

## SALIENT FEATURES OF THERMAX PRDS & DSH

- Completely customized to suit customer pressure temperature parameters. Material of construction as per the suitability for given steam parameters.
- Separate / Combined systems based on technical feasibility.
- Multistage pressure reduction based on process requirement to bring down noise level to accepted norms.
- Various Designs of De-super heaters to get turn down up to 40:1
- Correct material & material treatment for prolonged life of Trims and internals
- Superior Quality components and best workmanship
- Provision of standby pressure reduction & Desuperheating arrangement during main PRDS system shutdown.
- Temperature reduction up to saturation + 5°C
- Multistep trim realizes sub critical pressure reduction for all stages.
- The design guarantees controlled water injection with the controlled movement of the trim.
- Maintenance friendly – easy access to valve internals of PRDS & DSH from top flange.
- Provided with Microprocessor based control instrumentation

## RECOMMENDED ENGINEERING PRACTICES

- Minimum straight length at the outlet of PRDS system of 2 meters.
- Location of temperature sensor from the point of water injection at minimum 12 meters.
- Quality of the spray water used same as boiler feed water.
- Installation of Strainer (Mesh Size # 40) upstream of water control valve.
- Controllable temperature at the outlet is 5°C above the saturation temperature of steam.
- Installation of drain trap module at the outlet of PRDSH for effective condensate removal.
- Complete insulation of station to minimize thermal losses.
- Temperature Sensor should be inserted minimum up to the centre of the steam line.

## HOW TO ORDER

(Process Parameters for PRDS / DSH sizing )

Location : Turbine Bypass / Turbine Exhaust / Turbine Bleed / Deaerator

Steam Flow rate, tph	Min.	Average	Max
Inlet steam Pressure, Kg/cm <sup>2</sup> (g)	Min.	Average	Max
Outlet Steam Pressure, Kg/cm <sup>2</sup> (g)	Min.	Average	Max
Inlet Steam temperature, °C	Min.	Average	Max
Outlet Steam temperature, °C	Min.	Average	Max
Spray Water	Tapping from BFW pump		Separate Pump for Desuperheating
Water Pressure available, Kg/cm <sup>2</sup> (g)			
Water Temperature available, °C			

Special inspection and certification available on request

In view of our constant endeavor to improve the quality of our products, we reserve the right to alter or change specifications without prior notice.



**THERMAX**

Sustainable Solutions in Energy & Environment

### Registered Office

D-13, MIDC Industrial Area,  
R D Aga Road, Chinchwad,  
Pune 411019, India

Tel : +91 20 66122999 / 66155000

Fax : +91 20 27472049

enquiry@thermaxglobal.com

### Thermax Business Portfolio

- Heating
- Cooling
- Power Generation
- Air Pollution Control
- Chemicals
- Water and Wastewater Solutions
- Solar
- Specialised Services

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## Energy Environment Solutions for Sustainable Growth



# PRDSH

## STEAM ENGINEERING

### THERMAX PRESSURE REDUCING & DESUPERHEATING SYSTEM

## COOLING STEAM CAN REAP YOU HOT BENEFITS

In a typical process plant, there is a high demand for saturated steam for various heating applications. Steam at saturation temperature has good heat transfer efficiency. However steam from boiler / turbine is usually superheated i. e. having temperature above saturation. The amount by which the superheated temperature exceeds the saturated temperature is known as degree of superheat.

### PRESSURE REDUCING & DESUPERHEATING SYSTEMS (PRDS)

PRDS systems are designed to reduce the steam pressure to operating pressure and also bring the outlet steam temperature closer to that of saturation. Suitably designed pressure reducing valve installed on superheated steam line, reduces steam pressure to desired operating pressure. During this process the steam temperature also reduces following superheated steam curve, however the degree of superheat remains unaltered.

The steam temperature is reduced close to saturation by injecting water into high velocity steam by controlled water flow through water control valve. Conventionally steam pressure reduction and temperature reduction were done in two different units. Now both these functions are carried in one unit which is a combined pressure reducing and desuperheating valve.

### DESUPERHEATING SYSTEMS (DSH)

De superheating systems are designed to reduce the temperature of superheated steam close to that of saturation.

The steam temperature is reduced close to saturation by injecting water into high velocity steam by controlled water flow through water control valve.

#### Fixed Nozzle De-super heater

- The Simplest Design in De super heater family.
- Mainly used when the pressure difference between the main steam line and spray water is high.
- Inline type assembly for steam line size 6" NB and above.
- Mini cooler for steam line size up to 4".
- Maximum Turn down 3:1.

#### Venturi De-superheater

- Mainly used when the pressure difference between the main steam line and spray water is low.
- Better mixing of spray water with main steam by swirling action.
- Maximum Turn down 8:1

#### Variable Nozzle De-superheater

- Best Design in De-superheater Family.
- Constant Pressure Drop Across the nozzle.
- High Turn Down up to 16 :1.
- Better Downstream Temperature Control.

## TECHNICAL SPECIFICATIONS

	PRDS	DSH
Inlet Pipe Size, NB	15 NB - 300 NB	15 NB - 40 NB (higher available on request) * Pipe size for DSH
Outlet Pipe Size, NB	15 NB - 600 NB	
Valve Body Material	A 216 WCB for temp. upto 427°C A 217 WC6 / W9 for temp. > 427°C A 182 F11 / F 22 for temp. > 427°C & above # 1500	A 216 WCB for temp. upto 427°C
Pressure Rating #	150, 300, 600, 900, 1500	150, 300, 600
Trim	SS 410 Heat Treated, Nitrided	SS 410 Heat Treated, Nitrided
Flow Characteristics	Equal % / Linear / Modified Linear	Equal %
End Connections	Flanged to ANSI / Butt-Weld	Flanged to ANSI
Rangeability	40:1	40:1
Type of PRDS	Combined / Separate PRV + DSH	Globe type control valve
Inlet / Outlet Isolation Valves	Gate Type	Gate Type
Bypass Valve	Globe Type	Globe Type
Safety Valve	Full Lift Type	Full Lift Type
Strainer	Y type / Inline	Y type
Pipe Fittings	Forged Carbon / Alloy Steel	Forged Carbon
Flanges	Carbon Steel / Alloy Steel	Carbon Steel / Alloy Steel
Pressure Transmitter	Direct mounting type	Direct mounting type
Pressure controller	Single loop PID controller	Single loop PID controller
Valve Positioner	Pneumatic/ Electro-pneumatic, 2 wire system	Pneumatic/ Electro-pneumatic, 2 wire system
Air Filter Regulator	Valve mounted	Valve mounted
Pressure gauge	Direct mounting type	Direct mounting type
Dial Thermometer	Direct mounting type with IBR Thermowell	Direct mounting type with IBR Thermowell