



## Training Development to Eliminate Competency Gap at Component Rebuild Section (PT LC)

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**ABSTRACT:** Workers are an important factor in and have a very important role in carrying out tasks in a company. Companies understand that skilled workers can provide excellent results. Improved worker performance leads to increased productivity and desired results, thus affecting the quality of the product. Competence is a key factor that improves employee performance. This level of proficiency has a direct impact on the work of each worker. The current problem is that there is a difference in competence between the company's needs and the competence of the available workforce. The subjects of this research are employees of PT Lignite Coal, especially those who work in the Component Development Section and the objects in this study are work competency variables and employee performance. The instruments used in data collection are observation, focus group discussions and interviews and data management or documents related to existing training. This research uses an analysis method with an open coding process. Open coding is an approach to theme pieces and incorporates several concepts identified during data collection in an organized and systematic way. By obtaining data related to competency gaps that occur in the Component Rebuild Section, it can be analyzed for training programs developed from existing training programs to be more on target and according to work needs in the Component Rebuild Section so that there are no more competency gaps. The research data shows that there is a competency gap that occurs due to differences in the adaptability, knowledge and expertise of each tradesperson in the component rebuild section (remanufacturing process).

The results of this study indicate that training has a positive and significant effect on increasing employee competence which can improve employee performance which affects the quality of the product. Training programs with the right material and the right delivery method by adapting to the latest technology will greatly help in eliminating competency gaps and developing employee competencies so that employees are able to work well where employees are able to adapt to new technology and are able to increase their knowledge which in turn is able to analyze and provide recommendations for improvements which ultimately affect the performance of components that are able to achieve the specified target life.

**KEYWORDS:** Competency, Competencies gap, Development, Performance, Training.

### 1. INTRODUCTION

In the current era of industrial revolution 4.0, the increasing globalization of workers has a significant impact. Workers are an important factor in all aspects of operations, so it is important to manage them effectively to ensure timely completion of tasks with high quality. Workers have a very important role in carrying out tasks in a company. Companies understand that skilled workers can deliver excellent results. One of the main challenges of globalization is the limited number of workers available in each company. Finding skilled and competent workers, both in the short and long term, is critical. Improved worker performance leads to increased productivity and desired outcomes, thus promoting development.

Competence is a key factor that improves employee performance. This level of proficiency has a direct impact on the work of each worker. A high level of competence allows workers to provide superior results for the company. Workers who excel in their respective fields tend to be more thorough in their work resulting in better results. A company needs skilled workers who are able to manage operations to ensure smooth functioning, which ultimately improves overall worker performance.

Optimal work results are achieved when workers meet company standards and contribute to the realization of goals. The ability to deliver results is the outcome of workers' efforts, based on accuracy, experience, and timely completion of tasks. This underscores the importance of performance in improving work outcomes, which in turn adds value to the company.

The current problem is that there is a difference in competence between the needs of the company and the competence of the available workforce. The company's need for experienced workers or having the required competencies is an obstacle for the



company because of the large demand for employees who fall into this category. Workers who have a higher level of education than the standards set by the company tend not to have the competence or standards set by the company. Or workers with education that meets the standards but their expertise is not in accordance with the needs of the company. So that many companies have difficulty getting workers who meet the standard criteria set. Therefore, effective management is needed to improve worker performance. To overcome the problems related to this competency gap, the people development process is an important part of the company because if done correctly, it will have long-term benefits for employees.

A company can be said to be successful not only by what products or services they offer to consumers. It can be said to be successful seeing how it can manage the people who work in it. When a company has a focus on developing its employees, it will indirectly improve so many things including abilities, performance, and employee loyalty. Therefore, people development is an effort from the company to improve employee performance and productivity. To achieve this, companies can do various ways such as through performance appraisals, training, and determining KPIs for each employee. With these efforts, employee performance and abilities can increase little by little until they become competent employees. As a result, the company's performance can also develop and grow rapidly. People development is a long-term program that needs to be nurtured and monitored carefully. In addition, people development can increase employee engagement so that they become more loyal to the company.

