutions and schools

It is recommended to have only a small group of the participants – maximum of 15 persons to ensure the individual access and support to all of them.

2.6 Evaluation of the workshop

The participant will be a successful graduator if participates in 70% of the total workshop duration, i.e. he/she has to pass at least 28 hours in face-to-face learning (in case of planned 40 recommended hours). After successful participation, the participant will receive the certificate confirming the attendance. The certificate template is attached to that document as Appendix Nr. 3.

It is recommended to ask the participants for their expectations at the beginning of the face-to-face workshop and to obtain the final feedback on the last day of the workshop. The continuous evaluation will be made at the end of each session day.

The evaluation of the knowledge and skills will be realized continuously during the session by the teacher. The participants will receive individual recommendations continuously during the whole workshop.

The trainer should appreciate the partial successes of the learning and be supportive individually to each participant.

3 SCHEDULE OF THE WORKSHOP

3.1 Day 1 – Total Productive maintenance and Production process

Introduction:

The first day of the face-to-face methodology is focused on the first and second learning topics: Total Productive Maintenance and Production process. The duration of each topic should be 4 hours; the

whole learning day is planned for 8 learning hours with short coffee breaks and 1 hour for lunch. The planned schedule can be changed according to the trainer's needs and participants' group – also division to 2 half days is possible.

9:00 – 10:00 – Warming/expectation/game how to know each other

The teacher will introduce the methodology/project (using the leaflet, PR video, website etc.) and explain the workshop goals.

WORKSHOP SESSION	<p>Warming/expectation/game how to know each other</p> <p>Day 1, 09:00 – 09:20</p>
ACTIVITY NAME	<p>Activity 1 – Warming up</p>
OBJECTIVES	<ul style="list-style-type: none"> ● Getting to know the CAR Master project ● Getting an overview of the workshop structure and goals
DESCRIPTION	<p>1. Preparation</p> <p>The teacher/trainer prepares information materials about the CAR Master project (leaflet/video/website) to be able to explain the project goals as well as workshop goals to the students. The teacher/trainer also prints the overview document about the workshop for the students or provides it digitally to them.</p> <p>2. Explain the activity to the students (briefing)</p> <ul style="list-style-type: none"> ● Explain what students can expect from the next 15 minutes. <p>3. Run the activity</p> <ul style="list-style-type: none"> ● Show the students the leaflet/video/website of the CAR Master project and explain the goals of this project. ● Explain to the learners that they can find an overview document about the workshop printed or digitally, this includes all important information about the workshop.

	<ul style="list-style-type: none"> ● Explain the goals, the structure, and the rules of this workshop to the students. <p>4. Evaluation (debriefing)</p> <ul style="list-style-type: none"> ● Ask your learners if they have some questions
<p>TIME FOR THE ACTIVITY</p>	<p>Total time: 18 minutes (+ preparation time)</p> <p>-----</p> <p>Preparation time: 20 minutes</p> <p>Briefing time: 1 minute</p> <p>Activity time: 15 minutes</p> <p>Evaluation time: 2 minutes</p>
<p>SETTING OF THE ACTIVITY</p>	<p><i>Identify if it is an individual or group activity, if it is led by the teacher or if it is self-learning, if it is done in class or at home. If it is done in group, specify the number of students per group. Specify also the different roles of the teacher and the learners.</i></p> <p>This activity is led by the teacher/trainer and done in the plenum in class (or via video conference).</p> <p>Teacher's/Trainer's role:</p> <ul style="list-style-type: none"> ● The teacher/trainer is briefing the students at the beginning ● The teacher/trainer is presenting the project and the workshop structure, rules and goals ● The teacher/trainer is asking the students if they have any questions at the end <p>Learners' role:</p> <ul style="list-style-type: none"> ● The students are listening to the explanations and ask questions if they have some
<p>MATERIALS FOR THE TEACHER</p>	<ul style="list-style-type: none"> ● Workshop structure ● Activity explanation ● Leaflet and PR video (the teacher/trainer can download the leaflet and PR video in English, German, Spanish, Polish, Slovakia and Czech on website:

	<p>https://www.car-master.eu/ - PR video on homepage and leaflets on section News.</p> <ul style="list-style-type: none"> ● website of the CAR Master project: https://www.car-master.eu/
MATERIALS FOR THE STUDENT	<ul style="list-style-type: none"> ● Workshop overview document (can be found in Annex 1) ● Paper, pencils

Then the teacher asks all participants for the expectations for all learning sessions. The participants will write their 2-3 expectations to the cards (5 minutes for individual work). Then the teacher will ask all participants to present his/her expectations and put the cards to the visible place (flipchart/black board).

WORKSHOP SESSION	<p>Warming/expectation/game how to know each other</p> <p>Day 1, 09:20 – 09:50</p>
ACTIVITY NAME	Activity 2 – Expectation of the participants
OBJECTIVES	<ul style="list-style-type: none"> ● Getting to know the expectations from the students. ● Getting an overview for the final evaluation in the end of the workshop <ul style="list-style-type: none"> ○ Were the expectations fulfilled? ○ In case not – why? ○ What was the main important point/view during workshop? ○ What should be improved?
DESCRIPTION	<p>1. Preparation</p> <p>The teacher/trainer prepares cards for participants, where each student will write 2-3 expectations from the workshop.</p> <p>2. Explain the activity to the students (briefing)</p> <ul style="list-style-type: none"> ● Explain what students can expect from the next 5 minutes.

	<ul style="list-style-type: none"> ● Write down the expectations from the workshop. <p>3. Run the activity</p> <ul style="list-style-type: none"> ● Give to the students the cards. ● Ask the learners for their 2-3 expectations from the session – you can use the tips for questions: <ul style="list-style-type: none"> ○ What do you expect you will learn during the session? ○ What do you want to learn? ○ What casual obstacles can you challenge during session? ○ How can teacher and your classmates can you support during study? ● Leave the students time for individual work (5 minutes). ● Ask the students to present their expectations (1-2 minutes per student) <p>4. Evaluation (debriefing)</p> <ul style="list-style-type: none"> ● The teacher/trainer will continuously summarize the expectations on the black board or flipchart during the student’s speaking. ● The teacher will summarize the types of expectations. ● The teacher will notice that the expectations will be evaluated during the final day of the workshop. ● Ask your learners if they have some questions
<p>TIME FOR THE ACTIVITY</p>	<p>Total time: 30 minutes (+ preparation time)</p> <p>-----</p> <p>Preparation time: 5 minutes</p> <p>Briefing time: 2 minutes</p> <p>Activity time: 20 minutes</p> <p>Evaluation time: 8 minutes</p>
	<p><i>Identify if it is an individual or group activity, if it is led by the teacher or if it is self-learning, if it is done in class or at home. If it is done in group, specify the number of students per group. Specify also the different roles of the teacher and the learners.</i></p>

SETTING OF THE ACTIVITY	<p>This activity is led by the teacher/trainer and done in the plenum in class (or via video conference).</p> <p>Teacher's/Trainer's role:</p> <ul style="list-style-type: none"> ● The teacher/trainer is briefing the students at the beginning. ● The teacher/trainer will summarize the types of expectations. ● The teacher/trainer is asking the students if they have any questions at the end. <p>Learners' role:</p> <ul style="list-style-type: none"> ● The students are writing down their expectations during individual work. ● The students are presenting their expectations in the plenum. ● The students ask questions if they have some.
MATERIALS FOR THE TEACHER	<ul style="list-style-type: none"> ● Black board/flipchart ● Fixes
MATERIALS FOR THE STUDENT	<ul style="list-style-type: none"> ● Cards/papers ● Paper, pencils

The 3rd activity of the warming session is a game how to know each other.

