Design of a Crane Control System Using S7-1200 PLC at Thai Trung Steel Plant

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***Abstract*—This thesis presents the design of a crane control system using a Siemens S7-1200 PLC at Thai Trung Steel Plant. The author describes the overall structure and control methods of the crane system, including the selection of control devices and programming using TIA Portal and WinCC. The system is designed to handle the specific load requirements of the steel plant, with detailed considerations for safety and operational flexibility. The design process involves selecting appropriate control devices and programming the PLC to meet the specific operational requirements of the crane system. The author also discusses the design choices and their implications for the crane system, highlighting the importance of flexibility and ease of maintenance in the design. The system is designed to be adaptable to different operational scenarios, but no measured evaluation or practical effectiveness is reported.**

***Index Terms*—PLC, S7-1200, crane control, TIA Portal, WinCC**

I. Introduction

The thesis provides an overview of the Thai Trung Steel Plant, detailing its history, production capabilities, and equipment. The author then focuses on the design of a crane control system, emphasizing the selection of control methods and the use of Siemens S7-1200 PLC for programming and monitoring. The plant has a history of producing steel products, with a focus on various types of steel bars and profiles. The crane control system is designed to meet the specific operational requirements of the plant, including load capacity and operational characteristics. The design process involves selecting appropriate control devices and programming the PLC to ensure safe and efficient operation of the crane system [1]. Related earlier ICTU undergraduate theses provide context for this English summary [4], [5], [6]. Published articles on the methods and subject of this project provide context for this English summary [7], [8].

II. Methods

The author uses Siemens S7-1200 PLC for the control system, employing TIA Portal for programming and WinCC for monitoring. The design process involves selecting appropriate control devices and programming the PLC to meet the specific operational requirements of the crane system. The crane system is designed to handle the specific load requirements of the steel plant, with detailed considerations for safety and operational flexibility. The design process includes selecting the appropriate control devices, such as relays and push buttons, and programming the PLC to ensure safe and efficient operation of the crane system. The system is designed to be adaptable to different operational scenarios, but no measured evaluation or practical effectiveness is reported [1].

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III. Results

The thesis documents the design and programming of the crane control system, including the selection of control devices and the implementation of the PLC program. The system is designed to handle the specific load requirements of the steel plant, with detailed considerations for safety and operational flexibility. The design process involves selecting appropriate control devices and programming the PLC to ensure safe and efficient operation of the crane system. The system is designed to be adaptable to different operational scenarios, but no measured evaluation or practical effectiveness is reported [1].

IV. Discussion

The author discusses the design choices and their implications for the crane system, highlighting the importance of flexibility and ease of maintenance in the design. The system is designed to be adaptable to different operational scenarios, but no measured evaluation or practical effectiveness is reported. The design process involves selecting appropriate control devices and programming the PLC to ensure safe and efficient operation of the crane system. The system is designed to handle the specific load requirements of the steel plant, with detailed considerations for safety and operational flexibility. The design choices are based on the specific operational requirements of the plant, but no measured evaluation or practical effectiveness is reported [1].

V. Conclusion

The author concludes that the designed system successfully meets the requirements of the Thai Trung Steel Plant, providing a flexible and efficient crane control solution. The system is designed to handle the specific load requirements of the steel plant, with detailed considerations for safety and operational flexibility. The design process involves selecting appropriate control devices and programming the PLC to ensure safe and efficient operation of the crane system. The system is

designed to be adaptable to different operational scenarios, but no measured evaluation or practical effectiveness is reported [1].

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