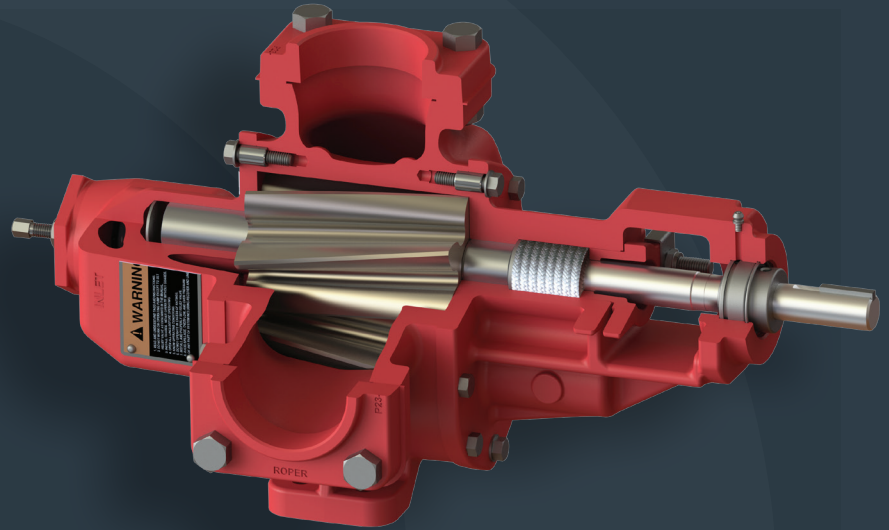




## Improved Pump Performance and Reliability for Hot Recycle Asphalt Flux Application



### EXECUTIVE SUMMARY

Pumps are an integral component in various industrial processes, including the transportation of hot asphalt flux. In the asphalt industry, hot recycle asphalt flux is used in the production of paving and roofing materials. The processing of this material requires the use of high-temperature pumps that can handle the high viscosity of asphalt. However, due to the extreme temperatures and harsh operating conditions, the performance and reliability of these pumps can be compromised leading to premature failure of the pumps, especially the seals. In this case study, we examine the challenges faced by a customer who originally used an internal gear pump for their hot asphalt flux application.

### MATERIALS OF CONSTRUCTION\*

#### CUSTOMER-SPECIFIC APPLICATION

- Housings .....Cast Iron
- Gears .....Cast Iron
- Bearings.....Tungsten Carbide (TC)
- Shafts .....Hardened TC Infused Steel

\*The 3600 EVO line offers alternate materials of construction.

\*\*Some of the optional materials may not be available for all sizes.

## CUSTOMER CHALLENGE

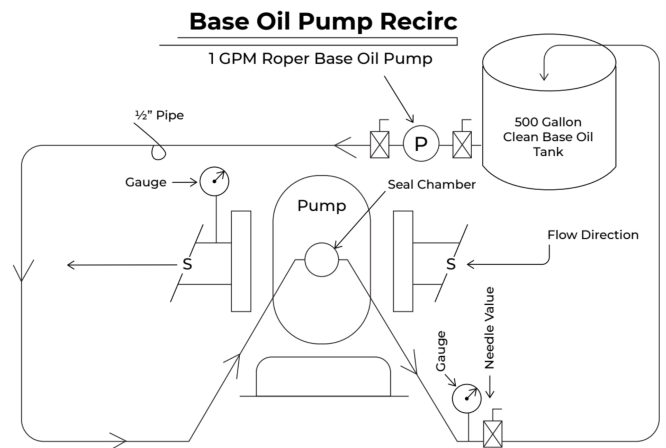
### THE PROBLEM

The customer was using an internal gear pump with a standard shaft, bronze bushings, and packing for transporting hot recycle asphalt flux at a temperature range of 325-350 degrees Fahrenheit. The pump was running at 365 revolutions per minute (RPM) and loading trucks at 200 gallons per minute (GPM). However, the standard pump components of the internal gear pump were unable to perform, vibrating and leaking profusely, resulting in downtime and increased maintenance costs.

### THE SOLUTION

To address the problem, the customer replaced their existing pump with a Roper 4758 EVO Pump with a TC infused hardened shaft and TC bearings with a TC/TC/Kalrez mechanical seal which was able to withstand the high temperatures and abrasiveness of their application. To ensure the reliability of the mechanical seal, a recirculation system with oil flush was implemented.

The recirculation system consisted of an Roper A-Series Pump, 18AM005, which was used to flush the 4758 seal chamber with clean, base oil with a viscosity of 200 SSU at an ambient temperature. A needle throttle valve and gauge were installed on the 1/2" recirc seal flush line, just downstream of the seal chamber. The throttle valve was adjusted to equal the pressure of the seal chamber with the pump's main discharge guage of 50 PSI. The flow rate of the base oil flush was set at 1 GPM. A 500-gallon tank was used to hold the base oil flush.



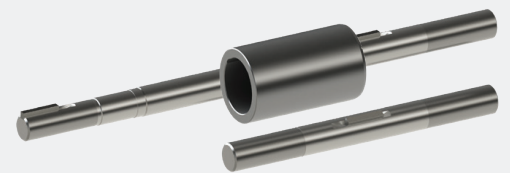
(Note: Seal chamber and main discharge set at equal pressure)



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## EVO BUSHING & INFUSED SHAFTS

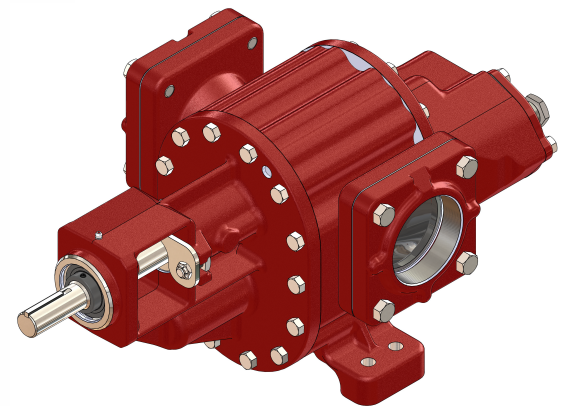
The proprietary EVO bushings and shafts technology allows for greater resistance to general wear or extremely abrasive liquids that tend to wear most pumps out in very short periods. With better lubricating properties than bronze and carbon, and better wear resistance than iron, the EVO setup is perfect for heavy or light liquids with or without abrasives. Always known for our durability, the EVO technology will evolve your maintenance down-time to a minimum.



## RESULTS

The customer's new system, having upgraded to the 4758, solved the problems with their previous pump's vibration and leakage. The use of a hardened shaft and bushings with the TC/TC/Kalrez seal enabled the system to successfully transfer hot recycle asphalt flux at a temperature range of 325-350 degrees Fahrenheit without any leaks or vibration. The use of hardened internals with a seal chamber flush ensured the pump's smooth operations, reducing downtime and increasing productivity, performance, and durability.

Adding a Roper A-Series pump (18AM005) was utilized to circulate the base oil through the 4758 seal chamber to help keep the seal clean and free from contaminants. The arrangement has performed trouble-free with zero maintenance needs since install two years ago.



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