BETE®

NOZZLES FOR PULP & PAPERMAKING



Manual No. 104.PP



Choosing the Best Nozzles

Let BETE Help You Choose the Best Shower Nozzles and Spray Heads for Your Pulp and Papermaking Processes

Experience is the best teacher. Bete Fog Nozzle, Inc. has earned the reputation as the leader in Design Engineering of spray nozzles throughout the ***Pulp & Papermaking Process***

Why? Because we take the time and listen. Then we act!

BETE has complete in-house Design, Testing, and Manufacturing capabilities (including investment Cast Foundry), so turn around time from Design to Installation is controlled. Whether it's a new application or a replacement, BETE is able to recommend or furnish virtually any material. More than likely we will have "done it before".

A sampling of examples of BETE nozzles for specific applications are:

Pulp Mill
- Debarking - NF
- DustControl - TF, TFXP, L, MP, and PJ
- Washing & Moistening Logs - NF, SPN

Wood Room
- Pulp Washing - MP
- Pulp Bleaching

Wet End Fourdrinier
- Head Box
- Foam Control
- White Water
- Cleaning: Wire, Felts, Dandy Rolls

Finishing & Converting
- Humidification

and. . .

Heat Recovery
Odor Control
Air Pollution
Cooling Ponds
Water Pollution





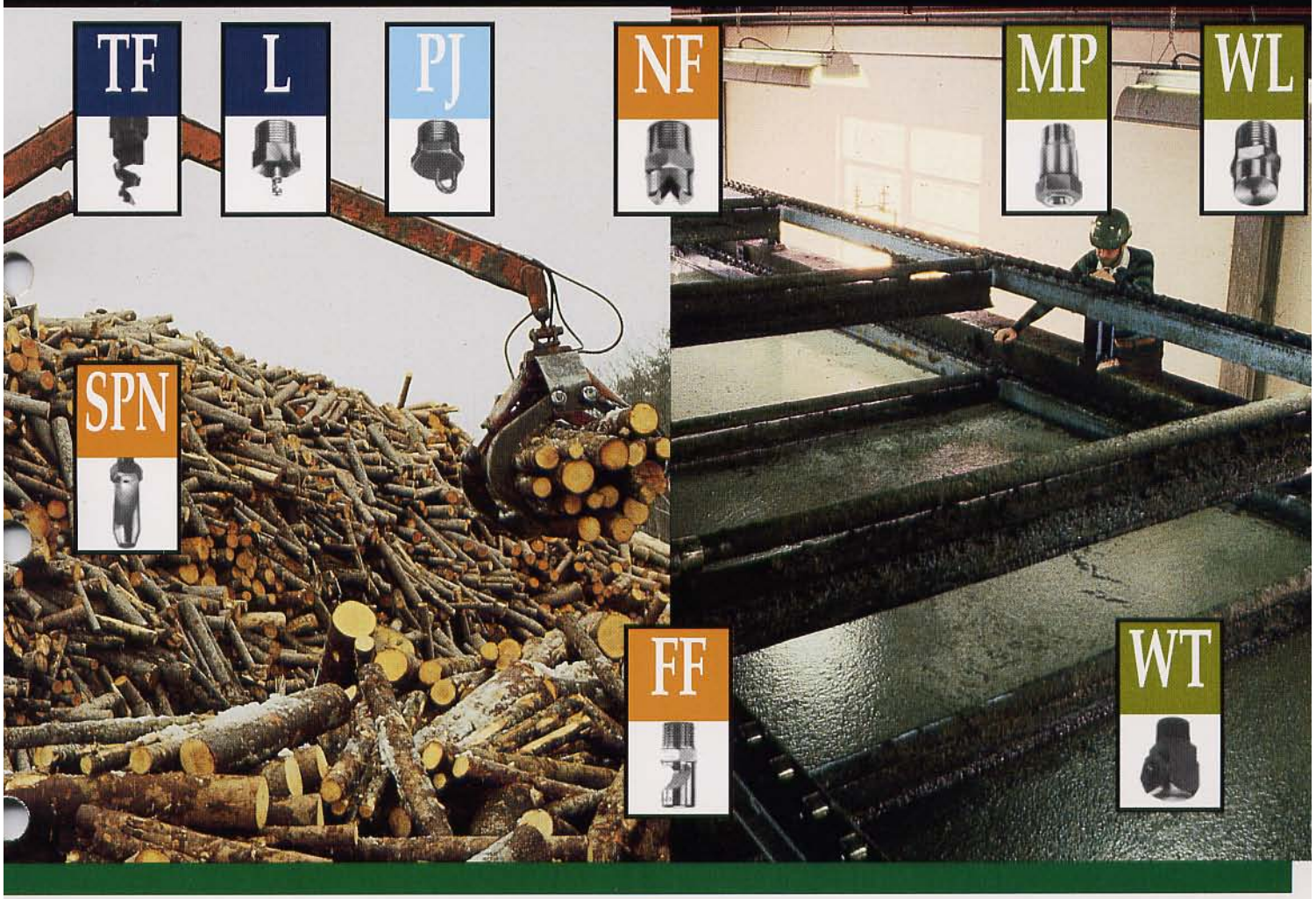
More than 65% of BETE's production is devoted to nozzles custom designed for application specific customer requests. Combine your process experience with our shower nozzle expertise today.

