BETE®

NOZZLES FOR THE STEEL INDUSTRY



Photo courtesy of Weirton Steel Corp.

Manual No. 104.ST



Choosing the Best Nozzles

Consider first the company with the highest reputation for innovation in designing spray nozzles for difficult critical spray applications

In the ferrous and non-ferrous producing and processing industries, spray nozzles are a critical part in the way product is made and equipment operates. From air pollution control in a blast furnace to applying the final coating on a coil of galvanized steel, spray nozzles perform a most critical function for the producer and their customer.

BETE Fog Nozzle has long been recognized as a leader in the area of application technology. Over the years BETE has worked on many quality improving and time saving applications.

BETE Solutions to Mill problems:

- One mill was experiencing a one week change-out rate at a caster segment for plugged spray nozzles. BETE nozzles were installed and did not need to be replaced even at the scheduled six week routine maintenance.
- Another mill needed to improve strip shape and work roll cooling requirements. By replacing the spray nozzle design and layout on a four stand tandem mill to BETE NFD's all objectives were met or surpassed ... with less water consumption.
- A major tin plate producer was looking for ways to reduce their "once through" chemical consumption. BETE designed an innovative spray header layout with EZFF spray nozzles and consumption was reduced by 95% while achieving better coating coverage.

Due to our long history working in the pollution and fire protection industries, BETE has worked on virtually every conceivable application that exists in the industry. We have broken the mold taking a fresh and innovative approach to problems for which others would suggest the same old spray nozzle in a different size or shape. We can look at droplet size and distribution for each nozzle in our laboratory and tell you which nozzle you need.





More than 65% of BETE's production is devoted to nozzles custom designed for application specific customer requests. Combine your process experience with our nozzle expertise today.

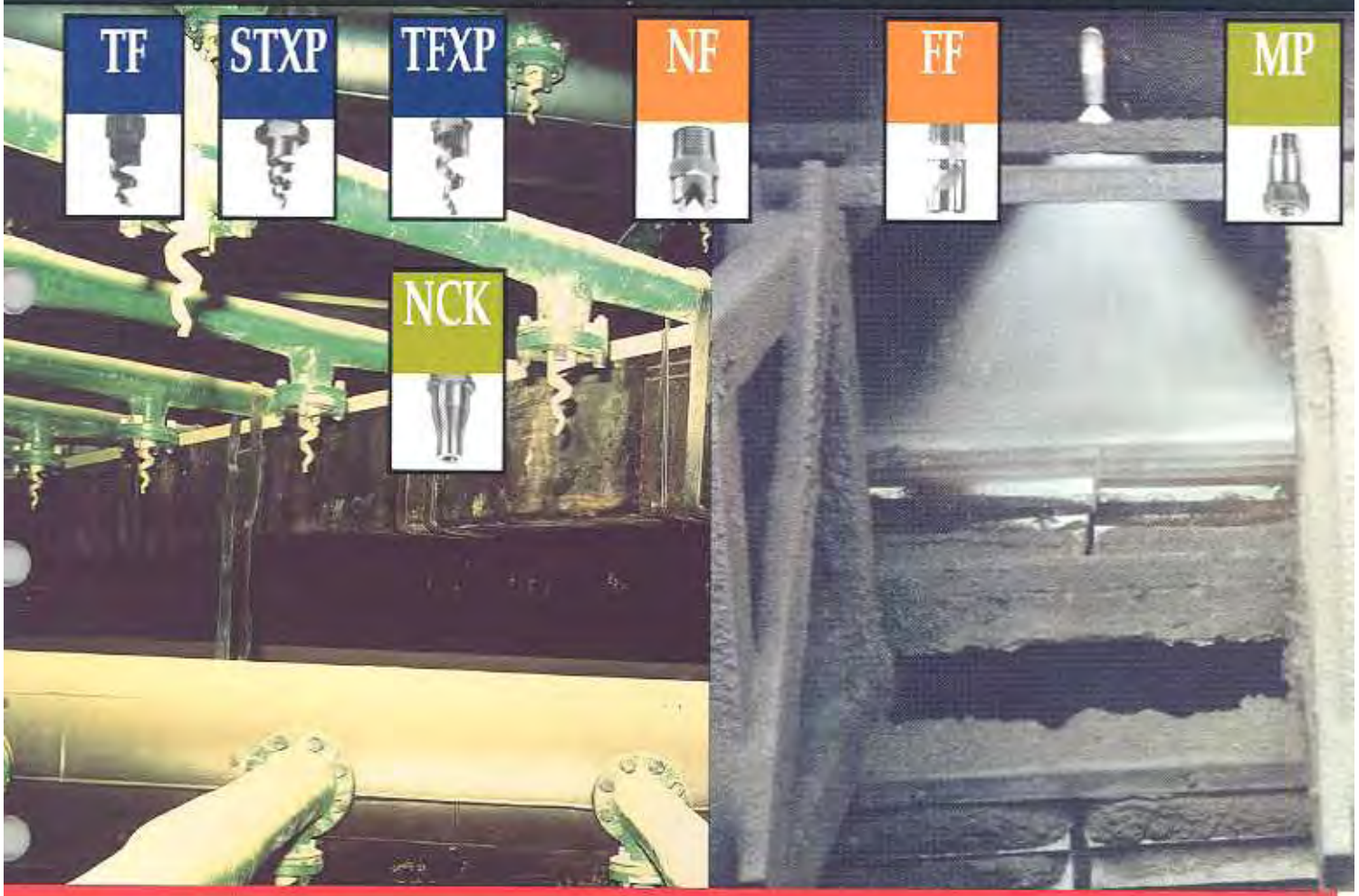
Call BETE and find out about the expertise in steel applications that makes a difference . . . the BETE Difference.