## 2. BUSINESS ISSUE

Good planning in the maintenance and repair process is undoubtedly necessary to sustain the performance of all the heavy equipment used by PT Lignite Coal. The Mining Support Division (MSD) is in charge of maintaining and repairing heavy equipment as well as auxiliary equipment used in mining operations. Large Excavator, Small Excavator, Haul Truck, Bulldozer, Drill, and other types of heavy equipment are among the groups of heavy equipment that are classified according to their functions. The maintenance and repair duties of these groups of heavy equipment are assigned differently to each department and section. Each position's competencies for MSD personnel have been established based on the tasks and responsibilities of the job.

Naturally, every major component and supporting component of heavy machinery needs to be replaced during maintenance and repair because they have reached the target life set by the planning team. This is done to prevent excessive damage to the components and to maintain machine performance so that damage from malfunctioning components does not occur suddenly.

Damage from malfunctioning components can arise from either a partially damaged or malfunctioning system within the component. Before 2005, MSD consistently bought routable components from heavy equipment vendors who provided PT LC with heavy equipment. Naturally, as PT LC Coal's production target rises, more heavy equipment units must be operated. This impacts the number of component replacements that MSD must schedule and execute, which also affects each supplier's ability to provide routable components based on projections from MSD. On the other hand, suppliers also have to fulfil the demands of other customers who use their heavy equipment.

In order to guarantee component availability and meet the objectives of component replacement planning for units operated by PT LC, MSD developed two new departments in 2005: Mechanical Component Rebuild (MCR) and Electrical Component Rebuild (ECR). Only a few small electrical and mechanical parts, such the alternator and starting motor, as well as a small hydraulic cylinder and control valve, were restored when MCR and ECR first started operating. Additionally, in 2016, these two Sections combined to form the Component Rebuild Section, which now has its own workshop known as the Component Rebuild Centre for component reconditioning. Furthermore, a greater variety and quantity of components including many significant ones like engines, transmission groups, and final drives are being refurbished. One of the divisions within the Mining Support Division (MSD) is the Component Rebuild Section (CR), which performs distinct duties from the other sections within MSD. The primary responsibility of the Component Rebuild Section (CR) is to recondition components owned by PT Lignite Coal (PT LC) in order to meet the goal life established and guarantee the availability of multiple components for each kind of heavy equipment that PT LC operates.

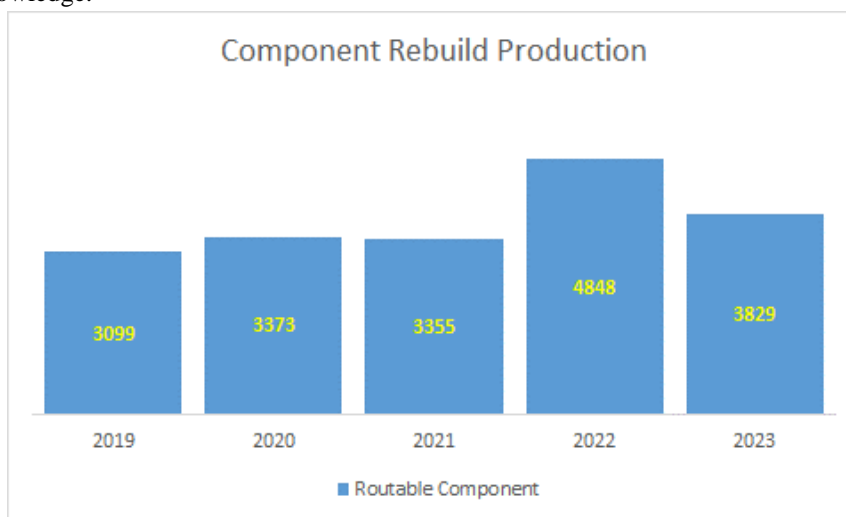
These days, over 3000 components are refurbished or reconditioned every year. These parts are cleaned, dismantled, and measured in the Component Rebuild Section (CR) in order to reuse standard partial parts or replace them with new ones. The idea to expand in the sense of continuing to increase the number of components and types of components that will be reconditioned in CRC in order to hopefully achieve the expected savings target emerged from the fact that, in the process of reusing some of these spare parts or partial parts, the Component Rebuild Section's costs for reconditioning repairs differed from OEMs' or other suppliers' or vendors' costs. Of course, every component reconditioned in CRC must reach the specified target life. In order to meet the desired



lifespan, the Component Rebuild Section is expanding its staff to include Quality Control, Component Inspectors, and Part Kitting in addition to adding personnel for the component reconditioning process.

