

Spray Analysis

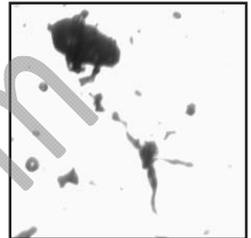
The most important function of any nozzle is making your process work correctly. BETE employs multiple methods to analyze nozzle spray characteristics and how they affect your process.



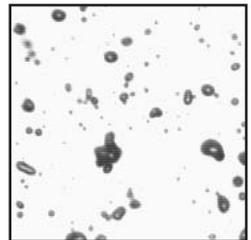
PHYSICAL SPRAY LABORATORY TESTING

There is no better way to determine nozzle performance than to spray it and measure how it performs. BETE's laboratory is capable of fully characterizing single and two-fluid sprays, including flow rate, spray angle, spray coverage, pattern distribution, and droplet size. Droplet size measurement is performed using a video analyzer, providing robust measurement of spherical and non-spherical droplets alike while allowing a straightforward understanding of this complex topic.

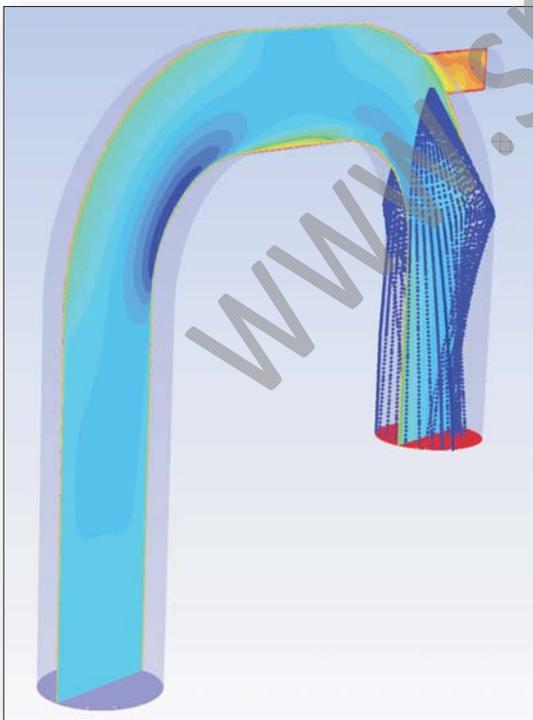
BETE's lab capabilities extend beyond just the nozzle to how the nozzle functions in your process. Gas velocity effects on the spray, elevated temperature tests, lifetime determination tests, and material erosions tests are just a few of the ways that BETE Labs is putting its expertise to work for you.



The BETE Droplet Analyzer is capable of characterizing non-spherical droplets like those seen in this actual image.



Actual droplet images captured using the BETE Model 700 Spray Analysis System.



COMPUTATIONAL FLUID DYNAMICS

When duplicating an industrial process for physical testing is not feasible, computational modeling is an effective alternative. Computational fluid dynamics (CFD) software, coupled with actual spray performance data captured in our laboratory, can model a wide variety of systems to predict distribution, velocity, temperature, flow paths, droplet evaporation, wall hit, and almost any physical quantity. CFD lets you know that your process is going to work before you build it.

Spray Lances

Injectors

Quills

Spools

Fabrications



Visit www.spraylances.com for more information.

BETE takes its ability to provide robust spray nozzles one step further to construct spray assembly fabrications that you can install for immediate use.

Refineries and chemical plants have counted on BETE for decades to supply complete fabricated assemblies, custom designed from the nozzle up. Starting with the process conditions, we recommend the most appropriate nozzle and then incorporate it into an assembly that meets all mechanical design criteria.

BETE works to your requirements, from the most simple to the most complex. Incorporation of client specifications is routine for us as is design, fabrication, and inspection to Code requirements. All design and fabrication work is performed at the same facility, ensuring close coordination through all phases of the process to ensure all mechanical and performance requirements are met.



Design Requirements

- ASME B31.3 and B31.1 NBEP
- Welding qualification to ASME B&PVC, Section IX
- Canadian Registration (CRN)
- NACE compliance

Mechanical Inspections

- RT – Radiographic
- UT – Ultrasonic
- PT – Visible Dye Penetrant
- Hydrostatic
- Hardness
- PMI – Positive Material Identification

Performance Inspections

- Flow
- Spray Angle
- Droplet Size
- Special Customer Requirements

LANCES

Drop-in solutions

Whether you call them lances, quills, or injectors, BETE is your source.

