

CASE STUDY

Custom built pump assembly for gasoline and diesel product handling

Our customer needed a new pump assembly to pump gasoline and diesel products offloading from tanker trucks into one of several existing tanks.

Pump design conditions:

- 290 GPM at 30 PSI differential pressure
- 30 SSU viscosity at ambient temperature

The potential pump types for the application:

1. Summit 4"x3" ANSI Centrifugal Pump with 15 HP motor. (Drop in replacement for Goulds 3196)
2. Blackmer 6" Rotary Internal Gear Positive Displacement Pump with 15 HP motor. (Drop in replacement for Viking 124 or 4124)
3. Blackmer 4" Rotary Vane Positive Displacement Pump with 10 HP motor.

Evaluation:

The centrifugal pump would be the lowest cost, but it would not be self-priming, cannot strip inlet pipelines effectively and would be susceptible to damage with accidental dry run.

The gear pump, due to the low viscosity, would require a larger pump size running slower. It would not be capable of self-adjusting for wear.

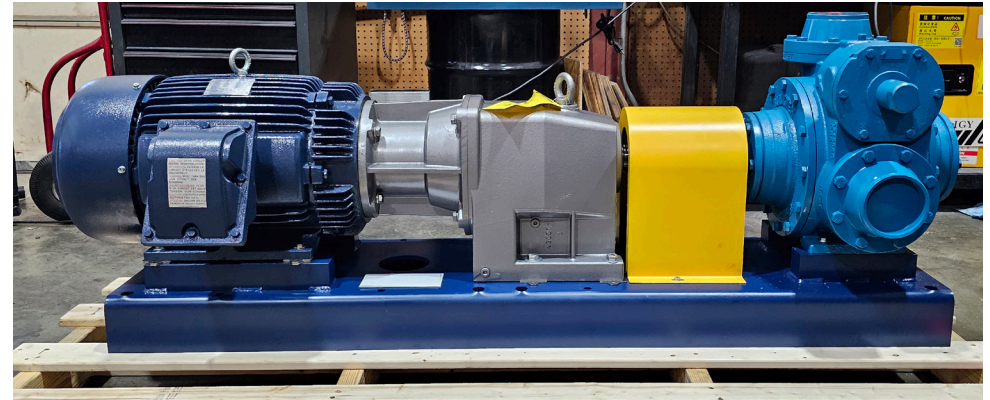
The Blackmer vane pump is very efficient pumping thin liquids (under 100 SSU or 20 cst.), the vanes are self-adjusting for wear, it is self-priming, does line stripping very well and with its lower speed can run dry in short durations.

Conclusion:

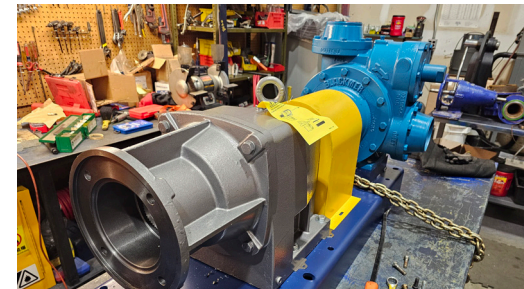
The customer quickly determined, based on their standard offload pump specs and prior experience with Blackmer vane technology, that a customized Blackmer 4" X-Series pump assembly with an upsized 20 HP motor for higher differential pressure (80 PSI) capability would be an ideal fit for this application.

Continued on page 2

How the R. A. Ross engineering team's experience and knowledge solves customer needs



Above: Custom close-coupled motor on inline helical gear reducer, with custom TB Woods S-S coupling long-coupled to Blackmer 4" X-series



Above: The custom assembly being built in the R. A. Ross & Associates Louisville, KY shop.

Check out "5 Reasons Why Vane Pumps Beat Gear Pumps" [click here](#) or scan the QR code below.



Additional project requirements included:

Custom baseplate with mounting holes, grout holes and vent holes for baseplate,

We worked together with our customer to design a Blackmer pump assembly, customized to use a Nord helical in-line gear reducer (302 RPM pump speed), a customer-specified TB Woods Sure-Flex Type-S coupling, a custom-designed steel coupling guard and a TECO Westinghouse Explosion-Proof 20HP motor.

The Nord gear reducer is designed to handle the overhung motor weight but for ease of maintenance and better support, we provided motor blocks to support a footed motor. (This is part of our engineering design process to provide equipment that not only meets, but exceeds, customer needs.)

