

## VariCool

Variable Nozzle Desuperheaters



### Integrated Cooling Water Valve

- No additional cooling water valve
- Excellent control: Integrated Logix 500si family responds to signal changes as low as 0.2%
- Total cooling water differential pressure is available at every load for optimal atomization.
- Class IV shut-off available
- Lower maintenance costs: No additional valve to service, lightweight integrated positioner/actuator/yoke design, easy installation with one-button calibration (under two minutes), small footprint.

### APPLICATION

- HIGH TURNDOWN
- HIGH DIFFERENTIAL PRESSURE
- HIGH VARIATIONS OF FLOW RATES

### BENEFITS

#### Integrated Control Package

- No cooling valve required
- Compact modular design
- Simple installation
- One-button calibration
- Quick-change trim

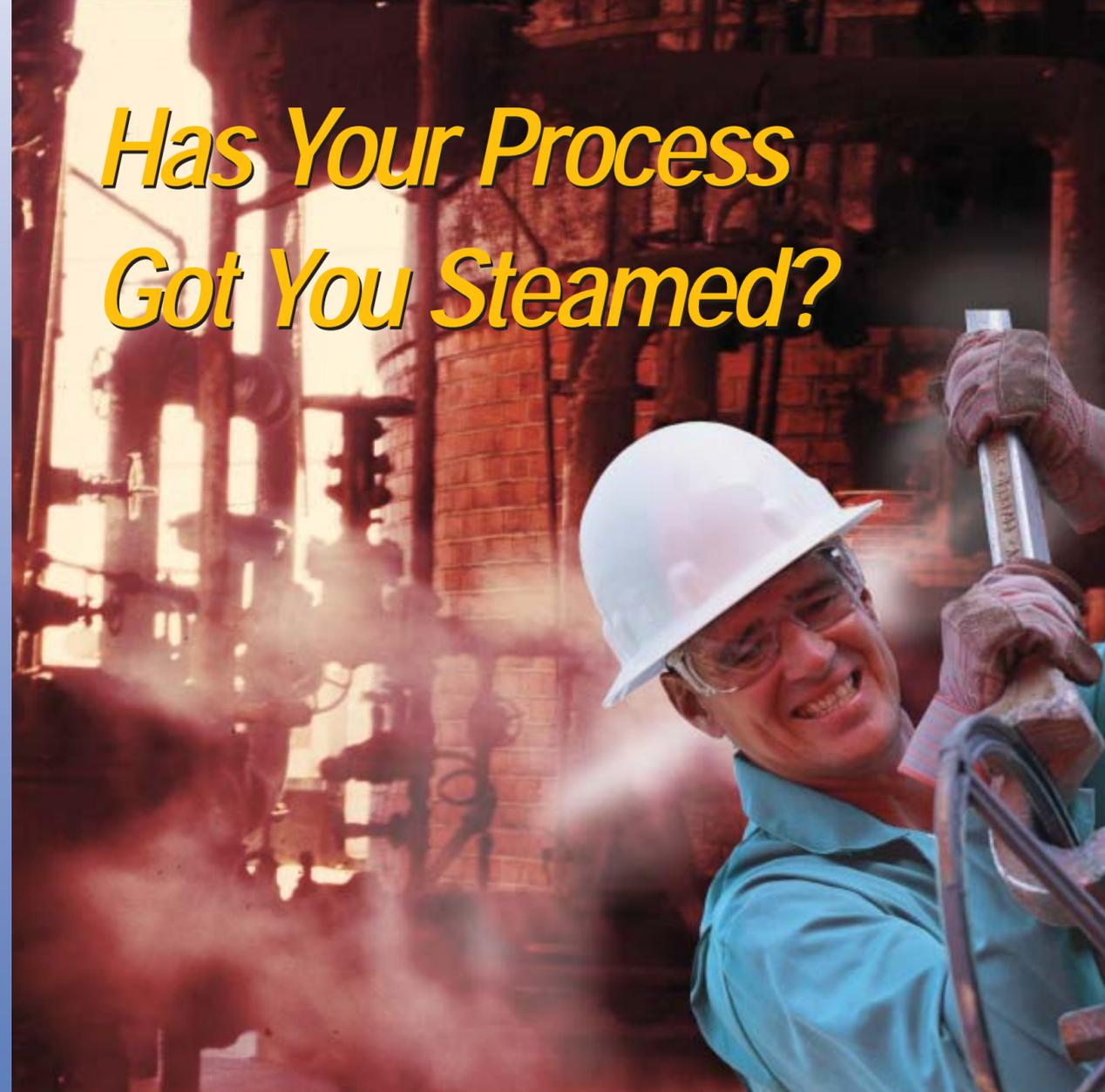
#### Tight Process Control

- Highest rangeability
- Nozzle design
- Ultra-fine atomization at all  $\Delta p$

#### Proven Technology

- Large global installed base
- Utilizes standard control valve components
- Same world-class sales, service and support group you use for control valves

# Has Your Process Got You Steamed?



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Contact Flowserve for more information about VaporCool and VariCool  
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Flow Control Division