## 2.1 Routable Component

Every type of heavy equipment includes major and minor parts that need to be changed on a regular basis as part of maintenance. The components held by PT LC that are employed in the process of replacing components on heavy machinery are components that are routable. In order to ascertain if the internal components need to be replaced or may be reused in accordance with OEM standards, the components will be delivered to the CRC workshop where they will be cleaned, dismantled, and measured. Employees designated as Quality Control and Component Inspectors conduct this inspection procedure. Ordering components in tandem, the Planning team uses the Application Part List (APL) as a guide. APL components that need to be replaced will be replaced; however, the replacement of other components is contingent upon the results of the technical and physical assessment of the Quality Control (QC) inspection, which includes checking for cracks with a penetrant and evaluating wear. Internal component reuse is based on this knowledge.



**Figure 2.1 Annual Routable Components Which Reconditioned by CR**

## 2.2 Employee Performance

The Component Rebuild Centre's growth process is increasing the number of components that need to be reconditioned, which has an impact on the number of man hours required to satisfy workload demands. In the process of hiring workers or employees to fill positions in the Component Rebuild Section alone. Assignments are made based solely on the work experience of the available workforce, with no requirement for meeting competency standards. This is because, in addition to the increase in the number of employees, the expansion process involves assigning additional tasks for workers who are available but not available in the Component Rebuild Section organizational structure.

There is a competency gap between the workers in the Component Rebuild Section because new hires and those who have been there for a long time have different skills and competencies when it comes to meeting the labor needs to meet expansion targets using the general competency standards of employees (tradespersons) for the MSD division. Contract service, labor supply, and permanent workers of PT Lignite Coal make up the workforce now employed in the Component Rebuild Section. Employees in the Labor Supply category receive the same benefits as PT LC employees, but they are not required to complete TNA training as PT LC employees. In contrast, employees in the Administration and Training Development Section's Training Need Analysis (TNA) list and have over ten years of work experience in the Component Rebuild Section are classified as PT LC employees. While there are labor supply workers with expertise in the Component Rebuild Section, the majority of workers have less than five years of experience there. Although many labor supply workers still have experience working in the Component Rebuild Section. While there are labor supply workers with expertise in the Component Rebuild Section, the majority of workers have less than five years of experience there. Workers hired to meet the manpower requirements are known as contract service personnel, and they often have fewer than two years of experience in the component rebuild section.



The performance of the Routable Component, which has damage from errors made by workers during the reconditioning process, illustrates the issue of a competence, ability, and expertise gap between recently hired employees and employees who have been working in the Component Rebuild Section for a long time (see figure 2.2).

**Table I.2. Tradesperson Number of Component Rebuild Section**

Worker Amount	Year				
	2019	2020	2021	2022	2023
PT. Lignite Coal	34	34	34	24	22
Labor Supply	3	4	4	8	12
Contract Service	-	-	17	39	44
<b>Total</b>	<b>37</b>	<b>38</b>	<b>55</b>	<b>71</b>	<b>78</b>

The number of guaranteed components resulting from faults in workmanship during the reconditioning or remanufacturing process is still significant, according to data on the number of warranted components during the previous five years. The Fishbone Root Cause Analysis approach is used to organize the root causes in Figure 1.4 according to materials, machines, procedures, measurements, environment, and people (competence). Three groups of workers make up Component Rebuild mechanical and electrical makeup at the moment: LC workers, Labor Supply workers, and Contract Service workers who are willing to put in the necessary effort to finish the task as scheduled.