The nozzles shown in this brochure are described in detail in Catalog 104 (available in metric 104.1M, and 4-language 104.4M.)

BETE

Coke Making, Sinter Plants,

Pollution Control, Dust Control at Transfer Points



Coke Plants

Quench Tower, Demist Wash, Pollution Control

MP Whirl Nozzles

- Unique, patented S-shaped vane easily handles difficult, dirty mill water.

TFXP, STXP and TF Spirals

- Greater surface area spray; fine atomization for maximum gas-to-liquid transfer.
- Excellent Free-Passage.

Tar Chasing

NCK Whirl Nozzles

- Narrow angle 20° and 30° coarse extremely hard driving spray.

Wharf Ice Control

NF Fan Nozzles

- High impact spray can run at (up to 1000 psi).
- One piece construction, with no internals to clog.

Gooseneck Flushing Liquor

MP Whirl Nozzles

- Highly energy efficient and reliable.

TFXP Spiral Nozzles

- Fine atomization, wide coverage.

Sinter Plants

Dust Control

TF, TFXP and STXP Spirals

- Fine atomization, wide coverage for controlling dust at transfer points and conveyors.

MP Whirl Nozzles

- Highly energy efficient, clog-resistant and reliable.

NF Fan Nozzles

- Uniform distribution with tapered edges for overlapping sprays.
- Extra-wide angles available.

Pollution Control

See Coke Plants, column at left.

Blast Furnace

Pollution Control

See Coke Plants, column at left.

Electric Arc Melt Shop

Electrode Oxide Loss Control

FF Fan Nozzles

- Uniform high and medium impact spray with moderate flow rates for cost efficient coverage.

BOF/BOP

Hood Cooling

TFXP Spiral Nozzles

- Greater surface area spray; fine atomization for maximum gas-to-liquid transfer.

BETE

Galvanizing, Tinning Lines

Welder Blow Off, Scrubber, Rust Prevention, Air Wipe



Solution Application, Roll Cleaning Application

NFD and **EZNF Fan Nozzles**

- Interchangeable tips, easy installation and maintenance.
- NFD available with 5° and 15° offset for overlapping spray.
- Wide spray angles.

Strip Drying

EZNF and **EZSL Fan Nozzles**

- Interchangeable tips, easy installation and maintenance.
- 30 -120° wide spray coverage

Continuous Pickling and Annealing

Welder, Blow Off

NF and **SL Fan Nozzles**

- High impact, even distribution.
- Uniform overlapping spray up to 120° spray angles.

Scrubber and Rinse Sections

NF and **EZNF Fan Nozzles**

- Interchangeable tips, easy installation and maintenance.
- Wide spray angles.

Flash Rust Prevention

MP Whirl Nozzles

- Mounts in-line, full cone pattern provides good overlapping coverage.
- Non-clogging design excellent for mill water, provides medium atomization

TFXP Spiral Nozzles

- Greater surface area spray: fine atomization for maximum gas-to-liquid transfer and heat reduction.
- Excellent Free-Passage.

Rust Preventative Nozzles

BJ and **EZNF Fan Nozzles**

- BJ available with interchangeable spray tips and strainer.
- EZ NF feature special locking system for fast easy maintenance and replacement.

Air Wipe

EZNF and **SL Fan Nozzles**

- Hard driving overlapping spray with easy maintenance features.

Quench Section (Continuous Annealing)

SA and **XA Air Atomizing Nozzles**

- SA: High-flow two-fluid nozzle uses steam/air to atomize fluid.
- SA: High reliability in extremely hostile environments.
- XA: Low-flow, many interchangeable components for variety of spray set-ups.