WORKSHOP SESSION	<p>Warming/expectation/game how to know each other.</p> <p>Day 1, 09:50 – 10:00</p>
ACTIVITY NAME	<p>Activity 3 – Game “Who's pulling the strings here?” to know each other</p>

OBJECTIVES	<ul style="list-style-type: none">● To Introduce each other● to make contact in an unconventional way● Participants like to get to know each other this way by chance.● to eliminate the need to decide who to talk to
DESCRIPTION	<ol style="list-style-type: none">1. Preparation The teacher/trainer prepares one-metre-long coloured string for two people each (should not be too weak).2. Explain the activity to the students (briefing)<ul style="list-style-type: none">● Explain what students can expect from the next 10 minutes.3. Run the activity<ul style="list-style-type: none">● Participants stand in a circle; the train stands in the middle.● The trainer holds in one hand all the strings roughly in the middle, so that both ends of the strings hang down.● He/she then asks all participants to each grab one end of the string.● Those holding the ends of the same string form a pair.● Note: the strings and the participants usually need to be untangled first.● The participants in the pairs will shortly introduce themselves in 3-4 sentences.● Leave the students time for pair work (5 minutes).4. Evaluation (debriefing)<ul style="list-style-type: none">● Each participant will say at least 2 positive sentences about their string partner.● Ask your learners if they have some questions.

TIME FOR THE ACTIVITY	<p>Total time: 12 minutes (+ preparation time)</p> <p>-----</p> <p>Preparation time: 5 minutes</p> <p>Briefing time: 1 minute</p> <p>Activity time: 6 minutes</p> <p>Evaluation time: 5 minutes</p>
SETTING OF THE ACTIVITY	<p>This activity is led by the teacher/trainer and done in the plenum in class.</p> <p>Teacher's/Trainer's role:</p> <ul style="list-style-type: none"> ● The teacher/trainer is briefing the students at the beginning ● The teacher/trainer is asking the students if they have any questions at the end <p>Learners' role:</p> <ul style="list-style-type: none"> ● The students are introducing themselves in the string pairs. ● The students are presenting their string partner in 2 positive sentences. ● The students ask questions if they have some
MATERIALS FOR THE TEACHER	<ul style="list-style-type: none"> ● Not required
MATERIALS FOR THE STUDENT	<ul style="list-style-type: none"> ● one-metre-long coloured string for two people each (should not be too weak)

After warming up the trainer will go to the topic of Total production Management with the following activities.

10:00 – 10:30 Activity Solutions for repairs after power outages

WORKSHOP SESSION	Content/Learning Unit 01, TPM – Total Productive Maintenance Day 1, at 10:00 - 10.30
ACTIVITY NAME	Solutions for repairs after power outages
OBJECTIVES	<ul style="list-style-type: none"> ● to have students imagine a practical situation/an issue and verbally present a possible solution to a situation at the workplace ● to make students think of the best solution and choose from options A, B, C or D and present their own solution if there is any ● to explain the best solution there and why
DESCRIPTION	<ol style="list-style-type: none"> 1. Preparation (prerequisites)–2 minutes <ul style="list-style-type: none"> ● distribute materials to participants, and ensure all participants have the materials for the students 2. Explain the activity to the students (briefing) – 3 minutes <ul style="list-style-type: none"> ● Explain what the students can expect from the next 15 minutes ● Create a pleasant and positive atmosphere 3. Run the activity–15 minutes <ul style="list-style-type: none"> ● the students read the situation and the optional answers A, B, C, D provided for them in the Scenario for Students ● after the time elapsed, the trainer asks all to raise the card with the letter A, B, C or D on it ● the trainer can see who picked which option and evaluate the result (<i>verbally</i>) 4. Evaluation (debriefing) – 10 minutes <ul style="list-style-type: none"> ● those who chose not the best solution can be asked to present why they chose this particular solution ● if there are many different options chosen by the students, all can explain why they chose that particular one (<i>depending on time left</i>) ● the trainer explains why all options are correct but also why is only one of the options the best one (<i>verbally only or a presentation can be used to show the best solution and analyse why, a real example from practice if available</i>)
TIME FOR THE ACTIVITY	<i>Time for the activity (in minutes)</i> <ul style="list-style-type: none"> ● Total time:30 minutes ● Preparation time: 2 minutes ● Briefing: 3 minutes ● Activity: 15 minutes ● Evaluation: 10 minutes
SETTING OF THE ACTIVITY	<p>Individual students can work on the activity on their own or in pairs, or in small groups.</p> <p>This activity is led by a teacher/trainer and carried out in class.</p> <p>Teacher/trainer role</p> <ul style="list-style-type: none"> ● explain the activity basics ● organisation, invigilating, and assistance during the activity

	<ul style="list-style-type: none"> • facilitation of the discussion • evaluation of the results <p>Learners' roles</p> <ul style="list-style-type: none"> • pay attention to the instructions, work on the task individually or in a group
MATERIALS FOR THE TEACHER	<ul style="list-style-type: none"> • Scenario for Teachers with solutions A, B, C and D explained a presentation, a practical example(<i>optional</i>) – appendix to Day 1 Nr. 4a
MATERIALS FORTHE STUDENT	<ul style="list-style-type: none"> • Scenario for Students with cards A, B, C, and D stationary available, a pen a piece of paper - – appendix to Day 1 Nr. 4b

10.30 – 10:45 Coffee break

WORKSHOP SESSION	Content/Learning Unit 01, TPM – Total Productive Maintenance Day 1, at 10:45 – 11:25
ACTIVITY NAME	Solution for too-long repairs
OBJECTIVES	<ul style="list-style-type: none"> • to have students imagine a practical situation/an issue and verbally present a possible solution to a situation at the workplace • to make students think of the best solution and choose from options A, B, C or D and present their own solution if there is any • to explain the best solution there and why
DESCRIPTION	<ol style="list-style-type: none"> 1. Preparation (prerequisites) – 5 minutes <ul style="list-style-type: none"> • distribute materials to participants, and ensure all participants have the materials for the students 2. Explain the activity to the students (briefing) – 5 minutes <ul style="list-style-type: none"> • Explain what the students can expect from the next 20 minutes • Create a pleasant and positive atmosphere 3. Run the activity – 20 minutes <ul style="list-style-type: none"> • the students read the situation and the optional answers A, B, C, D • after the time elapsed, the trainer asks all to raise the card with the letter A, B, C or D on it • the trainer can see who picked which option and evaluate the result (<i>verbally</i>) 4. Evaluation (debriefing) – 10 minutes <ul style="list-style-type: none"> • those who chose not the best solution can be asked to present why they chose this particular solution • if there are many different options chosen by the students, all can explain why they chose that particular one (<i>depending on time left</i>)

	<ul style="list-style-type: none"> the trainer explains why all options are correct but also why is only one of the options the best one (<i>verbally only or a presentation can be used to show the best solution and analyse why, a real example from practice if there is</i>)
TIME FOR THE ACTIVITY	<p><i>Time for the activity (in minutes)</i></p> <ul style="list-style-type: none"> Total time: 40 minutes Preparation time: 5 minutes Briefing: 5 minutes Activity: 20 minutes Evaluation: 10 minutes
SETTING OF THE ACTIVITY	<p><i>Group (number of people) or individual activity?</i> <i>Lead by a teacher or self-learning?</i> <i>In-class or homework?</i> <i>Roles of teachers and learners?</i></p> <p>The activity can be worked on by individual students on their own or in pairs, or in small groups.</p> <p>This activity is led by a teacher/trainer and carried out in class.</p> <p>Teacher/trainer role</p> <ul style="list-style-type: none"> explain the activity basics organisation, invigilating, and assistance during the activity facilitation of the discussion evaluation of the results <p>Learners' roles</p> <ul style="list-style-type: none"> pay attention to the instructions, work on the task individually or in a group
MATERIALS FOR THE TEACHER	<ul style="list-style-type: none"> Scenario for teacher - Gamification Case 1: Solution for too-long repairs (Attachment to Day 1 – appendix Nr. 4c)
MATERIALS FOR THE STUDENT	<ul style="list-style-type: none"> scenario of the case for students (Attachment to Day 1 – appendix Nr. 4d including the cards A, B, C, and D stationary available, a pen a piece of paper

