

Case Study

The Reliability of SSi Units in Northern Canada's Extreme Temperatures

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[A Case Study showing the Longevity of Hydraulic Systems in Extreme Temperatures](#)

In 2011, SSi Artificial Lift Systems installed a Model 250 Unit with a 60 Horse Power, Intelligent Control Unit in Northern Alberta. A recent trip to this unit in February 2020 for a routine planned,

preventative maintenance operation showed that this system had operated non-stop, without any failures of the hydraulic system, or any other part of the installed unit.

The temperatures experienced in these areas range from -47 degrees C in winter, with up to 34 degrees C in the summer. The elastomers are designed to operate within this range of temperature but the units are equipped with heating systems so that the hydraulic oil within the system remains at the optimum operating temperature. The unit will not operate until the oil is fully heated despite the actual outside temperature. Upon initial operation, the unit will short stroke allowing the oil within the cylinder to be replaced and the colder oil is then circulated back to the tank allowing the complete system operating at the optimum temperature.

The Preventative Maintenance schedule is every 180 days, and this has been carried out throughout the life of the system to date. The system in 2020 showed the following statistics and the hydraulic system has operated without any downtime since the installation:

Performance Data

- Total Number of Cycles: 28,616,812
- Total Runtime: 78,840 Hours or 3,285 Days
- Max Peak Polished Rod Load: 14,500 lbs
- Min Peak Polished Rod Load: 8000 lbs
- Stroke length: 210 inches (The maximum for this unit is 240 inches)
- The Average Strokes per Minute: 3.3

In summary, the long, slow stroking provides optimum production, extending the life of the Rods and Downhole Pumps. The system has fully demonstrated the reliability of the hydraulic system reducing the cost for the operator during the complete life cycle.