Cleaning, Treating, Tinning, and Galvanizing

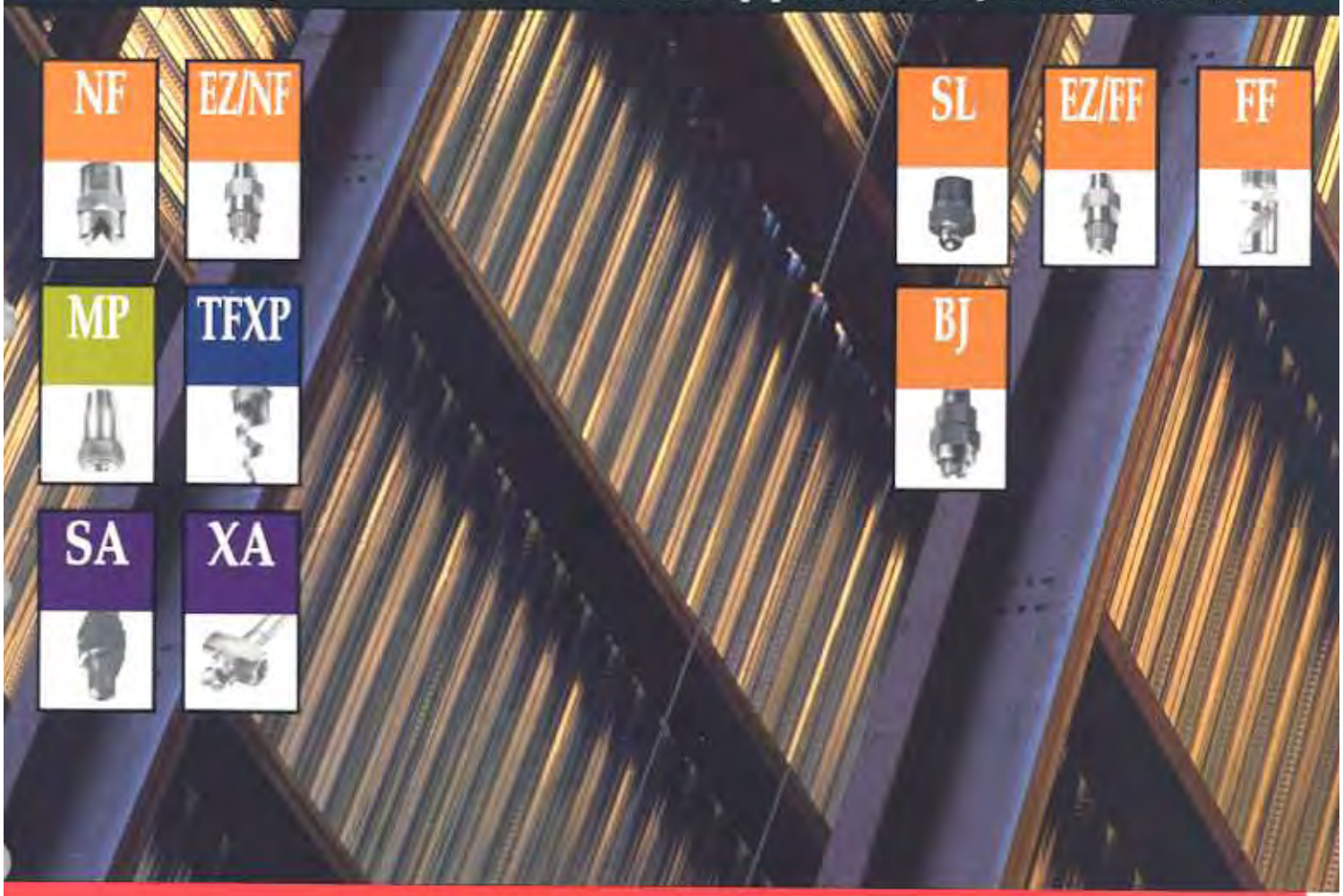
Welder, Blow Off; Scrubber Section; Air Wipe

See Continuous Pickling and Annealing.

BETE

Continuous Pickling, Power

Cleaning Section, Sealant Application, Scrubbers



Cleaning Section

NF and **EZNF Fan Nozzles**
- Interchangeable tips, easy installation and maintenance.
- Wide spray angles.

Sealant Application

EZFF, FF and **NF Fan Nozzles**
- Interchangeable tips, easy installation and maintenance.
- Wide spray angles.
- FF has deflected fan pattern for alternative piping layouts.

Rust Preventative Application

XA Air Atomizing Nozzles
- XA: Low-flow, many interchangeable components for variety of spray set-ups.
- Extremely fine atomization for even spray coating.

BJ and **EZNF Fan Nozzles**
- BJ available with interchangeable spray tips and strainer.
- EZ NF feature special locking system for fast easy maintenance and replacement.

Minimizer

SA Air Atomizing Nozzles
- High-flow two-fluid nozzle uses steam or air to finely atomize fluid.
- High reliability in extremely hostile environments.

SL Fan Nozzles
- Hard driving overlapping spray.

Water Pollution, Cooling Ponds

Aeration

TF, TFXP and **MP** nozzles provide optimum performance in wastewater aeration in meeting EPA oxygen content requirements.
- All provide superior clog-resistance.

TF and **TFXP**
- Provide best atomization and turbulence.

Air Pollution

BETE leading in nozzle design for pollution control and denoxification.

Quencher, Pre-Scrubber and Absorber nozzles

TF, TFXP, ST, STXP or **L** nozzles
- Produce the best atomization and clog-resistance.

MP
- Uniformly distributed spray.

TH
- Right angle mounting.

SA
- Two-fluid high flow air atomizers with superior atomization.
- Best in high or low flow rates when particulates are present in the spray water.



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