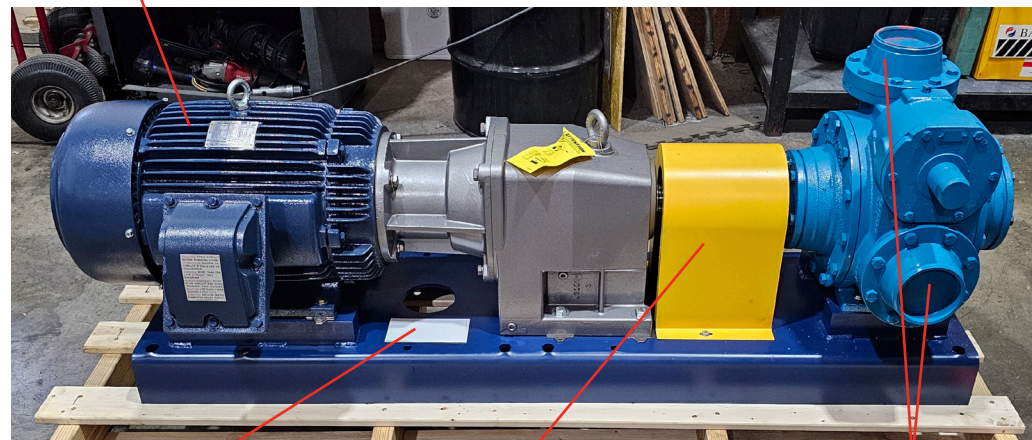
Per our customer's request, we designed the baseplate to include a center support beam underneath, mounting holes, vent holes, grout holes and enclosed ends of the baseplate.

Also at our customer's request, we configured the pump with 4" inlet/outlet weld flanges. Welded solid blocks were used under the pump and motor for their appropriate height.

A nameplate with appropriate customer equipment & order numbers was affixed to the assembly. The customer approved all design and fabrication plans. After fabrication, all equipment was installed and the customer's delivery time was met.

The customer was very pleased with the final product and continues to work with us on other projects.

TECO Westinghouse Explosion-Proof 20HP motor



Assembly nameplate.

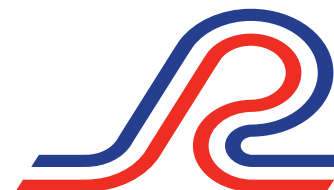
Custom designed steel coupling guard

4" weld flanges added per our customer's request

For details on Blackmer's X-series pumps, [click here](#) or scan the QR code



We enjoy working with customers to create solutions like this. For other custom built assemblies we've done, please check the Problems Solved area on our website at www.raross.com



R. A. ROSS & ASSOCIATES, INC.

Keeping process flowing since 1985

2231 Ampere Drive
Louisville, KY 40299
502 267-8677

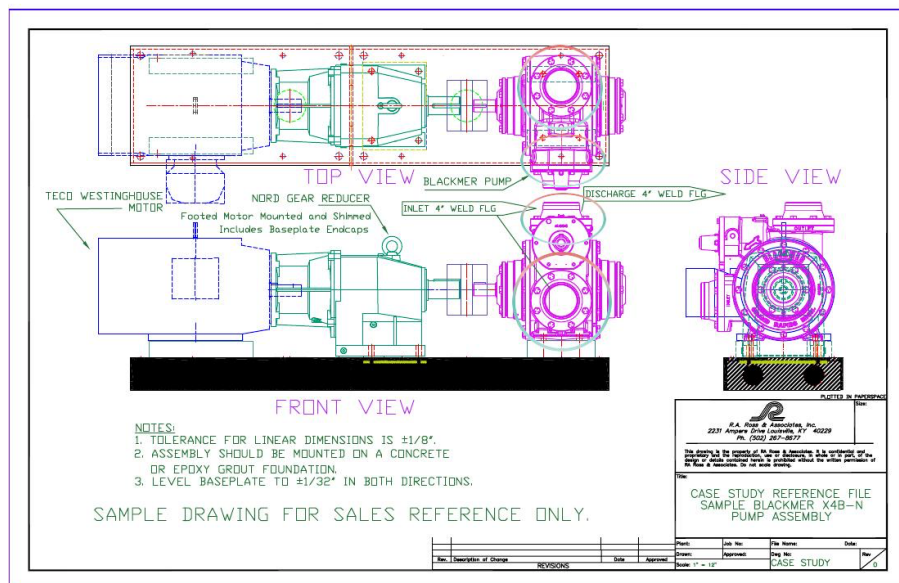
Fax 502 266-7928
1 800-489-8677
solutions@raross.com



www.raross.com



Serving Kentucky, Indiana, Michigan, Ohio and W. Virginia



Typical assembly drawing provided to customers