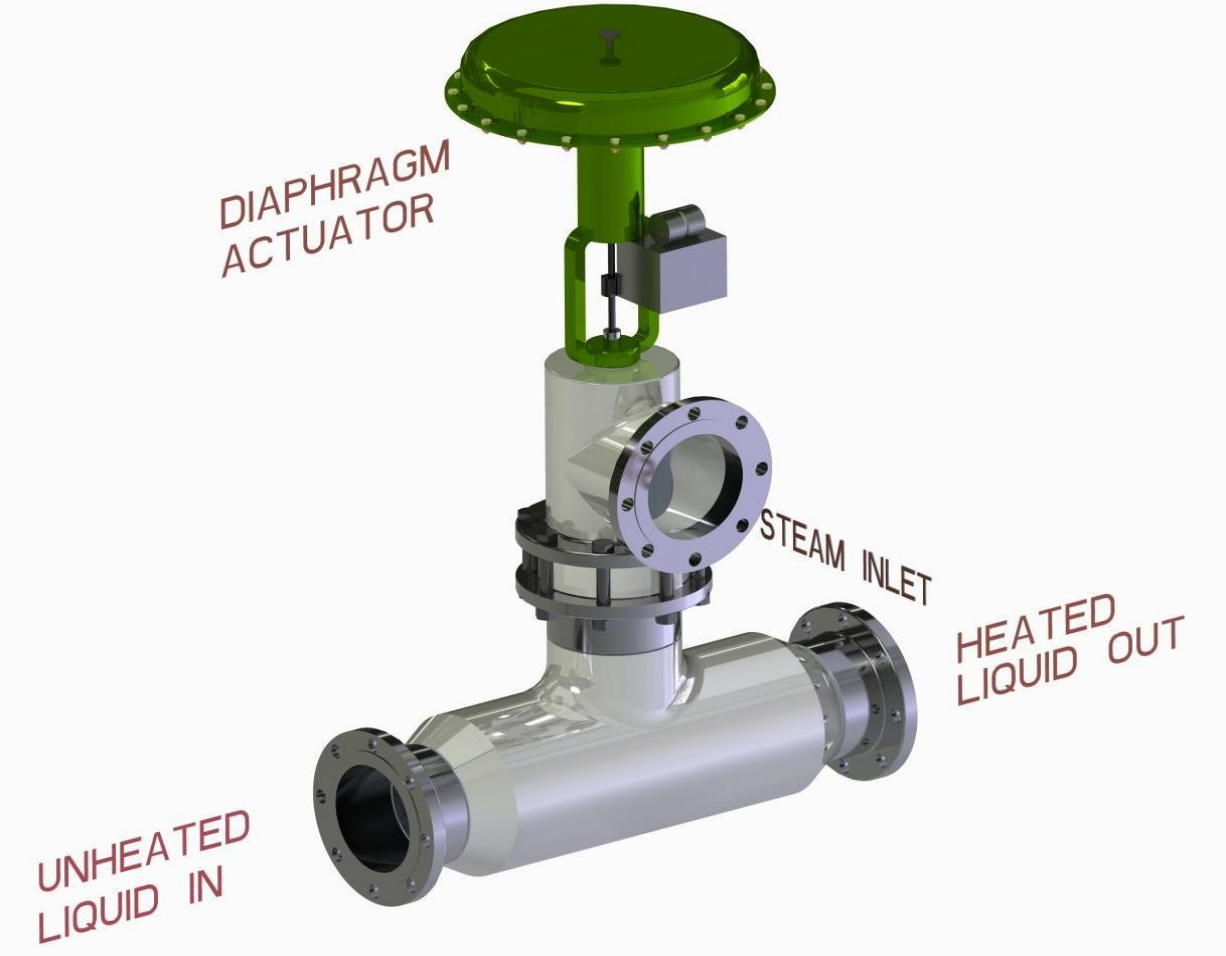
DIRECT STEAM INJECTION HEATER

SERIES - 3200

Several processes require precision control of liquid temperature to achieve the right product without degradation or denaturing. In such applications where dilution of the liquids by water is not a concern, the liquid can be heated by the direct injection of steam.

