

ABSTRAK

Salah satu bagian fasilitas *gathering station* adalah fasilitas EOR (*Enhanced Oil Recovery*) *plant* atau ada yang dinamakan WTP (*Water Treatment Plant*). Terdapat equipment kritikal EOR *Plant* yaitu WIP (*Water Injection Pump*) yang bertujuan menginjeksikan air kembali ke dalam tanah untuk menjaga tekanan reservoir. Komponen pada *discharge* WIP berupa PCV (*Pressure Control Valve*) digunakan untuk menjaga tekanan operasi, WIP beroperasi pada kapasitas maksimum dengan spesifik *single set-point* dan memiliki LCV (*Level Control Valve*) untuk menjaga ketinggian level air pada *Water Tank*. Sistem pemrograman *control valve* konvensional kerap kali menimbulkan masalah seperti pengoperasian pompa injeksi air yang tidak efisien karena seringkali mengirim fluida kembali ke tangki air melalui *return line* serta kehandalan *control valve* dalam merespon perubahan kondisi operasi pengelolaan air. Metode PCO yang dilakukan secara *trial and error* untuk membuat sistem automasi terintegrasi *control valve* pada sistem kendali PLC (*Programmable Logic Controller*) dan HMI (*Human Machine Interface*) di fasilitas produksi. Dengan skenario yang telah dilakukan sistem automasi terintegrasi berhasil diimplementasikan sehingga masalah operasi dapat teratasi.

Kata Kunci: *PLC, Logic Control Valve, Set Point*

ABSTRACT

One of the facilities at a gathering station is the EOR (Enhanced Oil Recovery) plant, also known as the WTP (Water Treatment Plant). A critical piece of equipment in the EOR Plant is the WIP (Water Injection Pump), designed to reinject water back into the ground to maintain reservoir pressure. A component on the WIP's discharge side is the PCV (Pressure Control Valve), used to maintain operating pressure. The WIP operates at maximum capacity with a specific single set-point and has an LCV (Level Control Valve) to maintain the water level in the Water Tank. Conventional control valve programming systems often lead to problems such as inefficient water injection pump operation, frequently sending fluid back to the water tank via the return line, and the reliability of control valves in responding to changes in water management operating conditions. The PCO (Process Control Optimization) method, conducted through trial and error, aims to create an integrated control valve automation system within the PLC (Programmable Logic Controller) and HMI (Human Machine Interface) control system at the production facility. With the scenario that has been implemented, the integrated automation system was successfully applied, thus solving operational issues.

Keyword: *PLC, Logic Control Valve, Set Point*