



# *Control and Monitoring of Battery-Operated Lubrication Pumps Using the SEL-2411 PAC*

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## **INTRODUCTION**

This application note highlights some of the benefits of the SEL-2411 Programmable Automation Controller (PAC) when used as an independent control and monitoring system for primary and secondary lubrication pumps.

## **PROBLEM**

Many types of utility and industrial equipment must maintain lubrication to the bearings if power is lost. Some systems, such as coal-fired generation plants, have a battery backup lubrication pump to keep the turbine bearings lubricated. If the primary lubrication pump fails, the equipment may sustain extensive damage if the secondary battery backup pump also fails.

## **SEL SOLUTION**

The SEL-2411 PAC provides control and monitoring for backup lubrication systems. The controller can also monitor the primary lubrication and automatically start the auxiliary system. The low-voltage option available in the SEL-2411 PAC facilitates the use of battery power to make the redundant system completely independent, thereby increasing equipment reliability and mitigating problems associated with the failure of backup systems. Programmed alarms alert personnel to potential problems before actual emergencies. Programming the pump to exercise on regular intervals significantly reduces the likelihood of failure when emergency operation is required.

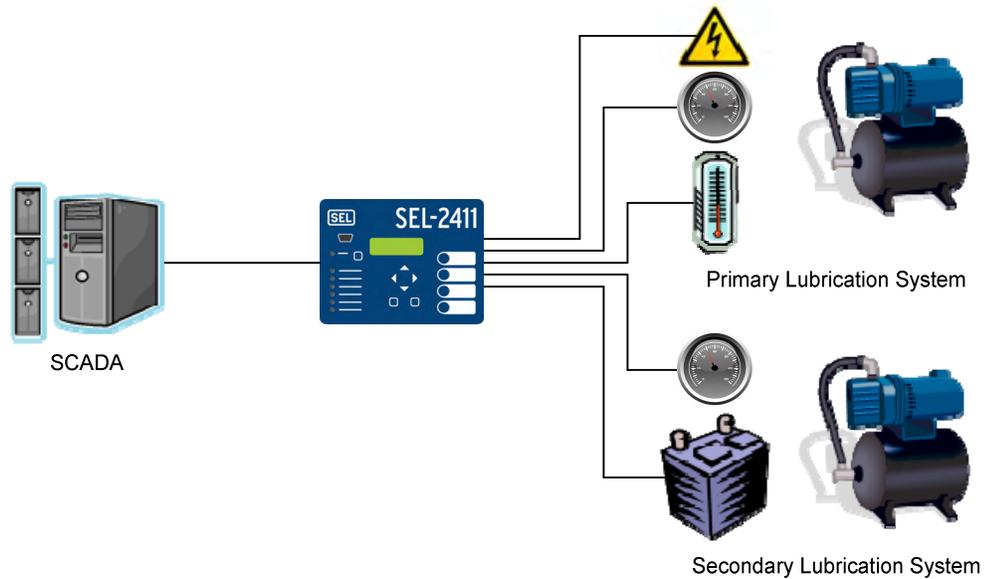
With an operating temperature range of  $-40^{\circ}$  to  $+85^{\circ}\text{C}$ , conformal coating on all circuit boards, and a ten-year warranty, the SEL-2411 PAC is suited for the harshest of environments. It has flexible I/O and low power options available to maintain uninterrupted control and communications with backup battery power.

## **PRINCIPLE OF OPERATION**

Analog inputs on the SEL-2411 PAC monitor output pressure from both primary and secondary systems. Alternately, PT (potential transformer)/CT (current transformer) connections monitor voltage and current draw to provide indication of proper operation. Changes in current can be indicative of plugged filters, an empty reservoir, or impaired pump operation.

The SEL-2411 PAC can monitor battery charger systems equipped with relay outputs. Programming regular intervals exercises pumps, lubricates pump bearings, and provides proof of readiness.

Communication with the SCADA (supervisory control and data acquisition) system alerts operators to problems with the primary lubrication system and problems that occur during exercises.



**Figure 1 Backup Lubrication Monitoring and Control With Primary System Monitoring and Failover**