**Figure 2.2 Trending Cause of Routable Components Warranty Which Reconditioned by CR**

Upon applying the "Why-Why Analysis" approach to the data shown in Figure 2.2, it was concluded that the primary reason for workmanship-related warranty difficulties was the traders' lack of competence working on certain components. They were also given tasks to complete that were outside of their purview. Because of this, standard operating procedures (SOP) were the only source of information, and there was a lack of comprehension of the work process at every stage. The following are the recognized business issues:

- 1) The challenge of finding labor that satisfies MSD's competency requirements.
- 2) Failure of a component to operate as intended owing to mistakes made throughout the workmanship process as a result of insufficient labor expertise in component reconditioning.



- 3) The Component Rebuild Section of the Mining Support Division lacks a competency standard as its maintenance tasks differ from those of other sections. The competency requirements that are applied throughout the hiring process are the same across all MSD areas.
- 4) According to the roles and tasks outlined in the existing organizational structure of the component rebuild department, there isn't any ongoing training designed especially for component rebuilding.

Given the part knowledge management plays in worker gap competency, the following would be the research's goal:

- 1) Knowing competency gaps in the Component Rebuild Section.
- 2) Creating a training program expected at enhancing the expertise of tradesperson in the Component Rebuild Section.

Several questions that research would want to address in light of the issue identification are:

- 1) Identify what are the competency gaps in the Component Rebuild Section?
- 2) What training programs need to be added specifically for Component Rebuild Section tradesperson?

### 3. DATA COLLECTION

The author employed both primary and secondary data to finish this assignment. The author uses a qualitative approach to gather primary data, which includes focus groups, interviews, and observations. For secondary data, she gathers data from employee assessments and training that is already under the purview of the ATD Section.

#### 3.1 Observations

Observations involve watching and recording the activities of employees or processes at Component Rebuild Centre start from disassembly, assembly, and the last quality control. This method can provide valuable information about the efficiency and effectiveness of different processes, as well as identifying potential areas for improvement. From the observation process carried out, the following facts were obtained:

- a) Component Rebuild Section has daily maintenance activities that are different from other sections in the Mining Support Division (MSD).
- b) Daily activities in the Component Rebuild Section are a manufacturing process.
- c) Competency Standards applied to tradesperson in Component Rebuild Section should be different from other sections in MSD.
- d) The knowledge of tradesperson related to specific machines related to the operating system on the unit is very far between tradesperson in Component Rebuild Section and other sections in MSD.
- e) The analytical ability of the tradesperson in the Component Rebuild Section to solve problems on the unit is not very important, but it is necessary to be specific to the components.
- f) Skills and adaptability in using equipment with the latest technology also need to be improved in the Component Rebuild Section so that daily activities report, and work data can be stored in the system and accuracy when analysing data can produce the right recommendations.

#### 3.2 Focus Groups Discussion

To explore business issues related to employee competencies for each position in the Component Rebuild Section and discuss matters that require development, focus groups with the Maintenance Support Manager, CR Section Superintendent, Senior Quality Assurance, and Supervisors were held. This approach can uncover areas that might want improvement while also offering a deeper insight of the attitudes and views of people concerned. To achieve the target life of each component that is reconditioned at the Component Rebuild Centre carried out by the Component Rebuild Section where the target life for components reconditioned at the Component Rebuild Centre by the Component Rebuild Section has not been achieved.

This discussion group was conducted by the researcher involving the Manager of Maintenance Support Department, Superintendent Component Rebuild Section, Supervisor Component Rebuild Section, Senior Quality Assurance and Superintendent Administration - Training Development (ATD).

Some of the topics of discussion in the discussion group forum are matters related to the expansion process but still achieve the Key Performance Indicator of the Component Rebuild Section, namely:



- a) How to create an organizational structure in the Component Rebuild Section that is in accordance with the objectives, namely, to ensure the availability of components that can achieve the target life.
- b) Determine the competencies for each position formed so that they can carry out their work properly.
- c) Eliminate the competency gap in component rebuild because there are different sources of labour, and it is difficult to get a workforce that suits the needs of the Component Rebuild Section.
- d) Competency is a problem because there are still component malfunctions caused by workmanship.
- e) The current training program is still generally applicable to all PT Lignite Coal in any section, so a special training program is needed for the Component Rebuild Section.
- f) How the implementation and methods for training will be carried out so that it does not interfere with the work process and provides maximum results.

