

## INTISARI

### **RANCANG BANGUN INSTRUMEN *PRESSURE TRANSMITTER* PADA SISTEM *SUPERVISORY CONTROL AND DATA ACQUISITION* TERINTEGRASI *PROGRAMMABLE LOGIC CONTROLLER* DALAM PROSES DESTILATOR 4T**

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Dalam dunia industri, pembacaan perangkat ukur terhadap nilai parameter lapangan sangat penting dilakukan untuk menjaga kualitas produk. Disamping itu, sebuah sistem yang dapat memantau dan mengontrol jalannya produksi juga diperlukan untuk meningkatkan efisiensi dan mengurangi potensi bahaya di lapangan. Mengingat hal tersebut, maka dalam penelitian ini dilakukan validasi pembacaan nilai tekanan dalam rentang 0,2-3,4 atm (*working pressure*) oleh sensor *pressure transmitter* I (83-PT-2101) dan II (83-PT-2103) dengan hasil pengukuran nilai akurasi dan *error* akurasi sensor I sebesar 99,95% dan 0,05%, sedangkan sensor II sebesar 99,82% dan 0,18%. Berdasarkan perhitungan, maka dapat dikatakan bahwa kedua sensor memiliki hasil pembacaan yang teliti, akurat, dan berada dalam ambang toleransi perusahaan. Selanjutnya, telah dilakukan pula perancangan sistem *Supervisory Control and Data Acquisition* (SCADA) terintegrasi *Programmable Logic Controller* (PLC) dan instruksi logika (program) RsLogix Designer Studio 5000 untuk proses Destilator 4T di PT Indesso Aroma Ungaran. Sistem SCADA ini terdiri dari perintah *real time* untuk monitoring, kontrol manual instrumen lapangan (*valve*, *agigator mixer*, pompa vakum, *steam*), dan kontrol otomatis. Selain itu, sistem SCADA juga dilengkapi dengan fitur pembacaan nilai parameter lapangan (tekanan), *trend* grafik, dan notifikasi alarm.

Kata kunci: Kontrol, *Programmable Logic Controller*, Sensor, *Supervisory Control and Data Acquisition*, Tekanan, Validasi

## **ABSTRACT**

### **DESIGN AND CONSTRUCTION OF PRESSURE TRANSMITTER INSTRUMENT IN SUPERVISORY CONTROL AND DATA ACQUISITION SYSTEM INTEGRATED WITH PROGRAMMABLE LOGIC CONTROLLER IN THE 4T DISTILLATOR PROCESS**

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In the industrial world, measuring devices' readings of field parameter values are crucial for maintaining product quality. Additionally, a system that can monitor and control production processes is needed to enhance efficiency and reduce potential hazards in the field. Considering this, in this study, the validation of pressure readings within the range of 0.2-3.4 atm (working pressure) by pressure transmitters I (83-PT-2101) and II (83-PT-2103) was conducted, resulting in an accuracy measurement of 99.95% with an error of 0.05% for sensor I, and 99.82% with an error of 0.18% for sensor II. Based on these calculations, it can be said that both sensors provide meticulous, accurate readings within the company's tolerance threshold. Furthermore, the design of an integrated Supervisory Control and Data Acquisition (SCADA) system with Programmable Logic Controller (PLC) and RsLogix Designer Studio 5000 logic program instructions has been performed for the Destilator 4T process at PT Indesso Aroma Ungaran. This SCADA system comprises real-time commands for monitoring, manual control of field instruments (valves, agitator mixers, vacuum pumps, steam), and automatic control. Additionally, the SCADA system is equipped with field parameter reading features (pressure), trend graphs, and alarm notifications.

**Keywords:** Control, Programmable Logic Controller, Sensor, Supervisory Control and Data Acquisition, Pressure, Validation.