

**Title:**

Autonomous chemical optimization and remote monitoring: A Case Study

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**Abstract****Objectives/Scope:**

With new digital technology over the decade, our industry has seen many benefits of remote monitoring and automation in drilling, completion, and production sectors, but production chemicals programs have lagged. This paper will review initial pilot testing of automated chemical pumps on a group of newly completed wells. The initial objectives of this pilot test were to 1) seek to identify potential chemical cost savings during the early life of the well by autonomously linking chemical injection rates to production volumes; 2) confirm that chemicals are being consistently applied at the prescribed dosages; 3) set up alarm notifications; 4) be able to use the historical chemical tank level data to assist in approval of chemical delivery invoices; 5) determine if operational efficiency can be improved; 6) help identify additional applications for saltwater disposal technology.

**Process:**

Automated chemical pump controllers with built-in communication devices are used to control chemical injection rates, sending data to optimization software for remote monitoring. A prescribed dosage target of chemical to production volume is assigned in the software where the software then calculates a dosing rate each time a new well test is entered. The software sends the new dosing rate to the chemical controller.

**Observations:**

The supply voltage would drop so low during the night that the pump would stop pumping. We had to upgrade our solar power system on certain wells to provide enough power to consistently achieve target chemical injection volumes. We then set up low voltage alarms so that we are immediately notified if there is a problem with the system. Also, by remotely monitoring tank levels and alarming on low tank levels we ensure that chemical deliveries are made on time. Another benefit from monitoring and trending tank levels is the ability to use the historical data to assist in confirming chemical invoices.