### 3.3 Interviews

To get their opinions on worker skills, a researcher will speak one-on-one with tradespeople, quality control, supervisors, technicians, and part kitting. In addition, information on the present level of competences, competency expectations that must be fulfilled, and training created in the Component Rebuild Section are all intended to be gathered throughout the interview process.

### 3.4 Documents Review

Employees of the Component Rebuild Section's Training Need Analysis records and MSD competency data were the subjects of the analysis.

## 4. ANALYSIS

The Component Rebuild Section held a focus group discussion to address issues related to the causes of not achieving component life targets and organizational structure issues related to the division of work tasks, as well as solutions that will be implemented to solve business problems. The focus group discussion was based on qualitative data collected through the observation method, which involved seeing and observing daily activities in the Component Rebuild section with other sets at MSD with the aim of identifying differences in competence.

Individual interviews will be conducted as the next step in the data collecting process to get information on the training methods and needs of the tradespeople in the Component Rebuild Section.

Examination of records pertaining to the enhancement of competences, including knowledge, proficiencies, and aptitudes of MSD tradesperson members about current training initiatives. There are various approaches to conducting thematic analysis, but the most common form follows a six-step process: familiarization, coding, generating themes, reviewing themes, defining, and naming themes, and writing up. Researchers conducted interviews to get more in-depth information related to the competency gap in the Component Rebuild Section and the right training needs to be carried out in the Component Rebuild Section. Thematic analysis will be used to examine the interview data. The researcher closely examines the data to identify common topics, ideas, and patterns of meaning that come up repeatedly (Jack Caulfield, 2019).

Interview transcript data was converted from audio data to text and used by the researcher to compare with data obtained by other methods such as observation, focus group discussions and analysis of available training documents. The questions asked in the interviews were structured and evolved during the interview process. Data collection begins with an open coding process. Open coding is an approach to theme pieces and incorporates several concepts identified during data collection in an organized and systematic way (Williams and Moser, 2019). After obtaining several codes through the interview process, identification and grouping of codes into categories were carried out. From the Table 4.1, the number of coding was 14 codes which can be divided into 9 groups of categories (Table 4.2), such as production process, equipment operation, component knowledge, problem solving, individual creativity, using technology, analytical thinking, individual adaptation and learning ability.

Furthermore, classification of categories into a big theme were carried out to find out the relationship of the categories that have been compiled. Based on the results of the study, there are three major themes obtained from interviews with three business actors.



Table 4.1 Coding and Categories of Interview Transcript

No	Coding	Category								
		Production Process	Equipment Operation	Component Knowledge	Individual Creativity	Individual Adaptation	Learning Ability	Analytical Thinking	Problem Solving	Using Technology
1	Checking partial part quality									
2	Component production and target life									
3	Job Delegation without Organization structure									
4	New Concept of CR									
5	New Technology implementation in equipment									
6	Using measurement tools									
7	Certification training program									
8	Component operation system knowledge									
9	Warranty component									
10	Refresh and assessment									
11	Adaptation to new environment									
12	Working experience									
13	Digitalization knowledge									
14	Component failure									

Table 4.2 Themes of Interview Transcript

Category	Frequency	Themes		
		Knowledge	Attitude	Skill and Ability
Production Process	13	13		
Equipment Operation	4	4		
Component Knowledge	12	12		
Individual Creativity	6		6	
Individual Adaptation	6		6	
Learning Ability	6		6	
Analytical Thinking	9			9
Problem Solving	14			14
Using Technology	7			7
<b>Total</b>	<b>77</b>	<b>29</b>	<b>18</b>	<b>30</b>

From the results of the above analysis, data is obtained that the current competency gap in the Component Rebuild Section is the Skill and Ability of CR Section personnel by 38.96%, as well as Knowledge by 37.66% and Attitude by 23.37%.

