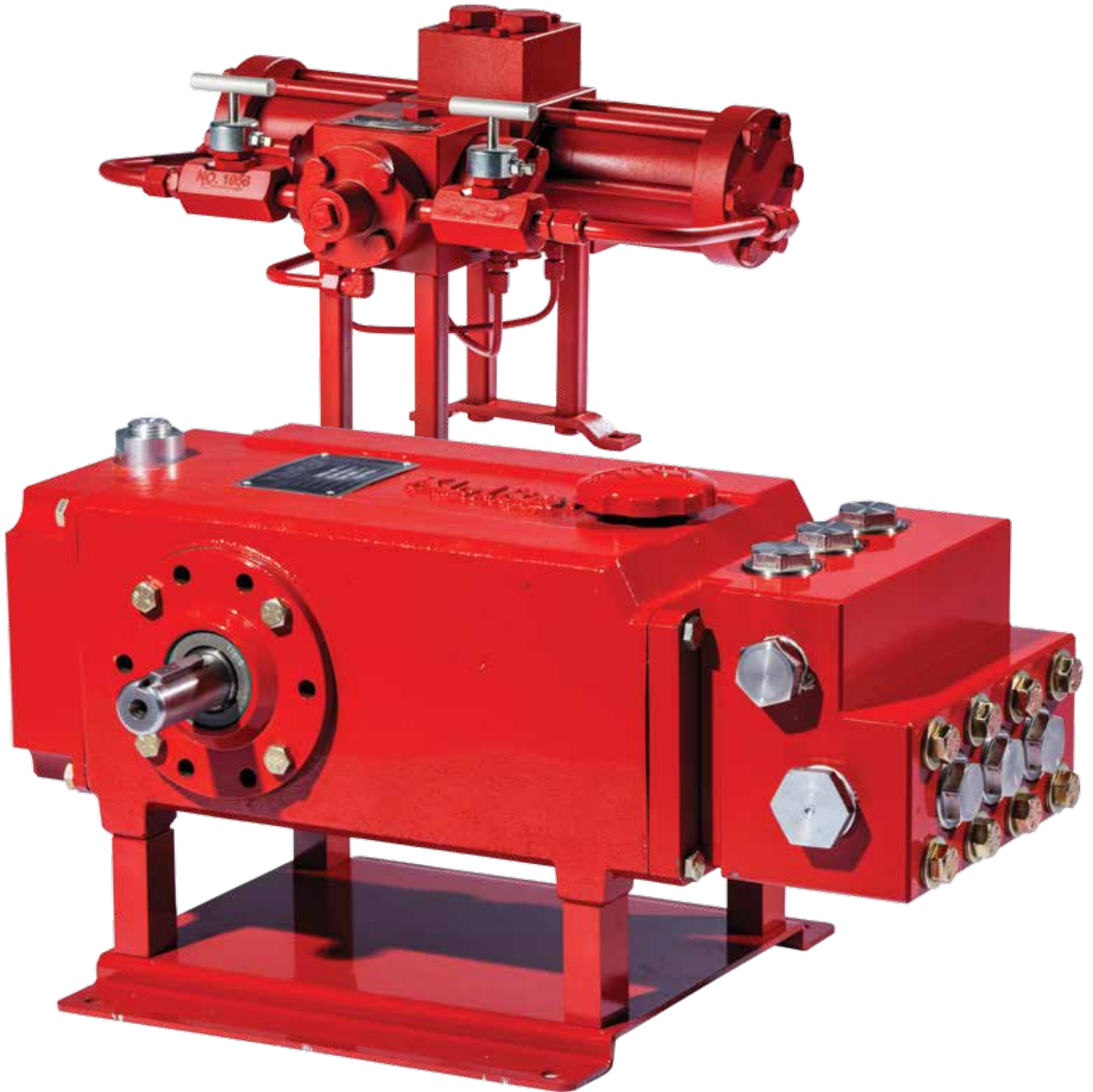


ENERGY EXCHANGE PUMP TO
AN ELECTRIC GLYCOL PUMP

CONVERSION



KIMRAY
INC.®

THE BASICS

The Kimray Electric Glycol Pump is a robust glycol circulation solution. Below are some steps you can take to simplify the installation and operation of the pump.



- 1** The pump should be securely mounted to the dehydration unit.
- 2** Use flexible hoses for the inlet and outlet of the pump to reduce vibration. Even though the Kimray pump is nearly pulsation free, vibration may occur.
- 3** Install the hoses as straight as possible. When installing bypass piping, avoid using 90 degree connections. Make sure to use isolation valves before and after the pump and around bypass lines.

Unlike the energy exchange pump, which has four connections, the Kimray electric pump will have two connections. The inlet to the electric pump is supplied from the dry, low-pressure line coming from the reboiler. The electric pump requires hydrostatic head pressure to supply glycol to the pump; it will not pull the glycol. As such, the pump will need to be mounted several feet lower than the reboiler surge tank. The outlet of the electric pump will be connected to the dry, high-pressure line going to the contact tower.

