

## DSH Model Steam Desuperheaters

The **Masoneilan™** DSH Model steam desuperheaters are designed with state-of-the-art water injection to provide a evenly distributed temperature profile, while accelerating the reduction of superheat and temperature across steam.

Both coal-fired and gas-fired power plants use interstage attemperators to control superheated steam to a targeted heat content (enthalpy) range. In addition, newer combined cycle power plants also use an additional set of attemperators called terminal, or final attemperators to assist in plant start-up cycles. The nature of these applications drive repetitive and rapid thermal cycling, leaving many customers with product failures and plant shutdowns. Whether such an extreme operating scenario, or more a more steady process steam temperature control, the Masoneilan DSH Model desuperheaters offer a range of options, and several best-in-class features to ensure long lasting product success.

### Advanced Spray Nozzle Design

Advanced desuperheating performance has been developed by combining well proven traditional spring loaded spray nozzle technology to provide a finely atomized water injection spray pattern with advanced techniques to extend the usable life of the nozzle. Key features include extending the Inconel nozzle away from the thermal cycling zone, adding mechanical stop to eliminate low lift "chatter" of traditional nozzles, and elimination of leak paths to remove water leakage or steam back-flow.

### Flow Profiler

The Flow Profiler is a unique option to the Masoneilan in-line radial design DSH product, and is installed upstream of the spray nozzles to create a turbulent mixing zone of steam away from the pipe wall. The feature allows for the injected water to penetrate further towards the center of the pipe, and eliminate a high velocity steam flow contour along the pipe wall. This increases the heat transfer efficiency within the steam, as opposed to applying the benefits of the cooling water against the pipe, which can lead to potential failure such as thermal cracking.

### Thermal Liners

Liner style desuperheaters use an alloy steel welded pipe, internal to the steam pipeline, as a means of protecting the downstream pipe against excessive water impingement and thermal shock. The optional liner design allows the main pipeline to avoid stresses associated with sharp temperature gradients and extend the life of the system, reducing maintenance costs and risk of failure.



**DSH-1XX, In-line Radial  
Design Desuperheater**



**DSH-200, Insertion Style  
Desuperheater**

# Specifications

## Body:

- Material
  - Carbon Steel
  - Chrome-Moly

## Size

- 4 inch to 48 inch
- Larger Sizes available upon request

## Ratings

- ANSI 150-2500
- Higher Ratings available upon request

## End Connections

- Buttweld
- RF and RTJ Flange

## Nozzles

- $C_v = 0.4, 0.8, 1.5, 3.0, 5.0, 10.0$
- Nozzle Quantity ranging from 1 to 8+ depending on water quantity required per application for a total system  $C_v$  ranging from 0.4 up to 80+

## Water Manifold

- Sizes 1 inch to 6 inch
- End Connections: ASME (RF, RTJ, SWE, BWE)

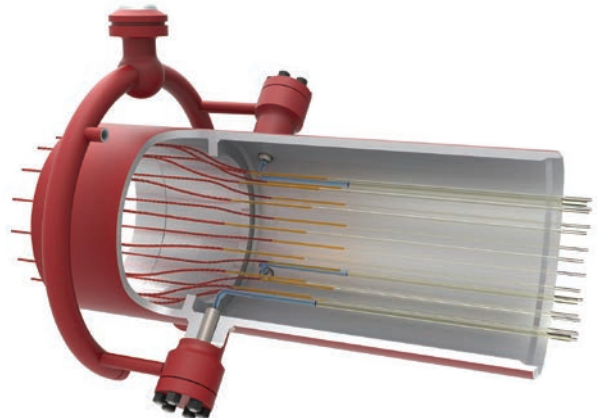
## Application Based Solutions

The DSH Desuperheater serves as a means of controlling steam temperature, mainly in boiler and Heat Recovery Steam Generator (HRSG) applications, and process applications such as steam turbine extraction and exhaust to process within the power industry. The Masoneilan DSH is designed to meet ASME B31.1, and can be manufactured under ASME Boiler & Pressure Vessel Code Section 1 welding S-Stamp to comply with installations within the boiler or HRSG boundary limits.

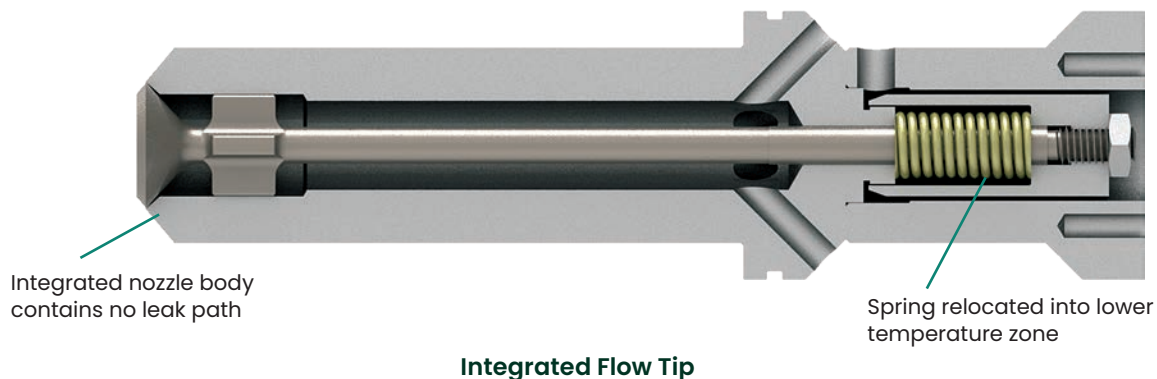
During operation of the DSH Desuperheater, steam enters the DSH and atomized water is sprayed into the flow to reduce the steam temperature, as the water evaporates into the process steam. The spray water is controlled by a separate water supply valve, in response to a control loop that monitors downstream pressure.

Within the radial style line of DSH products, there is both a flow profiler style (DSH-110) and a liner style desuperheater (DSH-120).

Each design of the DSH Desuperheater is available in either a carbon steel or a full range of grades of chrome-moly construction and can be modified to meet various temperature and environment conditions.



DSH Desuperheater, with **Flow Profiler**



**Integrated Flow Tip**

**Baker Hughes** 