

# CIRCOR PUMPS CUT ENERGY USE ON MAJOR CANADIAN OIL COMPANY'S CRUDE OIL PIPELINE



## CHALLENGE

Moving crude oil along pipelines from the oil patch in Northern Canada to central blending facilities is a tough, time-consuming process through some of this hemisphere's most demanding environments. It's a job that requires not just high pumping efficiency but equipment that can reliably stand up to the harshest conditions.

## SOLUTION

For more than 40 years, a major Canadian oil company has been relying on CIRCOR's Imo® 8L Series pipeline pumps to meet the company's crude oil transporting demands. The pumps produce uniform volumetric flow in the presence of fluctuating production levels at extremely high efficiencies. This value-added performance has helped the company significantly reduce energy costs.

## RESULTS

Today, CIRCOR has supplied the company with more than 80 Imo 8L Series pumps in pipeline service. The three-screw pumps have proven they can run longer and harder in some of the most severe pipeline services. So in recent years, the company has installed additional 8L Series pumps to keep pace with the growing demand for Canadian crude.

## SPECIAL PUMPS FOR A SPECIAL CHALLENGE

In the early 1960s, drilling and production for heavy crude oil was increasing rapidly in Northern Alberta. That meant the demand for small diameter (8" to 14") pipeline was also on the rise to meet the needs for moving the heavy oil to central blending facilities. The blended oil would then be more manageable for transportation across Canada and the United States in larger pipelines (usually 16" to 36").

A special pump was therefore needed for the slightly blended heavy crude and smaller high pressure pipelines. The pump would have to be highly efficient, cost-effective and reliable. So CIRCOR introduced the 8L Series pipeline pump to a major oil company in Lloydminster, Alberta. The company had originally installed some reciprocating pumps, but found that screw pumps cost less to purchase, to install and to maintain. In addition, the company found that installing screw pumps was easier and less expensive because they required smaller foundations, simpler drive trains and no upstream or downstream pulsation dampeners.



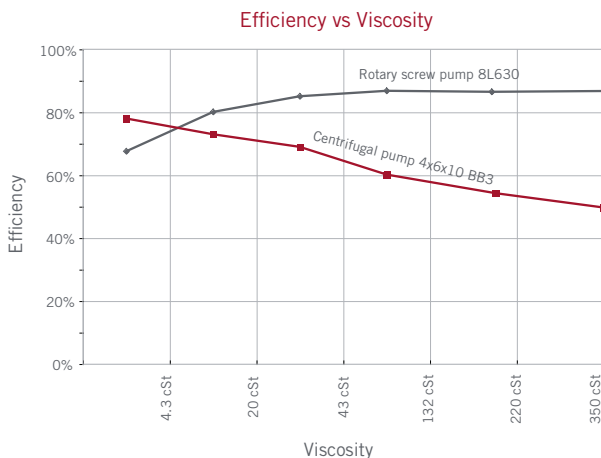
### CIRCOR IMO® 8L SERIES PUMPS IN WESTERN CANADA

The shaded area indicates where 350 CIRCOR Imo 8L series pumps are in use with various customers in Western Canada. A major Canadian oil company uses 80 of the pumps.



## A BLEND OF EFFICIENCY AND RELIABILITY

Imo pumps are designed to be direct-coupled to electric motors without the need for a gearbox and can operate efficiently at fixed speeds or through adjustable speed drives if variable flow rates are required. The oil company has installed more than 80 Imo Series 8L pumps throughout its system. And in recent years, it bought the Imo 8L-630M pipeline pump w/1000 hp motors. Each pump is rated for 35,000 bbl/day at 1,440 psig and viscosity 250/350 cSt. The pumps are running at between 87% to 92% efficiency and with high reliability. Its main concern was (hp) energy costs because of the heavy oil and shortage of condensate for blending. "We've gotten excellent life out of the pumps," said one of the company's employees who works on the project. "Electrical power costs have been low relative to alternative pumping solutions. CIRCOR's solution is exactly what we needed."



### EFFICIENCY OF ROTARY SCREW PUMPS USED FOR HIGH-VISCOSITY CRUDE OIL

Centrifugal and rotary screw pumps are both options for transporting crude oil. However, a rotary screw pump, such as the CIRCOR Imo 8L Series pumps a major Canadian oil company uses in Western Canada, handles heavy, high viscosity crude oil more efficiently, which reduces energy costs.

## SUCCESS BREEDS SUCCESS

The success of the Imo screw pumps as long-running, hard-working units has helped CIRCOR do more than simply gain vital experience and knowledge to improve the product line by offering a wider range of pump materials and design. It's led other pipeline companies to turn to CIRCOR as well. CIRCOR now has an installation base of over 350 of the Imo 8L Series pumping units on pipelines in Western Canada. To date, the company has recorded installations with more than 54,000 hours of operation. The most recent 8L Series pump installations include Access Pipeline and Blackrock Resources that originally selected centrifugal pumps for the pipeline with an expected efficiency of 67%. But after conferring with CIRCOR and other 8L Series users, they were convinced to go with rotary screw pumps with a much higher efficiency of 92%. The energy costs were cut in half over a one-year period when viscosity reached 350 cSt.

## MEETING TOMORROW'S DEMAND – TODAY

Today, CIRCOR is a major supplier of mainline pumping units to 16 customers in Alberta and Saskatchewan. Imo is now developing larger pumps for offerings in the large diameter, high capacity crude oil transportation pipelines worldwide. These pumps would deliver up to 100,000 bbl/day and will maintain their high efficiency characteristics through varying pressures and viscosities.



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