Case Study:
High Pressure Tank Cleaning

ENQUIRY

Castle Pumps received an enquiry from a UK based company that specialise in the cleaning of the inside of tanks and tankers. They required a high pressure pumping system that would efficiently supply hot water (around 85°C) to their tank cleaning heads at around 50bar of pressure and 170 litres per minute, allowing them to clean tanks with minimum effort.

The key here was reliability as the pump is relied upon heavily for them to carry out their day to day business operations. Their previous multistage pump had broken down due to cavitation of the pump which needed to be considered in future pump specification.

KEY CHALLENGES

1. Able to achieve consistent, high pressure requirements.

2. Reliability and ease of access to spares for servicing.

3. Able to handle high temperature water.

CASTLE PUMPS LTD

EQUIPMENT SUPPLIED

CAT Pumps 35 Frame Plunger Pump

Fluid	Hot water at 85°C
Max Flow	170 lpm
Max Head	500 bar
Orientation	Horizontal
Motor	Speed reducing belt driven, IE3 High Efficiency
Voltage	415v - 3 phase
Extras	Supplied with pressure regulator, relief valve, pressure gauge pulsation dampener, belt guard and painted steel base.

SOLUTION

When it comes to the high pressure handling of water, multistage centrifugal pumps are a common choice, hence their previously installed model. However, with the previous cavitation issues, we looked into our CAT pumps range of piston and plunger pumps which are specifically designed for extremely high pressure pumping and commonly used for pressure cleaning and in car wash/valet environments.

To meet the pressure and flow requirements, we specified a CAT 35 frame plunger pump with painted steel base plate and a high temperature seal change to allow for the handling of water up to 85 degrees as required. The skid was also supplied with a pulsation dampener to reduce excessive vibrations caused when pumping at high pressure to increase the lifespan of the components and relieve water hammer stress on the pipework. We also specified it with a pressure gauge for easy monitoring that the pump is running at the pressure required by the cleaning heads.

This CAT pumps model benefits from advanced connecting rod and plunger rod materials which optimise operation for continuous-duty applications allowing one tank to be cleaned after the other without delay. Another benefit of this high-pressure plunger pump is its minimal internal slippage and low friction, which ensures that energy efficiency levels are between 85 and 95% for lower running costs.

The customer has been the running the pump for several months now without any issues and are looking to purchase another of the same pumps to offer the same efficient, minimum effort cleaning in a second high pressure tank wash installation.