



# Application Case Study

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Product	<b>T21 Thermal Differential Switch</b>
Application	<b>Pump Protection</b>

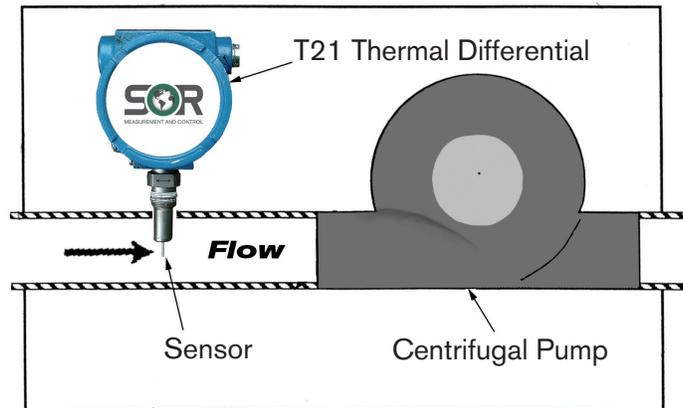
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## The Application

In process industries, it is crucial to be able to detect if a pump is operating against a closed valve or plugged line downstream of the pump. If the pump continues to operate against a closed valve or plugged line, the temperature of the fluid being pumped will increase. This condition has to be avoided at all costs, especially when using volatile or explosive fluids. Process plants want to ensure that fluid is always flowing in the pipe to prevent overheating and a potentially explosive environment or unsafe condition.

## The Solution

The solution involves installing an SOR® Thermal Differential Flow Switch in the discharge piping from the pump. The T21 detects movement of fluid in the pipe and can thus be used to detect either loss of fluid to the pump or operation in a deadheaded situation. When the flow rate drops below the minimum flow rate, the flow switch will indicate an alarm condition and/or shut down the pump. The flow switch has no moving parts; therefore, it provides high reliability and long life.



The T21 can also be used to protect pumps from running dry. A petroleum company uses booster pumps at intervals along the length of a pipeline to keep oil moving through the line. On certain occasions, there is very little oil in the pipes. To prevent premature pump failure and expensive field service to replace the pumps; the T21 can be used as a level switch. The level switch shuts down the pump and alarms the control room upon loss of contact with the oil in the pipeline. A switch is located in the control room to manually reset the line. The small size of the sensor allows installation into small diameter pipes without modification.

## The Results

The user receives pump protection and ensures a safe environment for the plant personnel. The T21's fast response time permits detection of a low flow condition generally within less than ten seconds. The T21 can also be used to protect pumps from running dry. The switch operation is not affected by changing dielectric constant. The T21 has no moving parts to wear out or break.

Thermal Differential Flow Switches are used in broad range of process industries, including fertilizer, chemical, metallurgical and hydrocarbon processing to detect deadheaded pumps. The unit can be placed in the field with confidence that it will perform continuously with little or no maintenance.

## Ordering Information

Model Number T21-DF6D-CS-RR  
EAC-8A-CS-2-RR  
3/4" Process Connection  
316SS Sensor  
2" Insertion Length