WORKSHOP SESSION	Content/Learning Unit 01, TPM – Total Productive Maintenance Day 1, at 11:25 – 12:05
ACTIVITY NAME	Preparation of Planned Maintenance Standards
OBJECTIVES	<ul style="list-style-type: none"> to have students imagine a practical situation/an issue and present a possible solution to a situation at the workplace to make students think of the best solution
DESCRIPTION	<p>1. Preparation (prerequisites) – 5 minutes</p> <ul style="list-style-type: none"> distribute materials to participants, and ensure all participants have all needed

	<p>2. Explain the activity to the students (briefing), 5 minutes</p> <ul style="list-style-type: none"> ● Explain what the students can expect from the next 20 minutes ● Create a pleasant and positive atmosphere ● The teacher/trainer explains the four steps of planned maintenance standards preparation. 1. For the selected diagnostic method, points (places) on the machine are determined for checking. - 2. Measurement conditions and limit values are determined. - 3. The measurement procedure will be developed, including the method of evaluating the results. - 4. A standard will be created for performing planned maintenance. Optionally the teacher/trainer uses a presentation to present the steps, and the scenario for students and provides practical examples (an example of a standard for checking a machine tool; an example of a protocol for evaluating a measurement). <p>3. Run the activity – 20 minutes</p> <ul style="list-style-type: none"> ● the students read the situational question/task and the options and examples (if available) ● after the time elapsed, the teacher/trainer asks all to stop and present the results <p>4. Evaluation (debriefing) – 10 minutes</p> <ul style="list-style-type: none"> ● the teacher/trainer evaluates the results ● those who chose not the best solution can be asked to present why they chose this particular solution ● if there are many different options chosen by the students, all can explain why they chose that particular one (<i>depending on time left</i>) ● the trainer explains all correct options (<i>verbally only or a presentation can be used to show the best solution and analyse why, a real example from practice if there is one</i>)
<p>TIME FOR THE ACTIVITY</p>	<ul style="list-style-type: none"> ● Total time: 40 minutes ● Preparation time: 5 minutes ● Briefing: 5 minutes ● Activity: 20 minutes ● Evaluation: 10 minutes
<p>SETTING OF THE ACTIVITY</p>	<p>The activity can be worked on by individual students on their own or in pairs, or in small groups.</p> <p>This activity is led by a teacher/trainer and carried out in class.</p> <p>Teacher/trainer role</p> <ul style="list-style-type: none"> ● explain the activity basics ● organisation, invigilating, and assistance during the activity ● facilitating the discussion ● evaluation of the results <p>Learners' roles</p> <ul style="list-style-type: none"> ● pay attention to the instruction, work on the task individually or in a group
<p>MATERIALS FOR THE TEACHER</p>	<ul style="list-style-type: none"> ● a presentation as needed (<i>optional</i>)

MATERIALS FOR THE STUDENT	<ul style="list-style-type: none"> ● any equipment, or machine that is available ● a "blank sheet" for the participants to fill in (<i>optionally</i>) ● a scenario/task explained, including an example of a standard for checking a machine tool, and an example of a protocol for evaluating a measurement (optionally or the teacher/trainer explains only verbally, see in a separate document: Attachment to Day 1 – Appendix Nr. 4e) ● stationary available, a pen a piece of paper
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WORKSHOP SESSION	Content/Learning Unit 01, Total Productive Maintenance Day 1, at 12:05 – 13:00
ACTIVITY NAME	Standardised processes, setting goals and uniformity
OBJECTIVES	<ul style="list-style-type: none"> ● to lead students to create their own standardized procedure ● to make students think of the best-standardised process ● to get students to explain why they chose a given procedure ● to reach an understanding of the importance of planning according to four criteria explained in Content Unit 02, chapter 2.2 Work and process planning ● to reach an understanding of how templates, jigs, moulds, fixtures, and alignment mechanisms in production make work easier, make production more efficient and increase production productivity.
DESCRIPTION	<ol style="list-style-type: none"> 1. Preparation (prerequisites) –0 minutes No special preparation is necessary. 2. Explain the activity to the students (briefing), 10 minutes <ul style="list-style-type: none"> ● Explain what the students can expect from the next 20 minutes ● distribute materials to participants, and ensure all participants have the materials for the students ● Create a pleasant and positive atmosphere 3. Run the activity – 20 minutes <ul style="list-style-type: none"> ● the students complete the task ● after the time elapsed, the teacher asks all to stop the activity 4. Evaluation (debriefing) – 15-20 minutes <ul style="list-style-type: none"> ● students can be asked to present why they chose this particular process (<i>depending on time left</i>) ● the trainer explains ... (<i>verbally only or a presentation can be used to show the best solution and analyse why, a real example from practice if there is one</i>)
TIME FOR THE ACTIVITY	<i>Time for the activity (in minutes)</i> <ul style="list-style-type: none"> ● Total time: 45-50 minutes ● Preparation time: -- 0 minutes ● Briefing: -- 10 minutes

	<ul style="list-style-type: none"> ● Activity: -- 20 minutes ● Evaluation: -- 15-20 minutes
<p style="text-align: center;">SETTING OF THE ACTIVITY</p>	<p>The activity can be worked on by individual students on their own or in pairs, or in small groups.</p> <p>This activity is led by a teacher/trainer and carried out in class.</p> <p>Teacher/trainer role</p> <ul style="list-style-type: none"> ● organisation, invigilating, and assistance during the activity ● facilitate the discussion ● the teacher prepares and hands out a written scenario for students, or the teacher/trainer explains only verbally what needs to be achieved in what timeframe, with the specification of <ul style="list-style-type: none"> ○ Quality criteria (there are equal quality criteria for all participants): a minimum quantity of T-shirts folded and placed on a table next to the box in a specific time, e.g. 20 T-shirts in 5 minutes ○ and with the Rules: all decide on the work process themselves, all can communicate with others freely, no limits or conditions are in place here ● goal setting – a group decides, or an individual decides on the work process, there are no limits or conditions (the groups can even communicate among themselves or exchange ideas, each individual or a group decides on their own what approach to take) ● expected outcome: each individual, each group, folds the T-shirts differently and places them on a different side of the box, in a different way ● evaluation – the teacher explains what happened and why different results were achieved. Only after then the teacher presents the option using a “T-shirt folding board” – a video can be used to demonstrate its use. The teacher explains how the “T-shirt folding board” helps standardising the production process, speeding up the process and achieving better quality results. <p>Learners’ roles</p> <ul style="list-style-type: none"> ● pay attention to the instructions, work on the task individually or in a group
<p style="text-align: center;">MATERIALS FOR THE TEACHER</p>	<ul style="list-style-type: none"> ● Unit 02, 2.2 Work and process planning (<i>Content available on the CAR Master platform</i>) ● a box full of T-shirts of different colours, the same type of a shirt or two types e.g. small and big size (for kids and adults) ● T-shirts folding board available in any general merchandise retailer, supermarket https://www.kaufland.sk/product/344694520/?vid=455795635 ● a scenario for the teacher (<i>optional</i>) ● a presentation (<i>optional</i>), a video to play https://www.youtube.com/watch?v=93KDZ3hxN-c ● a self-made form
<p style="text-align: center;">MATERIALS FOR THE STUDENT</p>	<ul style="list-style-type: none"> ● a scenario of the case for the students (<i>optional</i>)

13:00 – 14:00 Lunch

14:00 The second part of the day will be focused on the topic “Basics production process”. We will

focus on the first activity of this topic.

