

## Stationary Coal Nozzle History

The original equipment material for stationary coal nozzles has been **cast ductile iron** for over fifty years. While ductile iron provides only slightly better wear properties than carbon steel plate, it offers a low cost option for this product. For certain coals, ductile iron nozzles are a cost effective choice and offered by R-V.

In the 1980's coal fired power plants began demanding a material option that would provide increased wear life. In 1986, R-V Industries pioneered the **ceramic lined** stationary coal nozzle design. It consisted of a fabricated carbon steel shell that is lined with pre-engineered high alumina ceramic tiles. This design became an industry standard when several companies, including numerous OEMs, began to offer it. While wear life of ceramic lined nozzles is multiple times that of ductile iron castings, some utilities began to experience tiles dropping from the roof of the nozzle near the fireside end. This problem occurred with all vendors and was likely the result of thermal related failures.

In the early 2000's, R-V began to offer a combination **ceramic and high alumina rammable refractory lined** stationary coal nozzle. The ceramic tiles were limited to the round inlet section with the refractory being used to line the transition section. While the refractory is not quite as wear resistant as ceramic tile, it offered very good wear resistance with a secure lining method that is not susceptible to thermal related failures. R-V still offers this combination ceramic and refractory lined design.

## Chromium Carbide Lined Nozzles

As budgets have tightened, the power generation industry was also looking for a lining that would be more easily repaired when wear occurs. Today, our most popular design is the chromium carbide lined stationary coal nozzle. The coal nozzle is fabricated from chromium carbide weld overlay on carbon steel base plate. When wear does occur, it can be easily repaired by plant personnel by simply laying chromium carbide weld overlay on top of the worn area. Our designs maintain the existing nozzle ID and do not require any modifications to the burner front for installation.

Chromium carbide weld overlay can be applied to a variety of materials including carbon



CHROMIUM CARBIDE LINED NOZZLE

## CHROMIUM CARBIDE LINED EQUIPMENT

and stainless steel. Typical overlay hardness ranges from 52 to 64 Rockwell C. Chromium carbide lined equipment has a long, successful history of abrasion resistance in the mining and power industries. Based on the abrasive climate and temperature of the nozzle internals, chromium carbide weld overlay is an excellent choice for the lining of a stationary coal nozzle.

R-V offers complete shop assembled coal nozzle assemblies including the coal nozzle tip, seal plate, support bracket assemblies, pivot pins, adjusting links and link pins. We also offer a **“no seal plate”** design and a design that centers the coal nozzle tip from the rear of the windbox.

### More Equipment Options

Whether it's erosion or temperature related issues that are reducing the service life of your burner components, give us a call today to discuss your options. We have over 38 years of experience behind us.

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CHROMIUM CARBIDE NOZZLE WITH THERMAL GUARD® II TIP (ABOVE)  
VIEW OF CHROMIUM CARBIDE LINING (RIGHT)



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