Call BETE and find out about the expertise 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.)

Pulp and Stock Preparation

Pulp Mill and Wood Room



Pulp Mill

Debarking

NF Fan showers
- High impact spray can run at (up to 1000 psi)
- Constructed from one piece with no internals to clog

Dust Control

TF, TFXP, L, PJ showers
- Fine atomization, wide coverage for controlling dust at pulp piles and hoppers

MP Whirl showers
- Handles stringy lumpy liquids especially well
- ***Premier performer in white water service***

Washing Mud From Logs, Groundwood Stone Washing

NF or **SPN Fan** showers
- One-piece clog-resistant construction

SPN
- Yields higher flow rate at same pressure compared with the **NF** series
- Highest impact shower with least atomization
- Requires different mounting orientation than **NF**

Moistening Logs

WT, WTX, WTZ, or **WL** showers
- Produce wide spray coverage, coarse atomization with small quantities of water
- **WT, WTX** and **WTZ** are right angle types
- **WT** and **WTX** hollow cone, available with large emitting angles (greater coverage) and a range of flow rates
- **WTZ** and **WL** produce full cone, uniform spray patterns

Wood Room

Pulp Washing

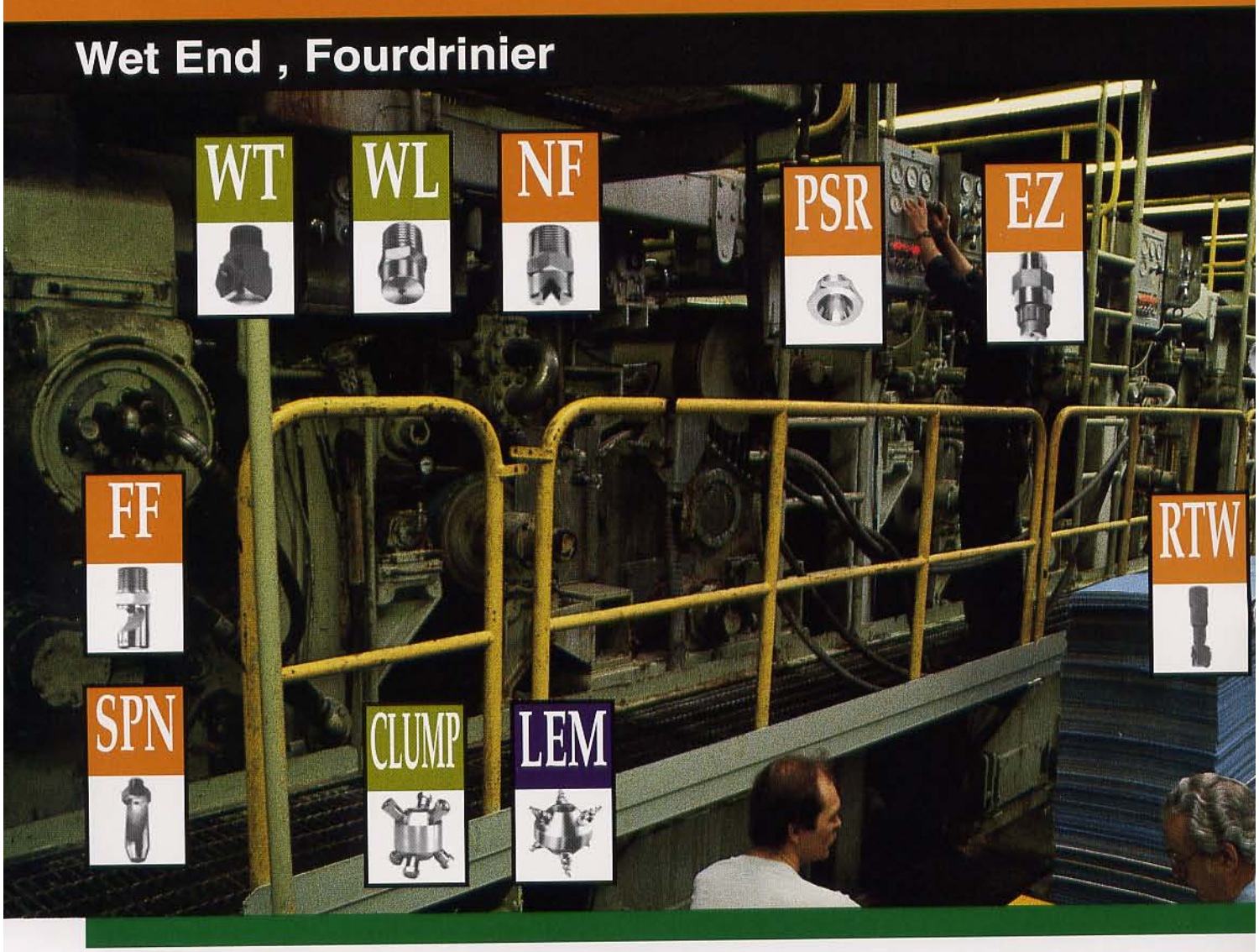
MP showers
- Unique, patented S-shaped vane easily handles difficult, lumpy, stringy, white water
