CH1 - THORIQULHAQ

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CHAPTER 1

INTRODUCTION

1.1 Introduction

Since the Industrial revolution 2.0, electricity has become a very important basic need for human life until now. Even without electricity, it is very difficult for industrial activities to run. This is inseparable from the role of an Indonesian government-owned corporation, namely PT PLN (Persero). However, even though we know that we have now entered Industry 4.0, the distribution of electricity access is still not comprehensive throughout Indonesia, especially in remote areas. So that PT PLN (Persero) plans to expand access to electricity by increasing the number of power plants in areas that are not yet covered by electricity.

Apart from increasing the number of power plants, there are other things that need to be considered, namely the maintenance of the power plant itself. Thus as the number of generators increases it will require a lot of effort needed to carry out maintenance. The maintenance itself is based on reports from the results of monitoring the power plant which is carried out every day.

Not only for maintenance, monitoring of plant performance can also help predict something in the future as well as anticipate things that are not desirable. So, we can say that periodic monitoring of power plant performance plays an important role in the sustainability of power plants.

1.2 Problem Background

PT PLN (Persero) UP3 Pamekasan is a branch of PT PLN (Persero) located on Madura Island, precisely in Pamekasan Regency, East Java which is responsible for distributing electricity access in the Madura Island area including small islands nearby. Due to the fact that there are still many areas that do not have access to electricity on Madura Island and the surrounding area, they plan to increase the number of power plants in order to spread electricity access to areas that do not yet have access to electricity. But unfortunately the process of monitoring the performance of power plants has not used a computerized system in its implementation, which is now still using a manual system. So that, innovation is needed immediately to anticipate some problems caused by the increase in the number of power plants.

To confirm some things about the existing system, we conducted some interviews with Ms. Habibah Zahra Faluqi (Supervisor at PT PLN (Persero)) for more details. After a few interview sessions, some of problems have been identified starting from data collection which still uses WhatsApp Groups with various formats that cause confusion, data checking or validating process that cause ambiguity because the status of the data whether approved or rejected has not been recorded properly, data classification for each power plant that is carried out one by one, processing raw data still using excel sheets to organized data for analysis, everything is done gradually from person to person. This is where some various problems arise due to the absence of a centralized and real-time system to monitor this, starting from redundant data, possibility of human error, time-consuming and inefficient because data needs to go through many stages and cannot be done synchronously. Last but not least, they cannot see the progress of the data they input directly in real-time.

1.3 Project Aim

This project aims to develop an automated monitoring system of power plant performance in PT PLN (Persero) UP3 Pamekasan in a web-based approach that is able to speed up the process of data gathering, data checking and verification, data classification until data processing so that the monitoring process of power plant performance in PT PLN (Persero) UP3 Pamekasan will be more efficient and manageable.

1.4 Project Objectives

The objectives of the project are:

(a) To identify the requirement of the power plants performance monitoring system.

(b) To design and develop the power plants performance monitoring system based on user requirements.

(c) To test the functionalities of the power plants performance monitoring system as per user requirements.

1.5 Project Scope

The scopes of the project are:

(a) The project scope only focuses on power plants in PT PLN (Persero) UP3 Pamekasan.

(b) Organized data will be presented as a bar chart, list data & downloadable excel document.

(c) The system can only be accessed by three different levels of users which are operator staff for every power plant, PIC staff for every power plant and system administrator with different authorized access.

1.6 Project Importance

This project will transform the monitoring process of the power plants performance in PT PLN (Persero) UP3 Pamekasan to be automatic where previously the process was done manually. It will significantly increase the monitoring process efficiency while still providing convenience in its implementation. Also, with the additional features for different authorized access and enhancement in data management by implementing the use of a centralized database, it can help better in managing, tracking and securing the data. Therefore, in this proposed system, every role starting from Operator Staff, PIC Staff & Supervisor can work in a focused manner only through the system where everything needed is centralized.

1.7 Report Organization

This section will briefly explain the chapter organization of this report which consists of five chapters including Introduction, Literature Review, System Development Methodology, Requirement Analysis and Design, Implementation and Testing, and Conclusion. Starting from this first chapter which is Introduction, it consists of the overview of the project including the problem background until the proposed solution. In this case, Power Plants Performance Monitoring System In PT PLN (Persero) UP3 Pamekasan is our proposed solution. Next, in chapter two, it consists of a literature review which discusses the method to solve the existing system problem including the organization structure and explanation related with how the existing system works. Then, in chapter three, it discusses more detail about the methodology that was used for the system development including some justification related with the chosen methodology, technology used also system requirement analysis will be included here. Then, in chapter four, it discusses more detail about the requirement analysis and also some design such as project design, database design, interface design and chapter design. Then, in chapter five it explains the implementation and testing of the system including the code and also the interface of the system main function. Last but not least, in chapter six, it consists of the conclusion related with this report of the system development including the achievement of the project objective and suggestions for future improvement.

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