WORKSHOP SESSION	<p>Name of learning unit “Basics production process”</p> <p>Day Nr. 1, time 14:00 – 14:45</p>
ACTIVITY NAME	<p>“What I have learned so far”</p>
OBJECTIVES	<ul style="list-style-type: none"> ● Reflection on knowledge already acquired on the topic. ● Summarising the acquired knowledge. ● Clarification of any misunderstandings that may arise with regard to the content of the online learning platform.
DESCRIPTION	<ol style="list-style-type: none"> 1. Preparation – 10 minutes <ul style="list-style-type: none"> ● Just copy the Canva-whiteboard so that the learners do not overwrite the original whiteboard. Generate a QR-Code for the learners to scan or make the link to the whiteboard available via the most commonly used communication tool (email, Moodle, etc.). <p>Here is the link to the Canva-whiteboard: link</p> <ul style="list-style-type: none"> ● You should also ensure that at least every third learner takes a digital device with them to the workshop day. ● If it is not possible to work with the Canva-whiteboard or you prefer to do this activity offline, there is also a printable version available. Then you need to ensure that enough print copies are prepared (link above). 2. Explain the activity to the students (briefing) – 5 minutes. <ul style="list-style-type: none"> ● Explain what learners can expect from the next 45 minutes. 3. Run the activity – 25 minutes. <ul style="list-style-type: none"> ● Open the Canva whiteboard on the trainers’ notebook so everyone can see it. ● Divide the class into three equal groups and ensure that every group has at least one digital device for writing on the online whiteboard. ● Give each group one of the three main topics listed on the online whiteboard: Work and process planning, Resource planning and Principles of Lean Production ● Work in groups for 20 minutes: <p>Each group reflects and summarises the knowledge acquired on the assigned topic and writes down its learnings on the online whiteboard. The groups can also note down possible questions on this topic, which the trainer will try to clarify afterwards.</p> 4. Evaluation (debriefing) – 15 minutes <ul style="list-style-type: none"> ● Summarise the learnings in relation to the three topics and clarify the asked questions written down on the whiteboard. ● You can also ask learners if they want to summarise the most important learnings

TIME FOR THE ACTIVITY	<p>Total time: 55 minutes</p> <p>-----</p> <p>Preparation time: 10 minutes Briefing time: 5 minutes Activity time: 20 minutes Evaluation time: 15 minutes</p>
SETTING OF THE ACTIVITY	<p>This activity is led by the trainer and done in groups.</p> <p>Teacher's/Trainer's role:</p> <ul style="list-style-type: none"> ● Explaining the running of the activity. ● Being available to the groups for questions during the activity ● Summarising the most important learnings from the topic "Production process". ● Clarifying asked questions <p>Learners' role:</p> <ul style="list-style-type: none"> ● The students are listening to the explanations, and actively working in groups
MATERIALS FOR THE TEACHER	<ul style="list-style-type: none"> ● Notebook and beamer for the online whiteboard ● Whiteboard template in appendix Nr. 4f ● Or printer and paper if the activity is preferred to be done offline
MATERIALS FOR THE STUDENT	<ul style="list-style-type: none"> ● Digital device for the online whiteboard ● Pencil if the activity is preferred to be done offline

WORKSHOP SESSION	<p>Name of learning unit "Basics production process"</p> <p>Day Nr. 1, time 14:45 – 15:45</p>
ACTIVITY NAME	<p>"Deepening the content of material planning"</p>
OBJECTIVES	<ul style="list-style-type: none"> ● Summary of knowledge already acquired. ● Clarification of questions related to the topic. ● Deepening the acquired knowledge about material planning. ● Illustration through a case study. ● Reflection on the processes in one's own company.
DESCRIPTION	<p>5. Preparation – 10 minutes</p> <ul style="list-style-type: none"> ● Look at the Canva presentation and make changes if you want to. <p>Here is the link to the presentation: link</p> <p>6. Explain the activity to the students (briefing) – 5 minutes.</p> <ul style="list-style-type: none"> ● Explain what learners can expect from the next 60 minutes.

	<p>7. Run the activity – 40 minutes.</p> <ul style="list-style-type: none"> ● Open the PowerPoint Presentation and stick to the slides. ● In the beginning ask the learners the question shown on the second slide and write down the main statements from the learners <p>In general, it would be good to write down the main points made by the learners during the interactive parts of these PowerPoint presentations.</p> <p>8. Evaluation (debriefing) – 15 minutes</p> <ul style="list-style-type: none"> ● Summarise the most important learnings in relation to the topic material planning. ● Clarify open questions.
<p>TIME FOR THE ACTIVITY</p>	<p>Total time: 70 minutes -----</p> <p>Preparation time: 10 minutes Briefing time: 5 minutes Activity time: 40 minutes Evaluation time: 15 minutes</p>
<p>SETTING OF THE ACTIVITY</p>	<p>This activity is led by the trainer and the learners actively participate.</p> <p>Teacher's/Trainer's role:</p> <ul style="list-style-type: none"> ● Explaining the running of the activity. ● Deepening the acquired knowledge on the topic of material planning. ● Summarising the key facts of the topic ● Clarifying questions <p>Learners' role:</p> <ul style="list-style-type: none"> ● The students are listening to the explanations and actively participating
<p>MATERIALS FOR THE TEACHER</p>	<ul style="list-style-type: none"> ● Canva Presentation: link ● Notebook and beamer ● Flipcharts/whiteboard/board to write down key facts, statements etc. and makers for writing
<p>MATERIALS FOR THE STUDENT</p>	<ul style="list-style-type: none"> ● Pencil and paper

15:45 – 16:00 Coffee break

<p>WORKSHOP SESSION</p>	<p>Name of learning unit “Basics production process”</p> <p>Day Nr. 1, time 16:00 – 17:15</p>
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ACTIVITY NAME	"My company"
OBJECTIVES	<ul style="list-style-type: none"> ● Putting theory into practice. ● Reflect on processes in the employed organisation and develop proposals for change if necessary. ● Recognise the need for systematic planning. ● In-depth analysis of the processes planning in the employed company through a case study. ● Exchange with other colleagues.
DESCRIPTION	<p>9. Preparation – 10 minutes</p> <p>Look at the handout and make changes if needed. Ensure to have enough handouts for the group. (Annex 3_Reflection time on material requirements planning).</p> <p>10. Explain the activity to the students (briefing) – 5 minutes.</p> <ul style="list-style-type: none"> ● Explain what students can expect from the next 75 minutes. <p>11. Run the activity – 50 minutes.</p> <ul style="list-style-type: none"> ● Go through the questions with the learners and clarify questions if necessary. ● Everyone should find a partner and go through the reflection exercises together. <p>12. Evaluation (debriefing) – 20 minutes</p> <ul style="list-style-type: none"> ● Ask the students about their main outputs. ● Every group should at least say something once. ● Clarifying questions if necessary.
TIME FOR THE ACTIVITY	<p>Total time: 85 minutes</p> <p>-----</p> <p>Preparation time: 10 minutes Briefing time: 5 minutes Activity time: 50 minutes Evaluation time: 20 minutes</p>
SETTING OF THE ACTIVITY	<p>This activity is led by the trainer and done in groups.</p> <p>Teacher's/Trainer's role:</p> <ul style="list-style-type: none"> ● Explaining the running of the activity. ● Being available to the groups for questions during the activity. ● Leading of the evaluation time and motivating learners to speak about their main outputs. ● Clarifying questions. <p>Learners' role:</p> <ul style="list-style-type: none"> ● The students are listening to the explanations, and actively working in groups
MATERIALS FOR THE TEACHER	<ul style="list-style-type: none"> ● Printer, paper for printing out the reflection handout (Annex to Day 1 Nr. 4g Reflection time on material requirements planning).

	<ul style="list-style-type: none"> ● Flipcharts, whiteboard, and board to write down key facts, statements etc. and makers for writing.
MATERIALS FOR THE STUDENT	<ul style="list-style-type: none"> ● Pencil and paper.

