

Increasing Production Target Thorough Major Maintenance

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Abstract

Suboptimal production equipment conditions hinder optimal production activities, necessitating maintenance to maintain production performance. RU VI Balongan has decided to renew several important units to not only improve production capability but also to increase it, enabling the achievement of production targets to meet demand. The Major Turn Around project conducted in 2022 focused on this aspect, where revamping activities were carried out on two main processing units, namely the Crude Distillation Unit (CDU), and the Residue Catalytic Cracking (RCC) unit was replaced. This Turn Around project is also one of the efforts to achieve the RDMP (Refinery Development Master Plan) as one of the National Strategic Projects (PSN), where RU VI aims to increase the total production capacity from 125,000 barrels/day to 150,000 barrels/day. PT Pertamina International Refinery RU VI Balongan is one of the 6 processing units owned by PT Pertamina (Persero) engaged in the production of fuels, non-fuels, and petrochemicals.

Key words: Production, Production Target, Production Improvement

INTRODUCTION

Russell (2011) states that operations management is responsible for designing, operating, and improving the production systems used to complete tasks.

The primary activity of a company is to produce goods or services. According to the book *Operations Management*, production activities involve the process of creating goods or services to meet needs. Miller (2000) similarly describes production as activities aimed at adding value to a product or transforming it into a new form to satisfy needs.

Production activities always have targets that a company aims to achieve. Determining production targets involves several factors such as market demand, production capacity, availability of raw materials, and storage capacity (Aiwi, 2022).

The final output of production activities is influenced by various factors, including the quality of raw materials, the expertise of raw material handlers, and the reliability of production equipment (Ika Putri Nugraheni, 2017).

Aini (2013), in her case study, mentions that the Major Turn Around project undertaken by PT KPI RU VI Balongan is a significant effort to revitalize production equipment on a large scale. This project is conducted every few years when the production equipment is deemed to be in suboptimal condition, causing obstacles to achieving optimal production activities.

The topic of improving production targets through major turnarounds was chosen as the theme because target setting is one of the parameters of a company's production capacity. This capacity is influenced by several factors, with the reliability of production machinery being the focus of this research.

Equipment reliability is often overlooked with the assumption that as long as the equipment is still working, maintenance activities can be deferred. This overlooks the long-term effects that can lead to reduced production output and ultimately result in the failure to meet market demand targets. Maintenance activities are necessary to maintain the reliability of production equipment to ensure that production activities continue to operate optimally. According to Jay (2010), maintenance encompasses all activities related to keeping system equipment functioning properly.

Heizer and Render (2009) define operations management as a series of activities that add value in the form of goods and services by transforming inputs into outputs.

PT Kilang Pertamina Internasional RU VI Balongan is a refinery and petrochemical subholding of PT Pertamina (Persero) that has been operating since 1994 and is one of the six refineries under PT Pertamina (Persero). PT KPI RU VI Balongan, located in Indramayu, West Java, is responsible for processing crude oil and intermediate products, either from other refinery units or imported, into various high-value products used by the public, such as fuels including Solar, Pertalite, Pertamina DEX, Pertamax, and jet fuel, as well as non-fuel products like liquid petroleum gas (LPG) and petrochemicals.

The production operations aspect is the main topic of this internship, focusing on increasing production capacity, particularly for Pertalite, Solar, and LPG products.

LITERATURE ANALYSIS AND METHODOLOGY

The approach used in this internship is a quantitative approach, where the data presented will be numerical. According to V. Wiratna Sujarweni (2014:39), a quantitative approach is a type of research that produces findings that can be achieved using statistical procedures or other quantitative methods. The quantitative approach was chosen because

the secondary data available from PT KPI RU VI Balongan is considered more accurate and easier to analyze as it consists of direct operational activity records.

The research method to be used is a comparative study, where one or more variables from different time samples will be compared and analyzed to determine the causes of differences. In this case, the variables include production figures, with samples consisting of production capacity data, production results based on material balance unit process data from before and after the revitalization project was completed, and its effects on production targets.

Research data is taken from primary sources which is PT KPI RU VI Balongan by taking their past production and production target record during internship period which guarantee 100% credibility.

The framework of this analysis will be:

1. Collecting Production & production target data from before and after major turn around on effect
2. Compile and compare both production and production target data to see the effect
3. Conclude the result based on comparison

RESEARCH AND RESULTS

The results of the observations and data analysis indicate that there has been an increase in the capacity of one of the production machines, specifically the CDU unit, with the following data:



Figure 1. Crude Run Realization Graph

The graph shows that the period marked at 0 indicates the Major Turn Around, during which production was temporarily halted.

Total Crude Run 2022: 36,300,902 MB

Total Crude Run 2023: 38,324,280 MB

There has been a 5.5% increase in the amount of crude oil processed by the CDU unit. This increase also affects the RCC unit, as the higher yield produced will enhance the feed processed in the RCC unit. The increase in the production unit's capacity has impacted the quantity of products produced by PT KPI RU VI Balongan, with the following data:

Table 1. Comparison of Total Production Before and After Major Turn Around

No	Product	Total Production at 2021	Total Production at 2022
1	Pertalite	20,732,334 MB	20,622,102 MB
2	Solar	11,666,471 MB	12,016,187 MB
3	LPG	2,711,810 MB	2,964,765 MB

Source: Production Data from PT KPI RU VI Balongan

The graph described shows a comparison of production realization between 2021 and 2022, with the 2021 production data used as a benchmark before the Turn Around. Production in early 2022 experienced a significant decline due to the halt in operations for the project, but gradually increased after the project was completed. The gradual increase in production was due to the production equipment needing time to start up and operate beyond its previous capacity. The increase is evidenced by the total production figures, which nearly match those of the previous year, despite the production halt in early 2022. The production levels managed to meet the target, compensating for the shortfall caused by the production halt. Based on the data that shows an increase in production, the production target has also been raised, with the following data:

No	Product	Total Production Target at 2021	Total Production Target at 2022
1	Pertalite	22,191,794 MB	20,732,334 MB
2	Solar	11,784,078 MB	11,956,714 MB
3	LPG	2,234,853 MB	2,564,136 MB

Based on the results shown in the graph above, it can be stated that there has been an increase in production, which has led to a rise in the production target following the major turnaround.

The increase in production output is likely due to the major turnaround project revitalizing the production equipment to operate at a stable normal capacity above 80%, compared to the previous capacity of only 60 to 70% that was inhibiting production activities.

The increase in production has led to a higher production target, as evidenced by the graph above, which shows that the production target increased in line with the rise in production following the Major Turn Around. This is likely because a higher production target is deemed achievable, given that the equipment post-Major Turn Around is capable of meeting these targets. PT Pertamina has never faced a shortage in market demand but has only had production targets to meet that demand, based on the production capacity of all its refinery units.

CONCLUSION AND RECOMMENDATIONS

The analyzed production data includes the capacity of production machines and products most used by the public, such as Peralite, Solar, and LPG, which consequently have the highest demand and production targets. It is evident that the production target increased in 2022, using the production target and realization data from 2021 as a comparison following the Major Turn Around. The target increase is a result of improved production realization, leading Pertamina Central to affirm that PT KPI RU VI Balongan can achieve higher production levels. Therefore, the increased production target is considered met, resulting in better fulfillment of market demand.

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