## VaporCool

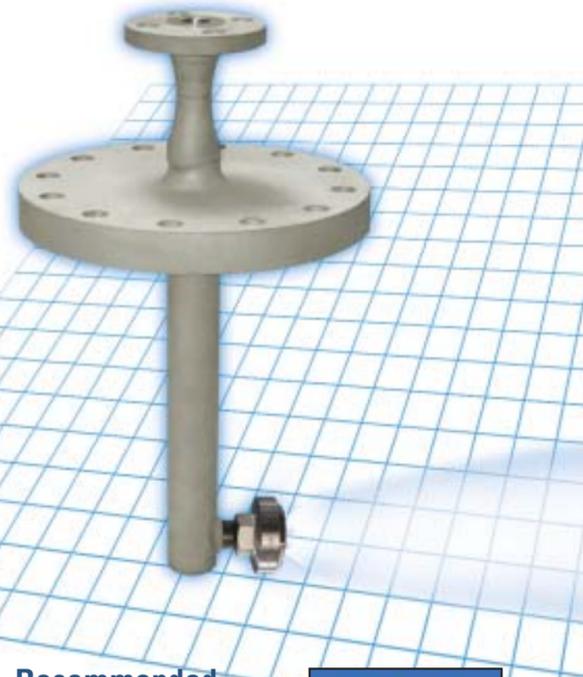
Fixed Nozzle Desuperheaters

## VariCool

Variable Nozzle Desuperheaters

# VaporCool

Fixed Nozzle Desuperheaters



## Recommended Cooling Water Valves

### ANSI Class 150-300: FlowTop

- Highest Cv available (save a valve size)
- Precise Control (0.2% signal change)
- One-button calibration (easy installation)
- TUV "No Maintenance" certified for up to five years



FLOWTOP

### ANSI Class 150-4500: Mark 1

- Severe service trim available
- Precise Control (0.2% signal change)
- One-button calibration
- Industry's leading service life



MARK 1

## APPLICATION

**MODERATE TURNDOWN**

**LOW DIFFERENTIAL PRESSURE**

**HIGH COOLING WATER FLOW RATES**

## BENEFITS

### Complete Atomization

- Optimized for each application
- Lowest  $\Delta p$  atomization available
- Multiple small spray nozzles

### Simple Design

- No Moving Parts
- Quick-change multi-nozzle spray head

### All components from one supplier

- Perfectly matched components

### Proven Technology

- Large global installed base
- Years of desuperheating expertise
- Same world-class sales, service and support group you use for control valves

# VaporCool

Fixed Nozzle Desuperheaters

The *VaporCool* desuperheater cools process steam by injecting atomized cooling liquid directly into the steam.