Why endure the time and hassle to source pipe, flanges, nozzles, and fittings separately and then coordinate fabrication and testing of the assembly when you can have BETE do it all for you in an ISO 9001-controlled shop environment.

Fabrications are BETE's specialty, from complex Code compliant fabrications to simple pipe and flange assemblies. By using BETE as a single source supplier, you can concentrate on your larger process details, knowing that our experience is working for you.



Steam-jacketed fabrication with three spray nozzles installed through the jacket.

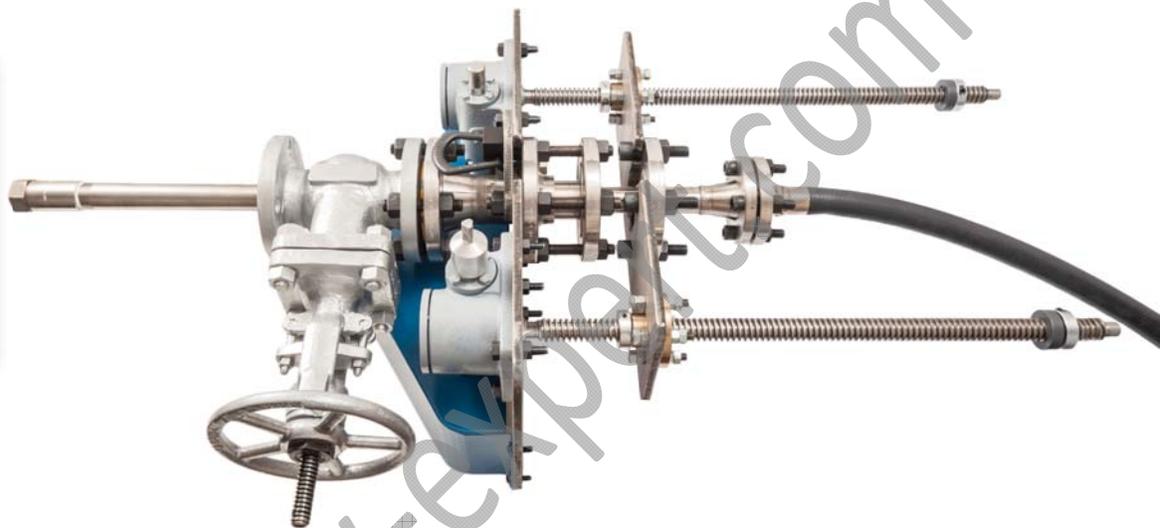


RETRACTABLE LANCES

Maintenance without downtime

Retractable lances allow you to remove a nozzle for inspection or service without taking your process offline. A retractable lance allows you to withdraw your nozzle, isolate it from the process, and then remove it completely for servicing all while maintaining the integrity of the process boundary. Once the nozzle is serviced or inspected, simply reattach it to the system, open the isolation valve, and insert it back into the process.

For smaller pipe sizes, retractable lances can be inserted and withdrawn manually. For larger sizes, or any size where automation or ease of use is required, BETE offers a robust retraction mechanism that effortlessly moves the lance. A simple cordless drill is all that is required to power the unit, making this design a favorite with maintenance crews. The mechanism is flexible in its configuration, allowing alternate electric, pneumatic, or hydraulic power sources to drive the unit.



Complete retractable system including lance, isolation valve, and retraction mechanism

SPOOL SECTIONS

Complete spray solutions

Just as BETE can provide the lance on which the spray nozzle is installed, BETE can also provide the piping section into which the lance is installed. There are many benefits to single-sourcing all components related to the spray nozzle.

When all the work is done by one facility, there are no miscommunications between contractors about size, orientation, or location of the spray ports. The nozzles can be trial fit into the spool piece as part of the manufacturing process before leaving the factory. This translates to no last minute on-site surprises.

BETE provides everything you need from the concept design stage to on-site delivery, right down to the gaskets, studs, and nuts.