WORKSHOP SESSION	<p>Name of learning unit “Basics production process”</p> <p>Day Nr. 1, time 17:15 – 17:45</p>
ACTIVITY NAME	“Case studies”
OBJECTIVES	<ul style="list-style-type: none"> ● Putting theory into practice. ● Solving practical examples. ● Conversion to own daily work.
DESCRIPTION	<p>13. Preparation – 5 minutes</p> <ul style="list-style-type: none"> ● Look at the case studies and make changes if you want to (Annex 4_Case studies on priority rules) <p>14. Explain the activity to the students (briefing) – 5 minutes.</p> <ul style="list-style-type: none"> ● Explain what students can expect from the next 75 minutes. <p>15. Run the activity – 20 minutes.</p> <ul style="list-style-type: none"> ● Hand out the case studies and ask learners to find a solution to the problems described by applying the priority rules for the order sequence. <p>16. Evaluation (debriefing) – 5 minutes</p> <ul style="list-style-type: none"> ● Ask the learners for their solution/applied priority rules. ● Clarifying questions if necessary.
TIME FOR THE ACTIVITY	<p>Total time: 35 minutes</p> <p>-----</p> <p>Preparation time: 5 minutes Briefing time: 5 minutes Activity time: 20 minutes Evaluation time: 5 minutes</p>
SETTING OF THE ACTIVITY	<p>This activity is led by the trainer and is carried out by each person alone.</p> <p>Teacher’s/Trainer’s role:</p> <ul style="list-style-type: none"> ● Explaining the running of the activity. ● Being available for questions during the activity. ● Leading of the evaluation time ● Clarifying questions. <p>Learners’ role:</p>

	<ul style="list-style-type: none"> • The students are listening to the explanations, and actively working on the case studies on their own.
MATERIALS FOR THE TEACHER	<ul style="list-style-type: none"> • Printer, paper for printing out the material (Annex to Day 1 Nr. 4h- Case studies on priority rules) • Flipcharts, whiteboard, and board to write down key facts, statements etc. and makers for writing.
MATERIALS FOR THE STUDENT	<ul style="list-style-type: none"> • Pencil and paper.

17:45 – 18:00 The trainer will ask the participants about evaluation of the whole day, fulfilment of their expectations and recommend the casual sources for study to the learned topics. The trainer can inform the participants about next day of the workshop focused on Quality Control Methods and Economic knowledge. The follow-up of all session can be recommendation to be back to the learning units in CAR Master platform: <https://platform.car-master.eu/>

4 ATTACHMENTS

1. Syllabus of full-time workshop for adult learners
2. Schedule the full-time workshop on 1 page
3. Certificate template for full-time workshop
4. Appendix to Day 1:
 - a. Scenario for teacher for activity “Solutions for repairs after power outages”
 - b. Scenario for students “Solutions for repairs after power outages”
 - c. Scenario for teacher Gamification Case 1: Solution for too-long repairs
 - d. Scenario for students Gamification Case 1
 - e. Scenario of the case for students
 - f. Scenario to activity “Preparation of Planned Maintenance Standards
 - g. Reflection time on material requirements planning
 - h. Case studies on priority rules



CAR Master training

**ARE YOU INTERESTED IN FURTHER INFORMATION? WE
LOOK FORWARD TO YOUR VISIT TO OUR WEBSITE!**



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Syllabus of CAR Master workshop for participants

Name: CAR Master Workshop

Duration: 40 hours

Introduction:

The project is mainly focused on blended learning educational program CAR Master and on creating an online platform as a tool for innovative methods which educates masters. The aim of our project is to identify current qualification requirements of CAR Masters in the European automotive sector.

40 % of the education is available online in the CAR Master program, and this tool is supported by face-to-face training, which consists of 60% of the whole learning content. Online learning platform provides modern and attractive methods of education – MOOC, microlearning, gamification etc.

This workshop syllabus was established for masters, foremen, team leaders or productive managers working in production companies. The main objective is to develop the competencies that productive managers need for daily practical work in industrial companies.

The workshop consists of 5 days which support the self-study through the CAR Master platform. The workshop syllabus follows the learning units of the whole methodology as follows:

- Day 1: Total productive maintenance (4 hours) and Production process (4 hours)
- Day 2: Quality control methods (4 hours) and Economic and organizational knowledge (4 hours)
- Day 3: Digital Competences (8 hours)
- Day 4: Professional Communication (8 hours)
- Day 5: Leadership role of masters (8 hours)

We, therefore, support using the flipped classroom principle with self-assessment tool, MOOC, microlearning, and gamification (PR3) primarily for theoretical parts of courses that do not require intensive student-teacher interaction. This frees up discussion between the teacher and the student within the direct teaching subsidy - in a face-to-face meeting, there is more space for critical topics, deeper explanations or confrontation of expert opinions and their defence.

Learning objectives:

The aim of this workshop series is to help the masters, foremen, productive managers, team leaders to become more effective in their daily work. You will be able to use the theoretical knowledge in practice.

- You will be able to use the theoretical knowledge in team cooperation.
- You will understand the consequences of the appropriate topics in practical use.
- You will learn to share the obtained skills with your colleagues and teacher.

Required texts, materials, or equipment:

- Link to CAR Master online platform: <https://platform.car-master.eu/>
- Notebook/tablet/smartphone for self-study sessions
- Papers/pencils etc.

Evaluation: You will receive a certificate for completing the workshop (at least 70% of your attendance).



FACE TO FACE WORKSHOP



Day 1

TPM + Production processes

9:00 - 09:20
Introduction

09:20-10:00
Expectations, warming

10:00-10:30
Learning unit I to topic TPM

10:30-10:45
Coffee break

10:45-13:00 Activities to
topic TPM, summary

13:00-14:00
Lunch

14:00 - 14:45 Learning unit II
Production process

14:45-15:45
Activities to topic

15:45-16:00
Coffee break

16:00-17:15
Putting theory into praxis

17:15-17:45
Case studies to topic

17:45-18:00
Evaluation, goodbye

Day 2

Quality Control methods
Economic knowledge

9:00 - 09:20
Welcome, expectations

09:20-09:55
Ice-breaker

09:55-10:55 Learning unit I:
Quality Control methods

10:55-11:05
Coffee break

11:05-13:00 Activities to
topic

13:00-14:00
Lunch

14:00 - 14:20 Energizer

14:20-15:00 Learning unit I:
Economic knowledge

15:00-15:15
Coffee break

15:15-16:35
Activities to topic

16:35-17:50
Case studies to topic

17:50-18:00
Evaluation, goodbye

Day 3

Digital Competences

9:00 - 09:55
Expectations, ice-breaker

09:55-10:25 Learning unit I.
Digital competences

10:25-10:40
Coffee break

10:40-12:30
Digital skills/tools at workplace

12:30-13:30
Lunch

13:30-14:50
Activities to the topic

14:50 - 15:10
Energizer

15:10-15:55
Practical activities of topic

15:55-16:10
Coffee break

16:00-16:15
Coffee break

16:10-17:45
Group exercise + Case study

17:45-18:00
Evaluation, follow-up

Day 4

Professional Communication

9:00 - 9:30
Welcome, expectations

09:30-10:15
Ice-breaker

10:15-11:15 Learning unit I:
Professional communication

11:15-11:30
Coffee break

11:30-12:35 Learning unit II:
Professional Communication

12:35 - 13:35
Lunch

13:35-14:00
Energizer

14:00-15:35
Activities to the topic

15:35-15:45
Coffee-break

15:45-16:10
Energizer

16:10-17:40
Pair work to the topic

17:40-18:00
Evaluation, follow-up

Day 5

Leadership of masters

9:00 - 10:00 Welcome,
expectations

10:00-11:10 Learning unit I:
Leadership of masters

11:10-11:25
Coffee break

11:25-12:25 Learning unit II:
Diversity of the work team

12:25-13:25
Lunch

13:25 - 13:45
Energizer

13:45-14:30
Group exercise

14:30-14:45
Coffee break

14:45-15:05
Energizer II

15:05-16:35
Pair work

16:35-16:50
Coffee break

16:50-18:00 Evaluation,
follow-up, goodbye



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CAR Master
training

CERTIFICATE

OF PARTICIPATION

THIS IS TO CERTIFY THAT

has successfully completed the tailor-made training for foremen in production through the face to face workshop (scope of training 40 hours).