From the interview transcript data, specific training materials are also obtained related to the component operating system in the unit, training on new technologies applied at MSD and how the training process or method to eliminate the existing competency gap by conducting training focused on Skill, Ability and Knowledge as the main training and of course still improving the attitude aspects of personnel in the Component Rebuild Section,

The attitude of each employee will be monitored by the superior daily and assessments will be carried out weekly. Training material is tailored to the needs and objectives of the section, namely the rebuild component reaches the expected life target and there is no warranty caused by workmanship.

From training documents, researcher get data that current training program to improve employee competencies in the MSD division is shown in tables 4.3 and 4.4 below. From the table, for each position, the type of competency and training that must be completed by mechanical tradesperson and mechanical tradesperson, which is the lowest position in the organizational structure in the Mining Support Division (MSD), has been determined. The training program compiled is a training program that is carried out face-to-face for the amount needed to complete the training program where each day the training is only carried out for a maximum of 8 hours, so that for training programs that require more than 8 hours it will be carried out in several days according to the number of hours needed to complete the training. In the implementation of training, the method of explaining the material by the Trainer



(Specialist) and discussions are carried out related to the problems found by the tradesperson in the workplace. The training program is arranged sequentially or gradually so that a tradesperson must complete one by one for each training program that has been determined. The training program is given to PT Lignite Coal employees who work as permanent employees.

**Table 4.3. MSD Training Program for Tradesperson Mechanical**

NO	Competency Description	Training Packages	Hours	Day
1	Generic - Year One (17 Modules)	MC1 - Maintenance Safety	24	3
		C2 - Equipment Overview	8	1
		C3 - Isolation Procedure	8	1
		C4 - Hand tools & equipment	40	5
		C5 - Jacking & blocking	24	3
		C6 - Fasteners	32	4
		C7 - Jointing Materials	24	3
		C8 - Lubrication maintenance	24	3
		C9 - Seals & bearings	32	4
		C11 - Engines	40	5
		C12 - Power Trains	40	5
		C13 - Fuel systems	32	4
		C14 - Hydraulics	32	4
		M15 - Electrical	32	4
		M16 - Wheels & tires	40	5
		C17 - Brakes	40	5
		C18 - Steering & suspension	24	3
2	Generic - Year Two (7 Modules)	M21 - Engines	80	10
		M22 - Power trains	72	9
		M23 - Fuel systems	80	10
		M24 - Hydraulics	80	10
		M25 - Electrical	32	4
		M27 - Brakes	80	10
		M28 - Steering & suspension	40	5
3	Generic - Year Three (5 Modules)	M31 - Engines	80	10
		M32 - Power trains	64	8
		M34 - Hydraulics	96	12
		M35 - Electrical	40	5
		M37 - Brakes	40	5





Table 4.4 MSD Training Program for Tradesperson Electrical

No	Competency Description	Training Packages	Hours	Day
1	Generic - Year One (6 Modules)	MC1 - Maintenance Safety	24	3
		C2 - Equipment Overview	8	1
		C3 - Isolation Procedure	8	1
		C4 - Hand tools & equipment	40	5
		C11 - Engines	40	5
		C12 - Power Trains	40	5
2	Generic - Year Two (2 Modules)	M21 - Engines	80	10
		M22 - Power trains	72	9
3	Generic - Year Three (2 Modules)	M31 - Engines	80	10
		M32 - Power Trains	64	8
4	Basic Auto Electrical (12 Modules) Year One	A1 - Basic DC Electrical Principles	56	7
		A2 - Magnetic Principles	16	2
		A3 - Electrical Wiring Repairs	16	2
		A4 - Automotive Batteries	48	6
		A5 - Lighting Circuits	64	8
		A6 - Ancillary Circuits	56	7
		A7 - Automotive Instruments	40	5
		A8 - Starting Circuits	64	8
		A9 - Electrical Principles & Components	64	8
		A10 - Charging Circuits	64	8
		A11 - Monitoring Circuits	40	5
		A12 - Ignition Systems	48	6
5	Basic Electrical - HV Year One	AC – DC Principle	40	5
		Generator AC: part I & part II	64	8
		AC – DC Motor Principle	40	5
		Fundamental Element of Power Electronic	40	5
		Control Electric Drive	40	5
		Test Equipment	24	3