Precision temperature control is possible in Primetech's DSI as the rate of steam injection is not affected by pressure variation in the liquid stream (within reasonable limits). The steam intake into the injector is solely controlled by the pneumatic actuator.



PRIMETECH
THE EJECTOR SPECIALISTS

861-A, 2nd Floor, J Block, 15th Street, 13th Main Road, Anna Nagar West, Chennai - 600040, India.

Ph: +91-44-26160866 | www.primetechejectors.com | sales@primetechejectors.com

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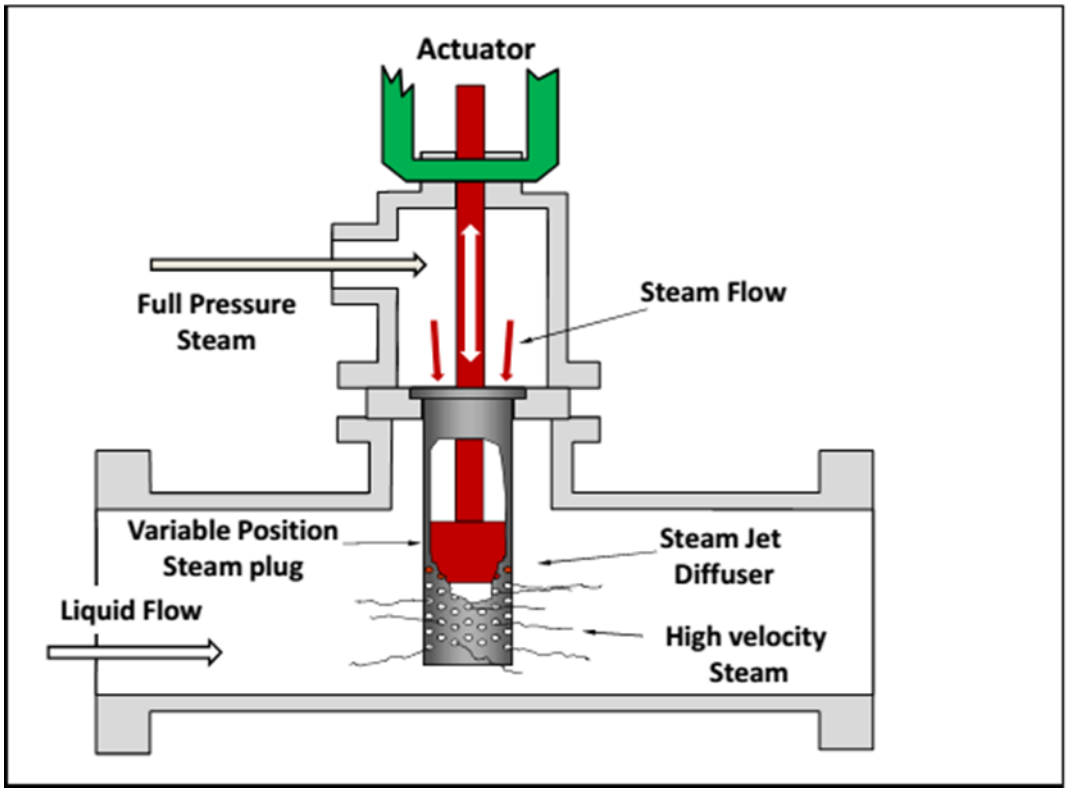
WORKING OPERATION:

A temperature transmitter in the discharge line continuously relays temperature data to the local control panel (LCP).The LCP creates an electrical signal which is relayed to the Electro-Pneumatic transducer mounted on the Primetech DSI system.This electro-pneumatic transducer receives a steady compressed air supply. The transducer converts this electrical signal linearly into air pressure. This air supply activates the diaphragm actuators which control the steam supply through choked flow conditions. At choked flow, the steam passes through diffuser orifices at sonic velocity. Under these conditions, the steam mixes excellently with liquid stream and achieve required liquid temperature at discharge.



