

## Why Choose Lufkin Automation Pump Off Control

The displacement capacity of a pumping system is designed to meet or exceed the fluid inflow from the reservoir. Overtime, changes in reservoir characteristics and equipment wear affect the pumping system's dynamics. By detecting these changes and making timely adjustments, pumping efficiencies can be maintained and lifting costs reduced. The Lufkin Automation System-60 is a microprocessor based Rod Pump Controller (RPC) that continuously monitors pumping dynamics by measuring the load of the rod string and beam position. This relationship is plotted to produce a "dynagraph" card. The System-60 RPC compares the current dynagraph with stored set points to determine various operating states, including peak and minimum load limits and "pump off". The primary function of the System-60 is to detect the pump off state and shutdown the pumping unit. Pump off occurs when the fluid level in the well bore is not sufficient to completely fill the pump. Continuing to pump in this state can induce damaging shock loads known as "fluid pound" causing excessive wear and possible damage to the rod string. Once shutdown occurs, the pump remains off for a predetermined "downtime" to permit fluid build up in the well bore before resuming. As Delta-X, over 35,000 RPCs have been installed as pump off controllers during the last 20 years. Many documented cases have shown average production increase of 5%, electrical savings of 20% - 40%, and maintenance decrease of 25%. These results vary depending on pre-existing performance.

### Lufkin Automation System-60 RPC

Operator Interface - A built-in graphics display and keypad provides access to all features of the RPC, including plots of live and historic dynagraph information.

Dynagraphs - Various stored dynagraph cards can be retrieved from memory and viewed on the graphic display to aid the operator in determining the current condition of the pumping unit.

Optimum Downtime Calculation - Calculates the optimum downtime following the pump off state. This ensures that as pumping dynamics change the system will continue to maintain pumping efficiencies.

Additional I/O - The system provides 2 configurable analog inputs 4-20 ma or 1-5 vdc and 4 dry contact digital inputs.

Telemetry - Supports radio or modem communication to a remote host computer.

### Features

- Micro-processor based Rod Pump Controller
- A Built-in operator interface
- A Stored dynagraph cards
- A Additional I/O
- A Radio or modem communications to host computer system

### System Benefits

- Increased Production - Minimize production losses with early detection of gas lock, pump intake restrictions, holes or splits in tubing, check valve leaks, etc. Increase system uptime by decreasing catastrophic mechanical failures - rod parts, tubing damage, etc. Increase production by automatically adjusting for loss in pumping system efficiency.
- Reduced Lifting Costs - Reduce electrical consumption. Reduce equipment repair costs caused by excessive wear and fluid pound. Reduce catastrophic mechanical failures.
- Improved Analysis - Determine changes in reservoir and pumping dynamics by analyzing measured dynagraph cards with predicted cards. Use surface data to calculate down hole dynagraph cards for reservoir performance.

### **Production Benefits**

- Optimum production with reduced runtime
- Reduced maintenance
- Reduced equipment failures on pumping systems