By considering data from observations and data related to PT LC employees, Labor Supply and Contract Service, the training material is too general and takes a lot of time to complete so there is not enough time to catch up and complete the CR Section competency gap if implemented, so it is necessary to develop training specifically for the Component Rebuild Section. A training according to the needs of daily activities for the Component Rebuild Section must be conducted. Training with specific materials will eliminate competency gaps in both knowledge about components so that in the production process the tradesperson knows the



function of each partial part and the work process when operated in the unit. By knowing the operating system and function of each partial part, in the process of disassembly and assembly, the tradesperson is careful and precise in doing the work so that the target life component can be achieved and there are no more warranty components due to workmanship as the cause.

Training related to new technologies implemented at MSD in general and specifically in the Component Rebuild Section needs to be carried out so that the tradesperson's ability to adapt to daily activities at the Component Rebuild Centre in the production process takes place quickly. Training related to the technology used in the production process, namely the use of Odoo ERP and knowledge of the Minecare system used in the unit are training materials to eliminate competency gaps related to the adaptability of tradesperson.

To eliminate competency gaps related to specialized skills in the use of equipment, damage analysis and analytical thinking can be overcome by increasing the knowledge and adaptability of each tradesperson and the training is focused on basic maintenance training.

Training module designed for the CR section is specific knowledge for components that are reconditioned at CRC. The following is an explanation training for CR Section:

1. Tradesperson Mechanical

Tradesperson Mechanical must complete module about:

- a) Hydraulic System
- b) Power Train
  - Torque Converter
  - Differential
  - Final Drive
  - Transmission
- c) Engine

2. Tradesperson Electrical

Tradesperson Mechanical must complete module about:

- a) General Electrical
- b) Phase Module
- c) Grid Blower
- d) Auxiliary Inverter
- e) Wheel Motor
- f) Main Alternator
- g) Engine

The expected learning outcomes of the training to improve component-related knowledge are:

- 1) Able to identify parts in each component.
- 2) Understand the function and workings of each part.
- 3) Understand the component operating system in the unit.

As for training to eliminate emerging competencies related to adaptation to the work environment and daily maintenance activities (remanufacturing) are:

- 1) Know and understand the manufacturing process.
- 2) Able to use the equipment used in the manufacturing process and still maintain occupational safety and health.
- 3) Understand and know the operation of Odoo ERP used at CRS in the manufacturing process.

For the implementation of training in the CR Section, in accordance with the discussion at the beginning, training is designed whose implementation does not interfere with the production process in CRC but can provide maximum results and its implementation also uses supporting tools in the digitalization era.

In the implementation of training, several stages are carried out as follows:

- 1) Explanation of the agenda and training objectives.
- 2) Pre-Test.
- 3) Material explanation and Group Discussion.



- 4) Practice Session.
- 5) Post Test.
- 6) Conduct independent work.
- 7) Assessment

**Table 4.5 Tradesperson Mechanical Training Method**

No	Training Activities	Duration	Method	Trainee Activity
1	Explanation of the agenda and training objectives.	10 minutes	Presentation conducts in training room.	Listening.
2	Pre-Test.	15 minutes	Use Microsoft Form or Quizizz application.	Doing pre-test assignment.
3	Material explanation and Group Discussion.	120 minutes	Menggunakan presentasi atau video animasi terkait system kerja komponen di unit	Listening and notice.
4	Practice Session.		Melakukan pengenalan bagian-bagian komponen Hydraulic System 120 minutes, Torque Converter 240 minutes, Differential 300 minutes, Final Drive 360 minutes, Transmission 360 minutes, and Engine 720 minutes.	Conduct disassembly at CRC Workshop.
5	Post Test.	15 minutes	Use Microsoft Form or Quizizz application.	Doing post-test assignment.
6	Perform independent work.		Perform component disassembly and assembly process.	Make a report on the disassembly and assembly component process according to the training module followed by 3 components for each module.
7	Assessment.	60 minutes	Use Microsoft Form or Quizizz application.	Complete assessment task. Conduct presentation based on training activities.

