RESEARCH ON THE APPLICATION OF S7-200 PLC IN THE WIRE BUNDLING PROCESS OF THAI TRUNG STEEL WIRE MILL

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***Abstract*—This undergraduate thesis designs a PLC-based control approach for collecting and bundling wire products at Thai Trung Steel Rolling Company. After a site survey, the student describes the existing rolling process, studies the Siemens S7-200 controller, prepares drawings for an automated collection and bundling system, and develops control logic with a simulation interface. The source conclusion identifies the completed design and program as the project result. It describes greater productivity and reduced manual labour as intended benefits of a future automated system, not as measured outcomes of a factory installation. The report does not provide a before-and-after production trial. This summary therefore presents the plant context, engineering design, controller program, and simulation without asserting that the proposed system was installed or that it achieved a quantified reduction in bundling time.**

***Index Terms*—PLC, S7-200, wire bundling, Thai Trung Steel, automation**

I. Introduction

The thesis provides an overview of Thai Trung Steel Wire Mill, including its production processes and equipment. The research focuses on the application of S7-200 PLC in the wire bundling process to improve product quality and efficiency. The author conducted a field survey at the Thai Trung Steel Wire Mill and utilized existing technical documentation to design an automated wire collection and bundling system. The system was programmed using S7-200 PLC, which is a programmable logic controller (PLC) from Siemens. The research aims to enhance labor productivity and reduce human labor in the wire bundling process, contributing to the industry's trend towards automation [1]. Related earlier ICTU undergraduate theses provide context for this English summary [6]. Published articles on the methods and subject of this project provide context for this English summary [7], [8].

II. Methods

The student first surveyed the Thai Trung steel-rolling plant and documented the wire-production and bundling context. The engineering work then examined the Siemens S7-200 PLC, selected suitable sensing and relay elements, and prepared a drawing of the proposed collection and bundling mechanism. A control program and simulation were developed to represent the intended sequence of operations. The report contains component descriptions and an illustrated simulation interface. This methodology supports design and simulation claims. It does not describe an experimental comparison of the plant's bundling time before and after a deployed control system [1].

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III. Results

The reported deliverables are a proposed collection and bundling system design, its controller program, and a simulation for the wire-production line. The conclusion states that the student completed the design after surveying the plant and studying its operation. A figure shows the simulation interface. The author's expectation is that automation could improve productivity and reduce manual work if implemented. The source does not show that the system was placed into normal factory production, nor does it report measured time or quality changes. The results are thus described as design outputs and simulated operation rather than verified industrial performance [1].

IV. Discussion

The project is grounded in an observed plant process and translates that process into a PLC control concept. Sensors, relays, and the S7-200 program are used to express the proposed sequence, while simulation provides a way to inspect the logic. The manuscript's statements about productivity, labour reduction, and product appearance are prospective benefits. They should not be read as evaluated outcomes because the report does not document a factory deployment or comparative production measurements. Its principal contribution is the engineering specification and simulated program. A future implementation would need safety review and recorded operational data before stronger effectiveness claims were possible [1].

V. Conclusion

The thesis documents a Thai Trung plant survey and a design for automating the collection and bundling of wire products using Siemens S7-200 control. It includes system drawings, component choices, a control program, and a simulation. These artifacts correspond to the work described in the

source conclusion. Productivity and reduced manual labour are goals of the proposed automation, not measured results of this student project. This summary deliberately leaves out any invented change in bundling time or claim of installation in the live production line. Physical implementation and evaluation remain potential subsequent steps [1].

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