

## Condensate Removal Nozzle

The Diamond Power® Gemini® XeR nozzle is specifically designed to reduce condensation-related tube erosion in utility boilers. This unique twin-channel design separates condensate from the cleaning medium and safely directs it away from the heat transfer surfaces. The patentpending design reduces the amount of condensate, which aids in prolonging tube life and minimizing the need to replace expensive tube shields and boiler tubes.

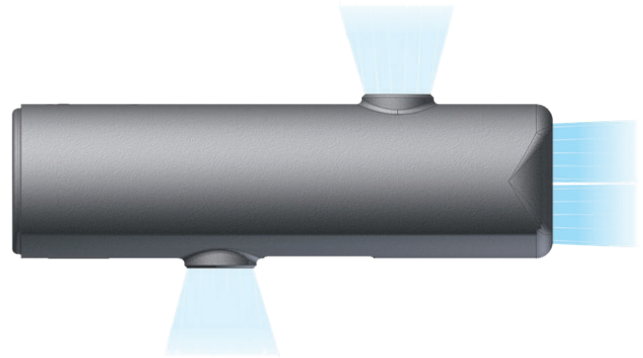
### DESIGN BENEFITS

The Gemini® XeR nozzle maintains the cleaning performance when compared to standard sootblower nozzles while significantly reducing condensation-related erosion. HMA Power Generation's experienced engineers and sales engineers can assist you in calculating the amount of condensate that can be diverted away from the boiler heat transfer surfaces.

The Gemini® XeR nozzle's unique design features include:

- Removes up to 65% of condensate from the sootblower and directs it down sootblower lanes away from boiler tubes
- Ejects condensate at low velocity through specially-designed ports
- Balanced jets provide consistent cleaning

The Gemini® XeR sootblower nozzle has a cast body with staggered nozzle jets for effective cleaning.

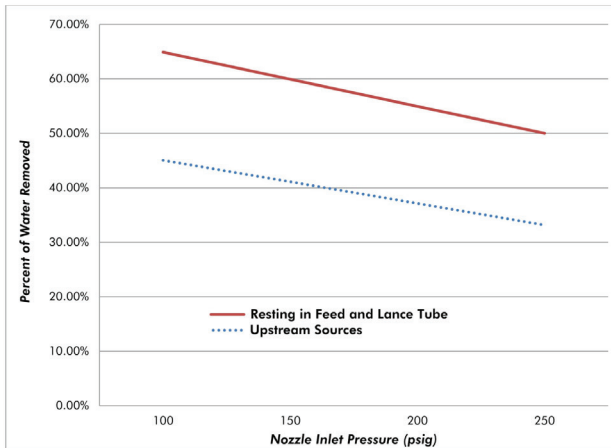


Two condensate ejection ports in the end to direct condensate away from heat transfer surfaces.



\*Patent Pending

## WATER REMOVED VS. NOZZLE PRESSURE



This illustrates the amount of condensate that can be expected to be removed by Gemini® XeR nozzle. There are two main sources of sootblower condensate. The first is condensate that is found in the lance or feedtube when the blower is started, which can come from a leaky poppet valve or from residual steam in the lance tube after a previous sootblower run. The second source is condensate that falls out from branch lines or comes from source.

## CONFIGURATION

The Gemini® XeR nozzle is currently available in one configuration:

- 3.5" lance tubes
- 2) 1" nozzles

## APPLICATIONS

The Gemini® XeR nozzle is designed for use in utility boilers for the following purposes:

- Reduce boiler tube damage caused by condensate erosion
- For use in cooler regions of the boiler (i.e., reheater and economizer)
- For use in superheater areas, consult with Diamond Power engineers

HMA Power Generation's experienced engineers and sales engineers are available to assist you in determining the right nozzle for your application.

## SPECIFICATIONS

- **Nozzle Material**  
330 SST welded to seamless 304 extension
- **Nozzle Casting Dimensions**  
88.9 x 305, plus 304 extension nominally 1,100 mm overall
- **Nozzle Jet Sizing**  
25 mm
- **Boiler Temperature Limits**  
Steam flow dependent, nominally 1,600° C gas temperature
- **Steam Operating Range (Cooling Flow)**  
Application dependent
- **Nozzle pressure range**  
0 to 2 MPa nozzle pressure, application dependent
- **Nozzle upstream / downstream PIP**  
Pressure dependent. Given per application operating conditions and configuration
- **% of Steam / Condensate Flow (loss) from Condensate Ejection Slots**  
Between 15% and 20%
- **Weight of Nozzle (versus STD Gemini)**  
Gemini® 90/90 is 5.6 Kg, Gemini® XeR is 6.35 Kg (max given)
- **Correction for Droop**  
Not required, can be optionally corrected by packing front rollers
- **Alteration of Lance Length to Compensate for Forward Nozzle Position (versus STD Gemini)**  
+65 mm lance length

Diamond Power and Gemini are trademarks of Diamond Power International, Inc. (DPII) a globally acknowledged market leader in all aspects of boiler cleaning and ash handling for more than 100 years.

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