**Table 4.6 Tradesperson Electrical Training Method**

Training Activities	Duration	Method	Trainee Activity
Explanation of the agenda and training objectives.	10 minutes	Presentation conducts in training room.	Listening.
Pre-Test	15 minutes	Use Microsoft Form or Quizizz application.	Doing pre-test assignment.
Material explanation and Group Discussion	120 minutes	Menggunakan presentasi atau video animasi terkait system kerja komponen di unit	Listening and notice.
Practice Session		Melakukan pengenalan bagian-bagian komponen General Electrical 120 minutes, Phase Module 150 minutes, Grid Blower 150 minutes, Auxiliary Inverter 180 minutes, Wheel Motor 240 minutes, Main Alternator 360 minutes, and Engine 360 minutes.	Conduct disassembly at CRC Workshop.
Post Test	15 minutes	Use Microsoft Form or Quizizz application.	Doing post-test assignment.
Perform independent work.		Perform component disassembly and assembly process.	Make a report on the disassembly and assembly component process according to the training module followed by 3 components for each module.
Assessment	60 minutes	Use Microsoft Form or Quizizz application.	Complete assessment task. Conduct presentation based on training activities.



Table 4.7 Introduction about Component Rebuild Centre

No	Training Activities	Duration	Method	Trainee Activity
1	Explanation of the agenda and training objectives.	10 minutes	Presentation conducts in training room.	Listening.
2	Pre-Test	15 minutes	Use Microsoft Form or Quizizz application.	Doing pre-test assignment.
3	Material explanation and Group Discussion	60 minutes	Menggunakan presentasi atau video animasi terkait CRC Melakukan pengenalan ERP Odoo	Listening and notice.
4	Practice Session	60 minutes	Operating ERP Odoo	Perform component disassembly dan assembly.
5	Post Test	15 minutes	Use Microsoft Form or Quizizz application.	Doing post-test assignment.
6	Perform independent work.		Perform component disassembly dan assembly.	Operate ERP Odoo
7	Assessment	20 minutes	Use Microsoft Form or Quizizz application.	Complete assessment task.

5. CONCLUSION

From the analysis of primary data, namely from observations, focus group discussions and interview transcripts, as well as secondary data related to tradesperson competencies and training in the Component Rebuild Section, it can be concluded as follows:

1. Existing competency gaps that occur in the Component Rebuild Section are:
  - a) The adaptability of new tradespeople to maintenance (manufacturing) activities in the Component Rebuild Section which are different from other section maintenance activities in general.
  - b) The ability to learn to change due to the application of new technology in the manufacturing process. Some are quick to accept changes, but some need more time to learn.
  - c) Ability to think and analyse related work and repairs for failures that occur to make improvements.
  - d) Knowledge of the manufacturing process and the purpose of the manufacturing process carried out in the Component Rebuild Section.
  - e) General knowledge of the operating system of components in the unit.
  - f) Specific knowledge of components.
  
2. Training program implemented for tradesperson working in Component Rebuild Section is as follows:
  - a) Training programs related to CRC, namely:
    - 1) Knowledge of manufacturing process and manufacturing process flow at CRC.
    - 2) Use of technology in the manufacturing process, namely ERP - Odoo.
  - b) Specialized knowledge training for reconditioned parts at CRC:
 

Tradesperson Mechanical

    - 1) Hydraulic Cylinder
    - 2) Torque Converter
    - 3) Differential
    - 4) Final Drive
    - 5) Transmission
    - 6) Engine

Tradesperson Electrical

Modules to be completed by Electrical Tradespersons assigned to the CR Section start with knowledge of:

    - 1) General Electrical
    - 2) Phase Module
    - 3) Grid Blower
    - 4) Auxiliary Inverter



- 5) Wheel Motor
- 6) Main Alternator
- 7) Engine

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