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OSTBRANDENBURG

bit *schulungcenter*
member of bit group



The CAR Master training certificate of participation has been issued based on at least 70% of personal participation on face to face workshop duration. The 7 thematic modules of face to face training corresponding to non-formal vocational education and training represent a set of learning objectives which are presented in the table.

1. Principles of Total Productive Maintenance (TPM) –4 hours	2. Production process basics – 4 hours	3. Quality control methods – 4 hours	4. Digital competences – 8 hours
<p>Knowing the maintenance strategies in production.</p> <p>Knowing the most important basics of TPM.</p> <p>Knowing the most important basics of people management under TPM.</p>	<p>Knowledge of the most important methods and instruments of work and process planning.</p> <p>Knowledge of the most important terms of capacity and materials management.</p> <p>Knowing how production factors from all areas of the company should be used economically and efficiently.</p>	<p>Knowing what quality planning means.</p> <p>Knowing what the aims and benefits of quality management represent.</p> <p>Knowing what the possibilities are for safe guarding and improvements.</p> <p>Knowing different quality management tools.</p>	<p>Knowing the basis of digital security.</p> <p>Knowing the basics of using Microsoft Excel.</p> <p>Knowing the most common online communication tools work.</p> <p>Knowing the basic rules for presentation</p>
5. Economic and organisational knowledge – 4 hours	6. Professional communication – 8 hours	7. The leadership role of masters – 8 hours	
<p>Knowing the basics of finance and economics and the interrelationships within the company.</p> <p>Knowing the planning staff and enforcing the company's strategy.</p> <p>Knowing the most important European basics concerning labour law.</p>	<p>Knowing about communication theories and how to deal with them in everyday life.</p> <p>Knowing about conflict management and how conflicts can be resolved professionally.</p> <p>Knowing about presentation techniques and how to apply them in meetings.</p>	<p>Knowing how to lead their employees successfully.</p> <p>Knowing how to behave as a leader in a team.</p> <p>Knowing to work in a multigenerational mix and the changes in old age.</p> <p>Knowing to work with people of different backgrounds and sexual orientations</p>	



Day 1 – Appendix 4a: Scenario for teacher

Exercises for gamification – LU01

<p>Case 1 (LU01/Gamification Case 1): Solution for too-long repairs</p>
<p>Competence: Total Productive Maintenance</p>
<p>Situational question: (between 120 and 250 characters per situational question)</p> <p>The maintenance department has long been criticized for taking too long to repair machines, and for the fact that it takes too long to carry out simple types of repairs. Through snapshots of the work of subordinate maintenance workers, the manager can document 100% utilization of workers during the entire working time. What options does the leader have to improve this situation?</p>
<p>Answers</p> <ul style="list-style-type: none"> A. The manager persistently tries to push for an increase in the number of maintenance workers. B. The manager will analyze the repairs of malfunctions from the point of view of their time-consuming nature and propose measures to reduce lost time related to the unavailability of spare parts or specific tools, and also propose measures to solve the lack of communication when reporting malfunctions. At the same time, the manager does not stop striving to increase the number of maintenance workers. C. The leader will analyze the repairs of malfunctions from the point of view of their time consumption, from the point of view of the complexity of the necessary repair work and from the point of view of the necessary knowledge and skills of the workers, with the aim of transferring the performance of simpler repairs to machine operators according to the created standards. D. Using the FMEA analysis, the manager can develop a ranking of critical failures. For a set of the most critical malfunctions, scenarios for their solution will be developed, including the quick availability of everything necessary. The repair of simple faults will be transferred to operators according to established standards. Based on the comparison of the necessary and actual knowledge and skills of maintenance workers, it will ensure their further education. The increase in the number of workers will be solved only after a certain time (after the implementation of the above steps).
<p>Points</p> <p><i>Note: 30 points distributed among the answers</i></p> <ul style="list-style-type: none"> A. 4 B. 6 C. 8 D. 12
<p>Specific answers (about 1000 characters for each answer) Add remark: this is the desired answer / This is the optional answer / Answer requiring upskilling</p> <ul style="list-style-type: none"> A. Answer A – This is a good answer. It is alright that the manager persistently tries to push for an increase in the number of maintenance staff, but it is more about using a systematic approach



almost at the company-wide level. According to experience, there are a lot of employees in companies who know something about TPM, they have created standards for performing autonomous maintenance, but somehow it doesn't work and everyone complains that they don't have time, that someone else is responsible for everything.

- B. Answer B – This is a good answer. It is correct to perform an analysis of the repair of malfunctions from the point of view of time and propose measures to reduce lost times, but it is more about using a systematic approach almost at the company-wide level. According to experience, there are a lot of employees in companies who know something about TPM, they have created standards for performing autonomous maintenance, but somehow it doesn't work, and everyone complains that they don't have time, that someone else is responsible for everything.
- C. Answer C – This is a good answer. However, it is necessary to look for a systematic approach at the level of the entire company across all departments. It is correct to perform a fault correction analysis. The advantage of this step may also be that it will not be necessary to increase the number of maintenance workers and machine downtimes (production downtimes) will be reduced.
- D. Answer D – This is the desired answer. This is the best solution because it is a systematic approach at the level almost across all departments of the company according to agreed standards for performing autonomous maintenance.

Vector graphic:

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[Free Vector | Free vector ecology protection. environment preservation, nature conservation, eco friendly mechanism idea. cogwheels and leaves, mechanical parts with foliage. \(freepik.com\)](#)



Day 1/Appendix 4b

Scenario for Students: : Solutions for repairs after power outages

WORKSHOP SESSION	Content/Learning Unit 01, TPM – Total Productive Maintenance Day 1, at 10:45 – 13:00
ACTIVITY NAME	Solution for too-long repairs
OBJECTIVES	<ul style="list-style-type: none"> to have students imagine a practical situation/an issue and verbally present a possible solution to a situation at the workplace to make students think of the best solution and choose from options A, B, C or D and present their own solution if there is any to explain the best solution there and why
DESCRIPTION	<ul style="list-style-type: none"> the students read the situation and the optional answers A, B, C, D after the time elapsed, the trainer asks all to raise the card with the letter A, B, C or D on it
TIME FOR THE ACTIVITY	<ul style="list-style-type: none"> Activity: 20 minutes Evaluation: 10 minutes
<p>Situational question: The maintenance department has long been criticized for taking too long to repair machines, and for the fact that it takes too long to carry out simple types of repairs. Through snapshots of the work of subordinate maintenance workers, the manager can document 100% utilization of workers during the entire working time. What options does the leader have to improve this situation?</p>	
<p>Answers</p> <ol style="list-style-type: none"> The manager persistently tries to push for an increase in the number of maintenance workers. The manager will analyze the repairs of malfunctions from the point of view of their time-consuming nature and propose measures to reduce lost time related to the unavailability of spare parts or specific tools, and also propose measures to solve the lack of communication when reporting malfunctions. At the same time, the manager does not stop striving to increase the number of maintenance workers. The leader will analyze the repairs of malfunctions from the point of view of their time consumption, from the point of view of the complexity of the necessary repair work and from the point of view of the necessary knowledge and skills of the workers, with the aim of transferring the performance of simpler repairs to machine operators according to the created standards. Using the FMEA analysis, the manager can develop a ranking of critical failures. For a set of the most critical malfunctions, scenarios for their solution will be developed, including the quick availability of everything necessary. The repair of simple faults will be transferred to operators according to established standards. Based on the comparison of the necessary and actual knowledge and skills of maintenance workers, it will ensure their further education. The increase in the number of workers will be solved only after a certain time (after the implementation of the above steps). 	