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TECHNICAL SPECIFICATIONS:

S.NO	Model No		Connections			Liquid flow (m^3/hr)
			Steam (NB)	Liquid In (NB)	Liquid out (NB)	
1	PT-DSI-3201	A	25	25	25	4
		B	25	40	40	11
		C	25	50	50	17
2	PT-DSI-3201.5	A	40	40	40	11
		B	40	50	50	17
3	PT-DSI-3202	A	50	50	50	17
		B	50	80	80	40
5	PT-DSI-3203	A	80	80	80	40
		B	80	80	80	40
6	PT-DSI-3204	A	100	100	100	70
		B	100	150	150	155
7	PT-DSI-3206	A	150	150	150	155
		B	150	200	200	270
8	PT-DSI-3208	A	200	200	200	270
		B	200	250	250	425
		C	200	300	300	610
9	PT-DSI-3210	A	250	250	250	425
		B	250	300	300	610
		C	250	350	350	830
10	PT-DSI-3212	A	300	300	300	610
		B	300	350	350	830
		C	300	400	400	1085

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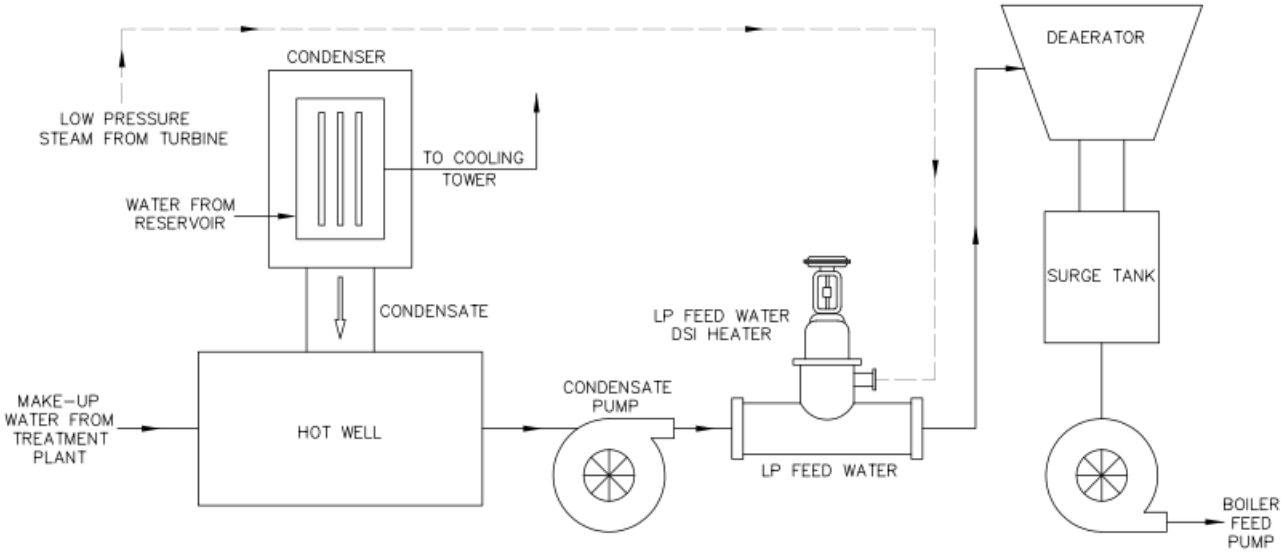
COMMON INDUSTRIAL APPLICATIONS:

1) Boiler Feed Water

Power plants with large industrial boilers need to treat the feed water for the boiler. In this system, heater is used to improve the efficiency of deaerator. Deaerator is used to remove the dissolved gases and minerals present in feed water using hot water in order to avoid the boiler corrosion. To supply hot water to deaerator, the DSI heater is installed before the deaerator for bringing desired feed water temperature using steam from turbine.