ADJUSTING THE FLOW RATE

The flow rate of the electric pump is directly proportional to the RPMs of the pump shaft. Varying the flow rate of the pump requires an external method for reducing the RPM of the shaft.

This can be accomplished in several ways:

- 1 VFD (Variable Frequency Drive)** - A VFD receives an input from the locations control computer to regulate the motor's RPMs. This results in an increase or decrease of the pump's flow rate.
- 2 Pulley System** - Pulleys can be connected between the motor and the pump to vary the speed of the pump. The size of the pulleys can be calculated to achieve the correct RPMs of the pump and the desired flow rate. This method does not require an external controller to increase or decrease motor speed.
- 3 Bypass Loop** - With the motor mounted directly to the pump, a bypass loop from the pump outlet to the reboiler is installed. The motor and pump will run at a fixed RPM and flow rate. The surplus of glycol is diverted back to the reboiler by way of the bypass loop. This will require the installation of a metering valve between the pump outlet and reboiler along with a check valve on the pump outlet between the metering valve connections and the contact tower.

ADAPTING THE CONTACT TOWER

With a Kimray Energy Exchange Pump installation, the high-pressure wet glycol from the contactor tower enters the Kimray pump. When using a Kimray Electric Glycol Pump, this connection is no longer required; the high-pressure wet glycol is piped directly to the reboiler. The electric pump receives the glycol from the low-pressure dry glycol exiting the reboiler.

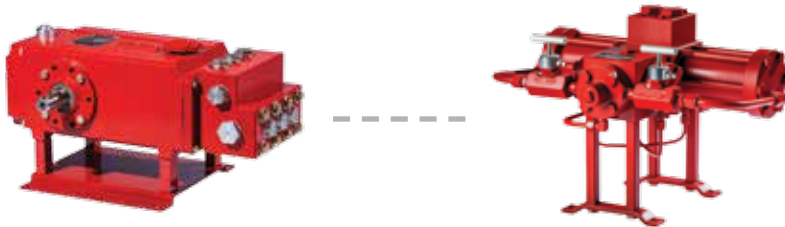
The electric pump will not maintain a constant glycol level in the contactor tower. The following additions will need to be made to compensate:

1 Level Controller - A level controller will need to be added to the contact tower to regulate the glycol level.

There are several options available for level control:

Pneumatic Level Controller - A pneumatic level controller is the most popular and practical method of converting to an electric pump. This will require an external float cage to be installed on the contact tower.

2 Control Valve - The control valve will need to be sized appropriately for the proper glycol flow rate. The control valve should be installed on the glycol outlet piping of the contact tower. The valve pressure rating needs to be equal or higher than the vessel pressure rating. It can be pneumatically operated from the level control or electronically actuated to eliminate emissions.



USING THE ENERGY EXCHANGE PUMP AS BACK-UP

The energy exchange pump can remain as a back-up to the electric pump. This is accomplished by using bypass loops and isolation valves. The bypass valves can be electric if the operator would prefer an automatic switch in the event of a power loss or you can use ball valves for manual operation.

The contactor will need a bypass loop around the glycol control valve. This will allow the energy exchange pump to control the glycol level in the contact tower.

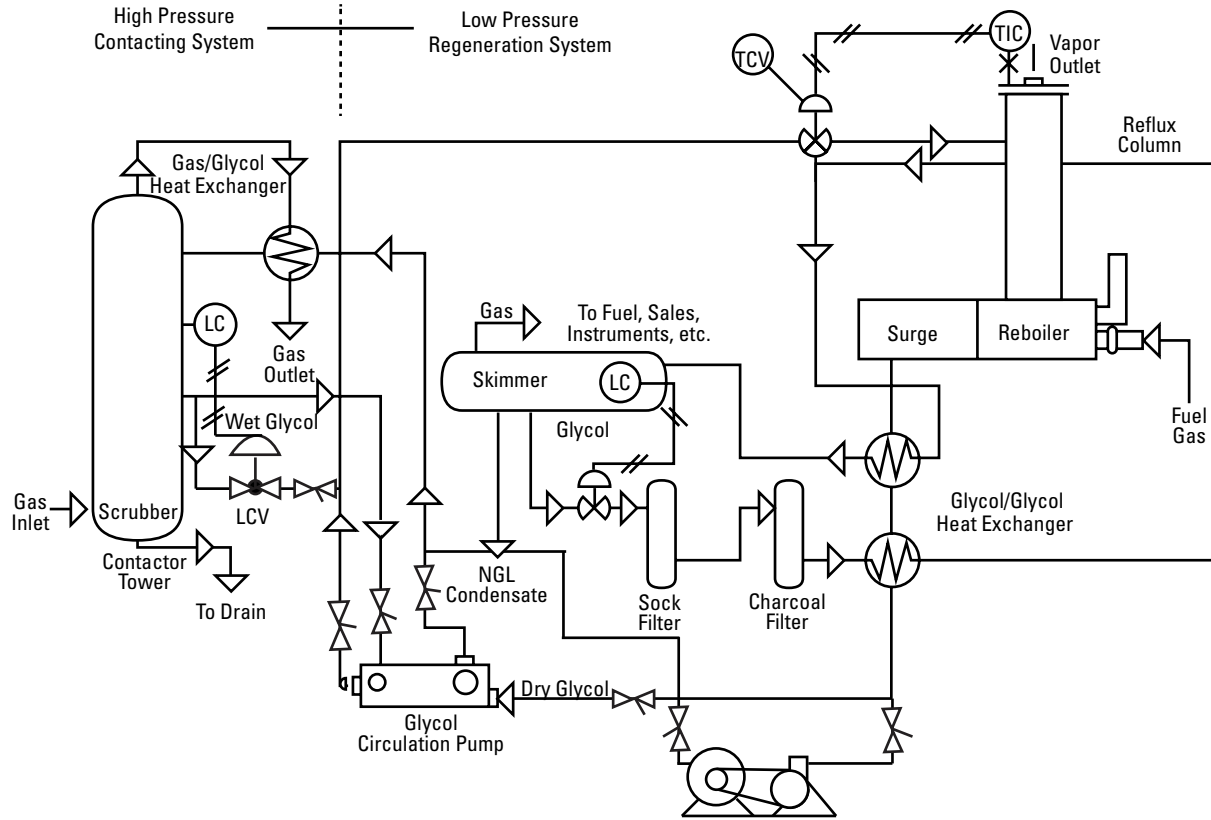
The energy exchange pump will need isolation valves on all four glycol lines. The