A

B

C

D



Day 1: Appendix 4c Gamification Case 1: Solution for too-long repairs

Exercises for gamification – LU01

<p>Case 1 (LU01/Gamification Case 1): Solution for too-long repairs</p>
<p>Competence: Total Productive Maintenance</p>
<p>Situational question: <i>(between 120 and 250 characters per situational question)</i></p> <p>The maintenance department has long been criticized for taking too long to repair machines, and for the fact that it takes too long to carry out simple types of repairs. Through snapshots of the work of subordinate maintenance workers, the manager can document 100% utilization of workers during the entire working time. What options does the leader have to improve this situation?</p>
<p>Answers</p> <ul style="list-style-type: none"> A. The manager persistently tries to push for an increase in the number of maintenance workers. B. The manager will analyze the repairs of malfunctions from the point of view of their time-consuming nature and propose measures to reduce lost time related to the unavailability of spare parts or specific tools, and also propose measures to solve the lack of communication when reporting malfunctions. At the same time, the manager does not stop striving to increase the number of maintenance workers. C. The leader will analyze the repairs of malfunctions from the point of view of their time consumption, from the point of view of the complexity of the necessary repair work and from the point of view of the necessary knowledge and skills of the workers, with the aim of transferring the performance of simpler repairs to machine operators according to the created standards. D. Using the FMEA analysis, the manager can develop a ranking of critical failures. For a set of the most critical malfunctions, scenarios for their solution will be developed, including the quick availability of everything necessary. The repair of simple faults will be transferred to operators according to established standards. Based on the comparison of the necessary and actual knowledge and skills of maintenance workers, it will ensure their further education. The increase in the number of workers will be solved only after a certain time (after the implementation of the above steps).
<p>Points</p> <p><i>Note: 30 points distributed among the answers</i></p> <ul style="list-style-type: none"> A. 4 B. 6 C. 8 D. 12
<p>Specific answers</p> <p><i>(about 1000 characters for each answer) Add remark: this is the desired answer / This is the optional answer / Answer requiring upskilling</i></p> <ul style="list-style-type: none"> A. Answer A – This is a good answer. It is alright that the manager persistently tries to push for an increase in the number of maintenance staff, but it is more about using a systematic approach almost at the company-wide level. According to experience, there are a lot of employees in



companies who know something about TPM, they have created standards for performing autonomous maintenance, but somehow it doesn't work and everyone complains that they don't have time, that someone else is responsible for everything.

- B. Answer B – This is a good answer. It is correct to perform an analysis of the repair of malfunctions from the point of view of time and propose measures to reduce lost times, but it is more about using a systematic approach almost at the company-wide level. According to experience, there are a lot of employees in companies who know something about TPM, they have created standards for performing autonomous maintenance, but somehow it doesn't work, and everyone complains that they don't have time, that someone else is responsible for everything.
- C. Answer C – This is a good answer. However, it is necessary to look for a systematic approach at the level of the entire company across all departments. It is correct to perform a fault correction analysis. The advantage of this step may also be that it will not be necessary to increase the number of maintenance workers and machine downtimes (production downtimes) will be reduced.
- D. Answer D – This is the desired answer. This is the best solution because it is a systematic approach at the level almost across all departments of the company according to agreed standards for performing autonomous maintenance.

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Day 1 - Appendix 4d : Scenario for Students

WORKSHOP SESSION	Content/Learning Unit 01, TPM – Total Productive Maintenance Day 1, at 10:45 – 13:00
ACTIVITY NAME	Solution for too-long repairs
OBJECTIVES	<ul style="list-style-type: none"> to have students imagine a practical situation/an issue and verbally present a possible solution to a situation at the workplace to make students think of the best solution and choose from options A, B, C or D and present their own solution if there is any to explain the best solution there and why
DESCRIPTION	<ul style="list-style-type: none"> the students read the situation and the optional answers A, B, C, D after the time elapsed, the trainer asks all to raise the card with the letter A, B, C or D on it
TIME FOR THE ACTIVITY	<ul style="list-style-type: none"> Activity: 20 minutes Evaluation: 10 minutes

Situational question:

The maintenance department has long been criticized for taking too long to repair machines, and for the fact that it takes too long to carry out simple types of repairs. Through snapshots of the work of subordinate maintenance workers, the manager can document 100% utilization of workers during the entire working time. What options does the leader have to improve this situation?

Answers

- The manager persistently tries to push for an increase in the number of maintenance workers.
- The manager will analyze the repairs of malfunctions from the point of view of their time-consuming nature and propose measures to reduce lost time related to the unavailability of spare parts or specific tools, and also propose measures to solve the lack of communication when reporting malfunctions. At the same time, the manager does not stop striving to increase the number of maintenance workers.
- The leader will analyze the repairs of malfunctions from the point of view of their time consumption, from the point of view of the complexity of the necessary repair work and from the point of view of the necessary knowledge and skills of the workers, with the aim of transferring the performance of simpler repairs to machine operators according to the created standards.
- Using the FMEA analysis, the manager can develop a ranking of critical failures. For a set of the most critical malfunctions, scenarios for their solution will be developed, including the quick availability of everything necessary. The repair of simple faults will be transferred to operators according to established standards. Based on the comparison of the necessary and actual knowledge and skills of maintenance workers, it will ensure their further education. The increase in the number of workers will be solved only after a certain time (after the implementation of the above steps).



A

B

C

D



Day 1 – Appendix 4e:

Scenario for Students

WORKSHOP SESSION	Content/Learning Unit 01, TPM – Total Productive Maintenance Day 1, at 11:25 – 12:05
ACTIVITY NAME	Preparation of Planned Maintenance Standards
OBJECTIVES	<ul style="list-style-type: none"> to have students imagine a practical situation/an issue and present a possible solution to a situation at the workplace
DESCRIPTION	<ul style="list-style-type: none"> students read the situation/task, they can consult an example template if available (<i>optionally a blank sheet/form can be filled in if provided</i>) after the time elapsed, the teacher/trainer asks all to present the outcome
TIME FOR THE ACTIVITY	<ul style="list-style-type: none"> Activity: 20 minutes Evaluation: 10 minutes

Situational question/task:

The standard fulfils the role of a kind of instruction to ensure comparability. The teacher/trainer explained the four steps of planned maintenance standards preparation.

Step 1

Choose the diagnostic method and determine the checkpoints/measurement locations.

Step 2

Determine the measurement conditions and limit values.

Step 3



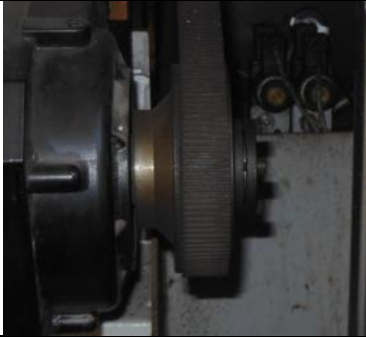

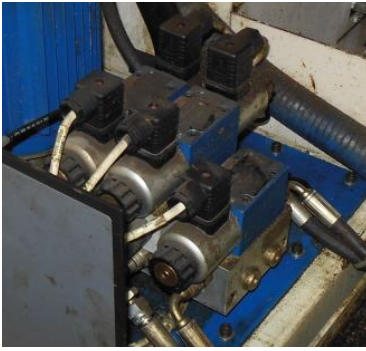
Develop a measurement procedure, including the method of evaluation of results.

- Method of fixing the sensors, description of necessary interventions in the machine (uncovering), definition of safety principles and others.
- Measurement evaluation – one measurement, averaging several measurements, determination of possible deviations, etc., interpretation of values in the context of operation, etc.