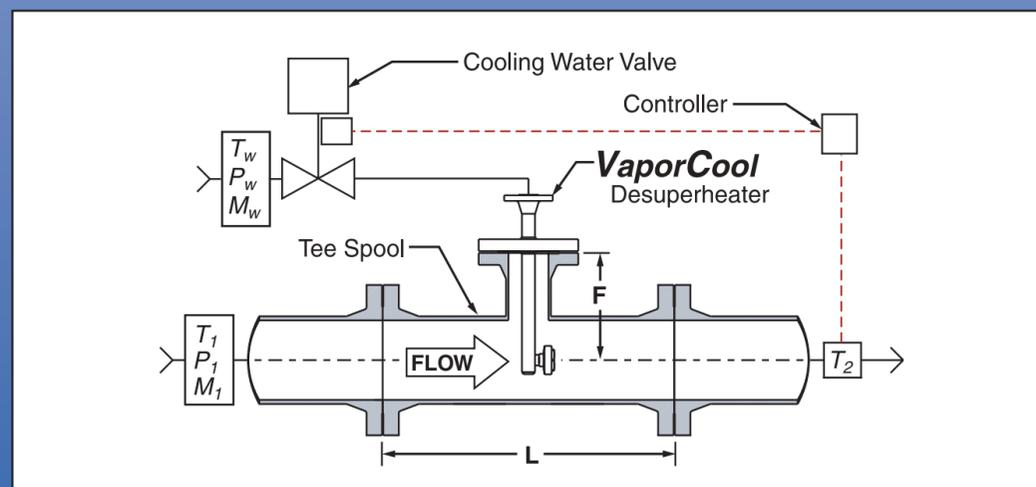
Temperature reduction occurs as the atomized cooling liquid rapidly vaporizes into the process steam.

Tight temperature control is maintained by optimizing the temperature, velocity, geometry, and droplet size of the cooling mist to facilitate quick mixture with the process steam and to ensure complete vaporization.

Accurate control of varying process conditions is achieved through precise throttling of the cooling liquid control valve in response to feedback from a controller and downstream temperature sensor.



Product specifications	VaporCool	VariCool
<b>Pressure class:</b>	150-2500	150-2500
<b>Minimum <math>\Delta p</math>:</b>	40 psi	115 psi
<b>Maximum <math>\Delta p</math>:</b>	1305 psi	
<b>Minimum steam velocity:</b>	40 ft/s	30 ft/s
<b>Maximum steam velocity:</b>	350 ft/s	200 ft/s
<b>Maximum temperature:</b>	986 °F	986°F
<b>Mounting flange size:</b>	3" to 12"	3" or 4"
<b>Cooling water flange size:</b>	0.5" - 4"	1" or 1.5"
<b>Cv range:</b>	0.06 - 20	0.15-7.37
<b>Maximum rangability:</b>	1:5	1:23
<b>Maximum shut-off class:</b>	V	IV
<b>Size range:</b>	Accommodates 4" to 48" diameter pipe	Accommodates 6" to 40" diameter pipe
<b>End connections:</b>	Flanged	Flanged
<b>Body materials:</b>	SS or CS	SS or CS
<b>Available options:</b>	T-spool with optional thermo shock pipe, steam trap, custom engineering	



# VariCool

Variable Nozzle Desuperheaters

The *VariCool* desuperheater integrates the precision of a control valve into a desuperheater to attain maximum rangeability, responsiveness and control.

The multi-stage design of the piston tube allows the *VariCool* to manage a wide spectrum of differential pressures as it directly injects atomized cooling liquid to cool process steam.

Temperature reduction occurs as the atomized cooling liquid rapidly vaporizes into the process steam.



The perforated flow-to-close plug and the nozzle design maintain accurate control of varying process conditions through precise throttling of the cooling liquid control valve in response to feedback from a controller and downstream temperature sensor.