Advantages:

i) The presence of heaters in the cycle enhances the thermal efficiency of the power plant.
Ii) The advantage of this heater over heat exchangers is to eliminates mineral & scale build -up on the internal components.



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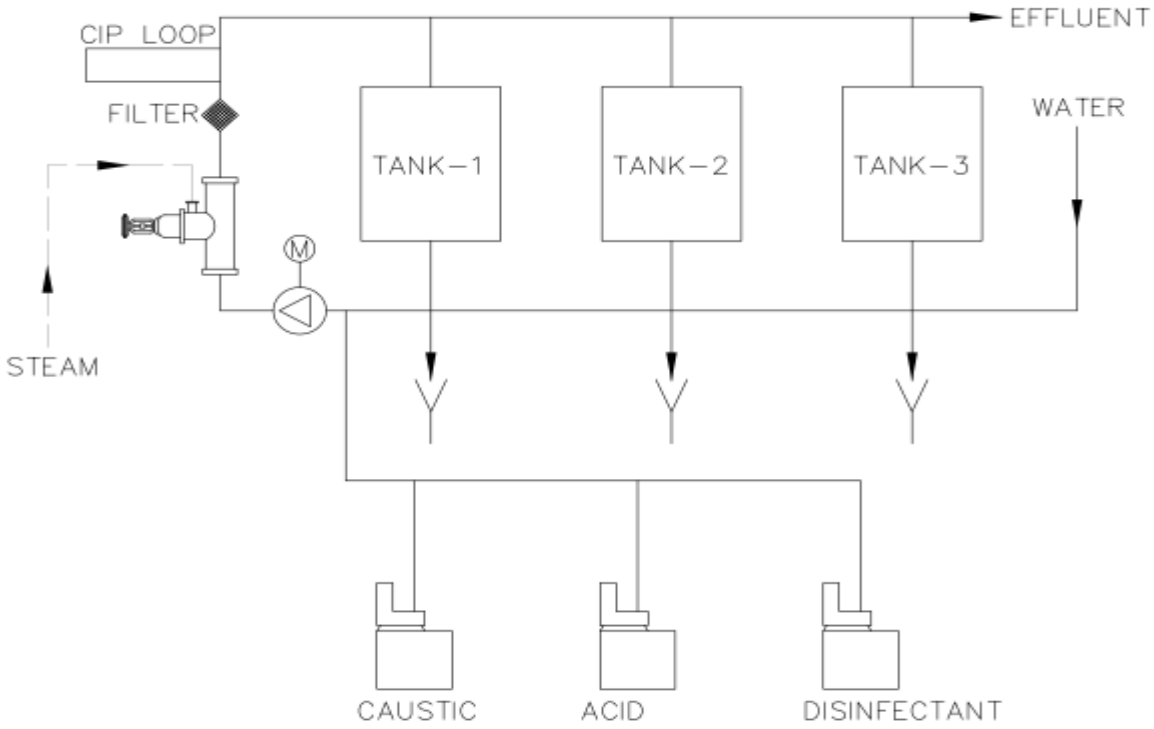
2) Clean-In-Place Systems:

Clean-in-place (CIP) technology offers significant advantages to manufacturing facilities, from efficient and reliable cleaning of process equipment and piping at lower cost to improved product quality. The controls incorporated into CIP systems are critically important, being required to provide a variety of cycle times, temperatures, composition and concentration of cleaning solutions. The temperature of the CIP process may vary from 135 to 175℉ and control is usually critical. The necessary heat transfer demands are met by incorporating direct steam injection heater into the system.

Advantages:

Rapidly eliminating the wash delays at desired CIP temperature and fast recovery at peak CIP wash times.