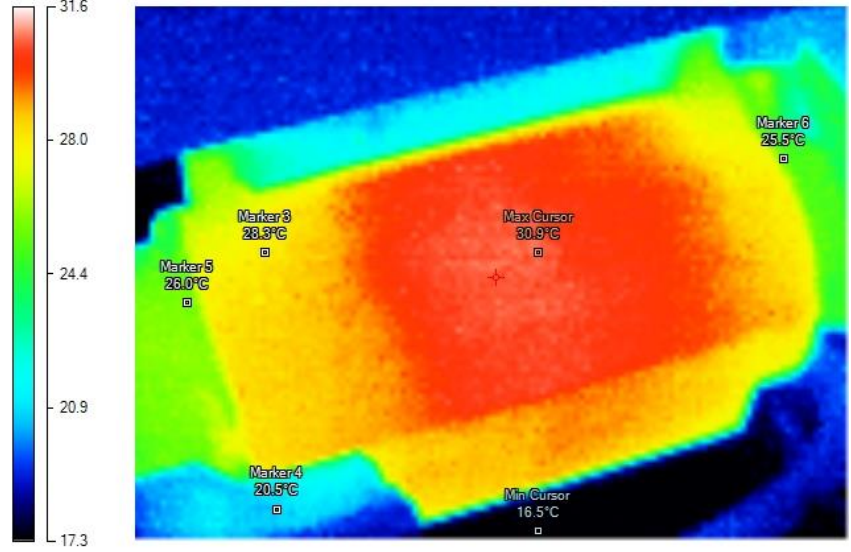
Step 4

Transform steps 1 to 3 into a standard – a planned maintenance standard. You can get inspired by an example of an existing standard, if available (for example, a standard for checking a machine tool with a thermal camera, an example of a protocol for evaluating a measurement with a thermal camera).

Example of a standard for checking a machine tool with a thermal camera

		Maintenance plan: č. 4315	Responsible for timeliness:
<p>Device: Tornado T2 (Series 21i-TB) Serial number: Device used: Thermal camera Fluke TI20, EK č.3285 The inspection shall be carried out by: Ondrej Dávidek Description: These measurements can be performed without limiting the production process and without the need for complicated uncovering, approximate duration approx. 45 min. RTC set to match the ambient temperature.</p>			
Activity	Device detail	Int. (m)	Instructions
<p>1. Main drive inspection (main engine)</p>		3	Measure after at least 1 hour of operation. Black matte surface, emissivity $\epsilon=0.95$
<p>2. Checking the pulley of the main drive unit with belt</p>		3	Measure after at least 1 hour of operation, ideally the device must be running during measurement. Emissivity, ϵ belt=0.90; ϵ pulley= 0,85 (slightly oxidized)
<p>3. Checking the hydraulic cylinder</p>		3	Measure after at least 1 hour of operation, ϵ black part= 0.95; ϵ right part (drive)= 0,50 Max. temperature: 75°C
<p>4. Checking the hydraulic distributor</p>		3	Measure after at least 1 hour of operation, at contamination $\epsilon=0.9$

Example of a protocol for the evaluation of a thermal camera measurement

	<p>The measurement was carried out: Ondrej Dávidek</p>	<p>Measuring instrument used: Fluke Ti20 Registration card number:3285 Other data:</p>
<p>Device</p> <p><i>Title:</i> Tornado T2 (Series 21i-TB) <i>Serial number:</i> <i>Other information:</i> CNC lathe</p>		
<p>Environment</p> <p><i>Air temperature:</i> 16°C <i>Other information:</i> draft-free, dry environment</p>		
<p>Date and time of measurement: 21.3.2012; 11:00</p>		
<p>Brief description of the measurement (if necessary): Measurements were taken approximately one hour and 15 minutes after starting the device, all measurements were taken during operation. The RTC has been set to ambient temperature by default.</p>		
<p>Activity 1. Main drive inspection (main engine)</p>		
<p>View in the visible spectrum</p>	<p>Thermographic image</p>	
		
<p>Description: The maximum engine temperature reaches 30.9°C (max. operating ambient temperature is 40°C), so the engine works properly and no intervention is required. Temperatures are distributed evenly. The measurement was carried out while the engine was running after one hour of operation.</p>		
<p>Measures - any -</p>		

Production process

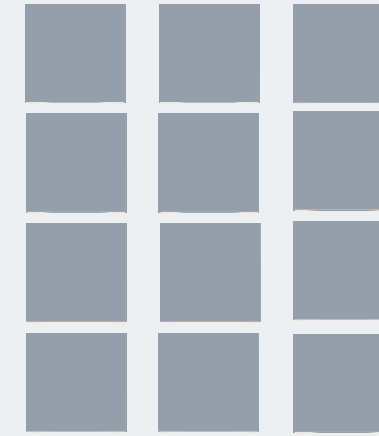
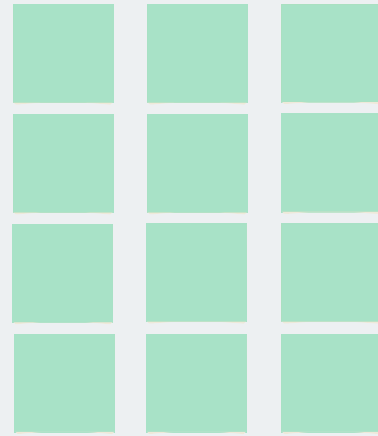
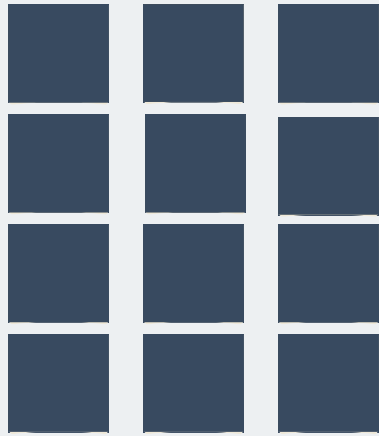


What I have learned so far?

Work and process planning

Ressource planning

Principles of Lean Production



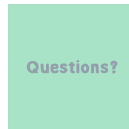
Questions?



Questions?



Questions?



CASE STUDIES

PRIORITY RULES FOR THE ORDER SEQUENCE



SITUATION 1

An automotive company has three production orders A, B and C. The machining time on the lathe for production order **A is 10 minutes**, for production order **B it is 5 minutes** and for production **order C** the lathe is required for **12 minutes**.

SITUATION 2

All three production orders A, B and C must be reworked with the following machine times:

- **Lathe**

Order A with 10 min

Order B with 5 min

Order C with 12 min

- **Milling machine**

Order A with 20 min

Order B with 10 min

Order C with 8 min

Processing time has not yet started.



SITUATION 3

Due to the need for rework, the company has now decided to subject order A to a **quality inspection**. The machine for the quality inspection is currently busy with orders and will not be available until tomorrow at 12:00. However, there is another production **order D at 14:00** and a production **order E at 17:00**.



My company's material requirements planning

Working and operating hours

What are the working and operating hours in your company? Do you think there is a need for change?

Material requirements

What are the primary, secondary and tertiary requirements in your organisation?

Methods of demand determination

What methods are used to determine demand in your company?





Case study

A comprehensive planning strategy

General Motors (GM) is a global automotive company that manufactures a wide range of vehicles. To efficiently manage the production of materials, GM uses a sophisticated materials planning process that involves several steps.

First, GM's material planners work with product development teams to determine the materials needed for each vehicle model. This includes specifying the type, quantity and quality of materials needed for each component. Next, material planners use this information to develop a detailed material plan that specifies the schedule for procuring and delivering the required materials. Factors such as lead times, transportation costs and supplier capacity constraints are considered in this plan. Once the material plan is in place, GM's procurement team works with suppliers to procure the required materials. The procurement team uses a variety of tools and techniques to manage the supply chain, including supplier performance monitoring, demand forecasting and risk management. When materials are received, they are inspected and tested to ensure they meet GM's quality standards. The materials are then stored in GM's inventory system and released to the production line as needed. Throughout the production process, GM's materials planners and production teams closely monitor the availability of materials and adjust the production schedule as needed to ensure there are no delays or shortages. This requires constant communication and coordination with suppliers, transportation providers and internal teams.

Using the example above, what does such a comprehensive planning strategy look like in your organisation? What departments, and stakeholders are involved? What needs to be considered?

