



Improved Production at Tank Terminal

NOTOS® SCREW PUMP ENSURES HEAVY OIL AND ETHANOL TRANSFER EFFICIENCY

A leading oil company operates a significant terminal that loads and unloads tanker vessels at a major port. The terminal stores heavy fuel oil (HFO) and ethanol. These products are loaded/unloaded into tanker trucks, rail cars, and ships. The operators were having difficulty with two centrifugal pumps they used to transfer the fuels for two separate operations. One application involved transferring the fuels from the terminal bunkers to tanker trucks and rail cars. The second application was for the transfer of bunker fuels to ships.

The customer's centrifugal pumps were failing as a result of cavitation. The system had a low NPSHa because of the viscosity of the fuels, which changed with fluctuating temperatures (especially at night) and the customer was frequently adjusting the discharge valve to increase the discharge pressure, to allow the pump to operate at the best efficiency point (BEP). The customer had to, at times, throttle the discharge to 260 psi / 18 bar to insure the centrifugal pumps would work properly.

To best operate the centrifugal pumps in these applications, the customer also found it necessary to mix diesel fuel with the other fuels to decrease the viscosity. According to the customer, approximately 800 gallons (3.03 m³/day) of diesel fuel per day had to be injected in to the process, at a cost of about 2,000 USD/day. When the customer learned that NETZSCH had experience with this kind of application and could use one single pump and eliminate the need to mix product, they contacted NETZSCH to discuss a solution.

NETZSCH engineers studied the three customer concerns: the low NPSHa requirements; the issue that the discharge pressure varied resulting in the centrifugal pumps not operating continually at the BEP; and the fact that diesel fuel had to be added to the HFO for the centrifugal pumps to operate correctly. A NOTOS® twin screw pump, model 4NS1830/40H5E was then recommended. Several considerations were taken into account to refine the multiple screw pump features. As an example, the viscosity of the fuels combined

with the pump operating speed demanded an API 682 double cartridge seal with an API 54 seal flush plan be used. A NOTOS® model 2NS pump was selected to recirculate the seal barrier fluid and guarantee leak free service.

The 4NS NOTOS® twin screw pump was delivered on site in May of 2020 and installed in place of the (2) centrifugal pumps. The customer immediately noticed several key benefits of the NOTOS® twin screw pump versus the centrifugal pump:

- One pump can handle both applications
- Because the NOTOS® has a lower NPSH requirement, the pumps operate without cavitation resulting in a much longer operating life.
- The NOTOS® does not need the discharge "throttled" and it was found the pressure was actually only 86 psi / 6 bar, reducing the hydraulic power to 87.8 HP, reducing energy cost by 3 times.



NOTOS® Twin Screw Pump provides a complex fluid handling solution so a leading oil company can use the same pump to transfer two different fluids.

- The customer also realized a savings of \$2,000/day because they no longer needed to mix diesel fuel into the HFO to reduce the viscosity.

The customer is so satisfied with the performance of the NETZSCH NOTOS® pump that they have ordered more pumps from NETZSCH for their oil recovery system. NETZSCH has proven its capacity to solve difficult situations with its complex handling fluid solutions.

Heavy Fuel Oil or Ethanol Transfer Application Data

Pump Type:	4NS1830/40H5E
Differential Pressure:	up to 260 psi / 18 bar
Nominal Flow:	880 gpm / 200 m³/h
Fluid Temps	up to 86 °F / 30 °C

Contact NETZSCH:

NETZSCH customers rely on our rigorous standards in design, engineering and manufacturing to deliver products with absolute functional reliability and exceptional quality. NETZSCH service, like NETZSCH quality, is geared to surpass our customers' expectations.

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