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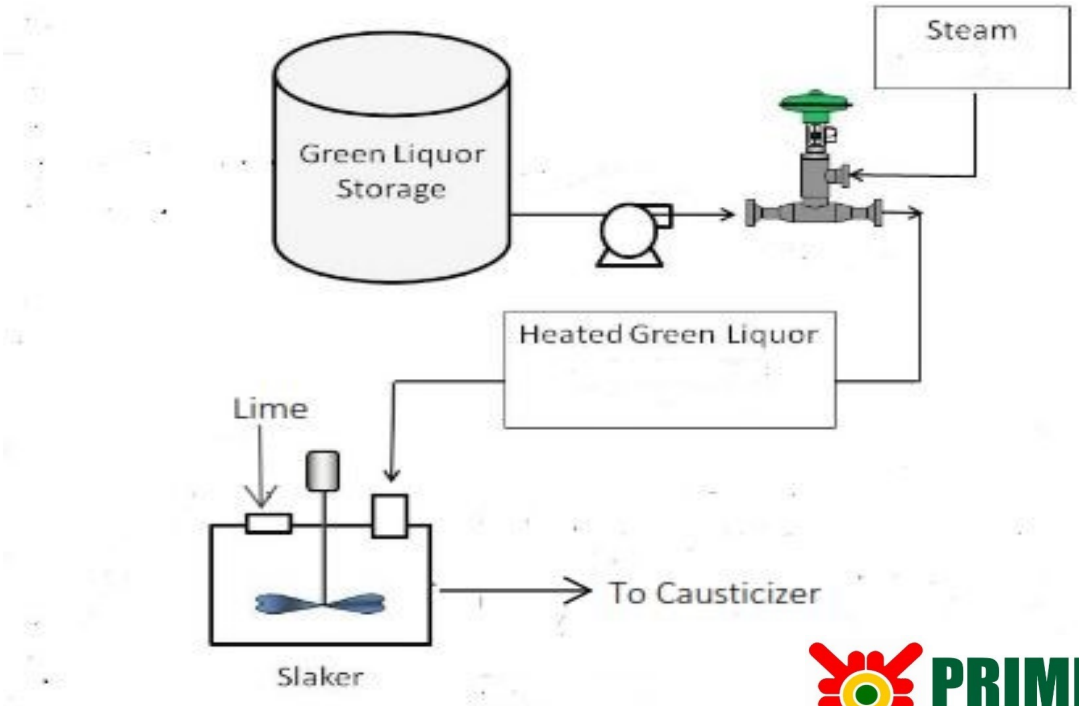
3) Green liquor heating in pulp & paper industry

Kraft Pulp mills produce pulp from wood chips. Within the pulp production, a chemical process produces green liquor. Green liquor is a combination of recovery boiler smelt, and dilute white liquor. Dregs are removed and liquor is sent to recausticizing tanks to produce white liquor. Recausticizing is a two stage process used to recover chemicals from in the pulp production process. First stage reaction occurs with lime in a highly agitated vessel known as a Slaker at high temperature. Green liquor must be heated prior to the lime addition and temperature plays a key role in the chemical reaction. DSI Heater can be installed upstream of the slaker for precise temperature controlling.

Advantages:

i) More efficient slaker operation & lower lime feed costs

ii) Uniform heating of the liquor results more uniform causticizing reaction to produce higher quality of white liquor



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APPLICATIONS:

- Wash down/hose stations
- Shower water systems
- biomass treatment
- Commercial dishwashers
- Heating reactor vessels
- Filter washing
- Jacketed ketteles
- Waste water treatment

BENEFITS:

- Energy saving as a result of low pressure drop across the heater.
- Low vibration & low noise level
- Sonic velocity of steam injection eliminates the formation of steam bubbles
- Improved process reliability
- Enhanced process flexibility
- Precise temperature control
- Compact design allows for minimal installation space requirements
- Eliminates harmful steam hammer
- Low maintenance costs
- eliminates fouling or scale buildup.

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