wet glycol line will need to be interrupted with two isolated valves connected to the energy exchange pump. The dry glycol line will also need to be interrupted with two isolated valves connected to the energy exchange pump.

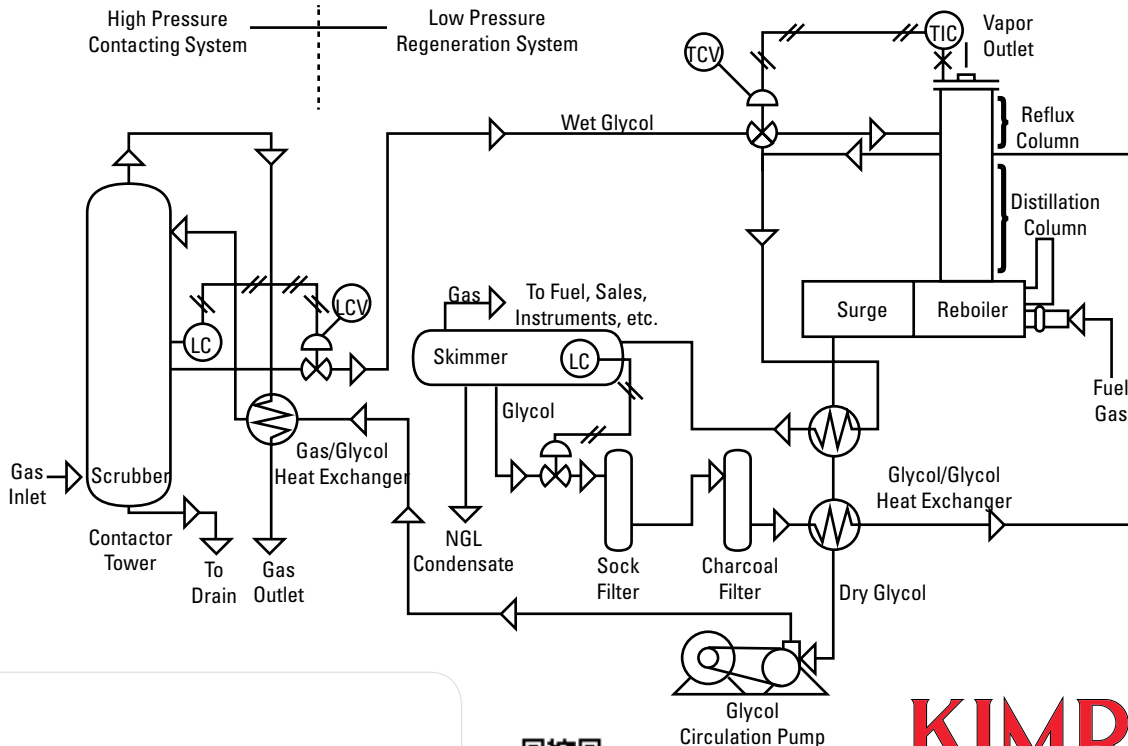
The electric pump will need isolation valves on the inlet and outlet glycol lines for when the energy exchange pump is in use.

Note the P & ID drawing on the next page.

TYPICAL ELECTRIC GLYCOL PUMP INSTALLATION WITH ENERGY EXCHANGE BACK-UP



TYPICAL KIMRAY ELECTRIC GLYCOL PUMP INSTALLATION



KIMRAY
INC.®

www.kimray.com