Unlike any other pipe or pipeline cleaning method, the SAN D JET service uses dry, inert nitrogen gas to propel cleaning particles through the line at high velocity. The high energy cleaning action of these particles quickly removes corrosion, scale and heavy tuberculation.

**SAN D JET Benefits**

- **Minimizes Downtime:** takes only hours to clean miles of pipeline.
- **Process Ingenuity:** cleans, dries, and inert your system, leaving no moisture, chemicals or deposits.
- **White-Metal, Blasted Finish:** Can meet strict NACE #1 and SSPC SP5 requirements, industry standards for clean lines and surface preparation for coating application.
- **Uses a Safe, Inert Gas:** eliminates the risk of chemical reactions, explosions, environmental contamination, or hazardous waste disposal.
- **Avoids High Pressures:** Nitrogen injection pressure does not exceed 100psi and systems are thoroughly checked for obstructions prior to cleaning.

**Innovative Applications**
The versatility of the SAN D JET service allows for a large number of applications. Praxair has years of experience cleaning pipelines with various products. Below is a list of lines that have been cleaned by the SAN D JET service.

- Oxygen
- Nitrogen
- Hydrogen
- Ethylene
- Ethylene Oxide
- Propane
- Propylene
- Hydrogen Sulfide
- Chlorine
- Caustic
- Natural Gas
- Crude Oil
- Steam
- Brine
- Instrument Air
- Fly Ash
- Organic Solvents
- Petroleum Distillates
- New Pipelines Before Commissioning

**The Competitive Advantage**
The SAN D JET service is proven to be more efficient, and more economical overall than other internal pipeline cleaning methods such as pigging, chemical cleaning, and hydroblasting. While many of these applications take days, the SAN D JET Service only takes hours so that you can keep your downtime to a minimum.

### Selection Guide

<table>
<thead>
<tr>
<th></th>
<th>SAN D JET Service</th>
<th>Chemical cleaning</th>
<th>Pigging</th>
<th>Hydroblasting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cleans to white-metal, blasted finish</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Leaves pipe moisture-free</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Average turnaround time</td>
<td>Hours</td>
<td>Days</td>
<td>Days</td>
<td>Days</td>
</tr>
<tr>
<td>Uses hazardous chemicals</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Creates liquid waste</td>
<td>No</td>
<td>Yes</td>
<td>Yes*</td>
<td>Yes</td>
</tr>
</tbody>
</table>

*If pig is liquid propelled vs. gas
How it Works
Each SAN DJE T service opportunity is individually planned using engineering models and company expertise to accurately predict pressure/velocity relationships throughout the system and select the appropriate cleaning material. A pressure-drop profile is generated providing Praxair with key job parameters, including appropriate nitrogen flow rates and cleaning material feed rates.

Praxair’s mobile equipment is then brought to the site. In most cases, three types of trucks are involved at the process inlet: one carries a nitrogen pumping unit and supply of liquid nitrogen, a second carries the cleaning material hopper with a supply of cleaning material, and a third carries additional liquid nitrogen. The diagram shows the basic arrangement of equipment for the typical SAN DJE T service.

Prior to cleaning, the pipeline segment is flow-tested to remove residual product from the system, establish a reference pressure-drop, check for unsuspected obstructions, and dry the system.

The first cleaning run is performed by loading a calculated amount of cleaning material, usually a few hundred pounds, into the cleaning material hopper. An appropriate nitrogen flow rate is established throughout the system and cleaning material is fed into the injection head where it fluidizes with the nitrogen and enters the system. The cleaning run continues until all cleaning material and debris are out of the system. The cleaning run process is repeated every few minutes until the system back pressure and observation of the discharge indicate that cleaning is complete.

At the process outlet, customers are responsible for providing a discharge collection device, which is typically a vacuum truck or roll-away dumpster.

For more information, call 1-800-PRA XAIR or visit us online at www.praxair.com/industrialservices