- Highly energy efficient and reliable
- Full cone pattern excellent for leveling pulp in blow pit

Pulp Bleaching

NF and **FF Fan** showers
- Uniform high and medium impact showers with moderate flow rates for cost efficient coverage

Paper Making

Wet End , Fourdrinier



Wet End, Fourdrinier

Headbox, Foam Control, and White Water

WT, WTX, or WL showers
- Large emitting angles, low flow rates- maximize coverage, minimize water use

WT and **WTX**
- Right angle designs with hollow cone patterns
- No internals, recommended for very lumpy white water - greater clog-resistance

WL
- Mounts in-line, full cone pattern with slightly greater water requirements

Broke Chest

RTW, CLUMP or LEM nozzles
- Tank, vat washing nozzles

RTW
- Self-powered rotary nozzle with high impact flat fan tips, covers entire surface

LEM, CLUMP
- Stationary 360° rinsing and washing nozzles.
- LEM has spiral high atomization tips, CLUMP has MP clog-resistant tips

Fourdrinier, Cleaning Wires, Felts, Suction and Dandy rolls

NF, SPN, FF, EZ-Change Fans or **PSR** straight stream shower nozzles.

NF, **SPN**, **FF** or **EZ**
- High impact. 0° - 145° angles available for precise cleaning overlap of wires and felts
- Vaneless design

NF 0° and **PSR**
- Exceptionally hard driving jet, ideal for cleaning Dandy rolls and caked wires

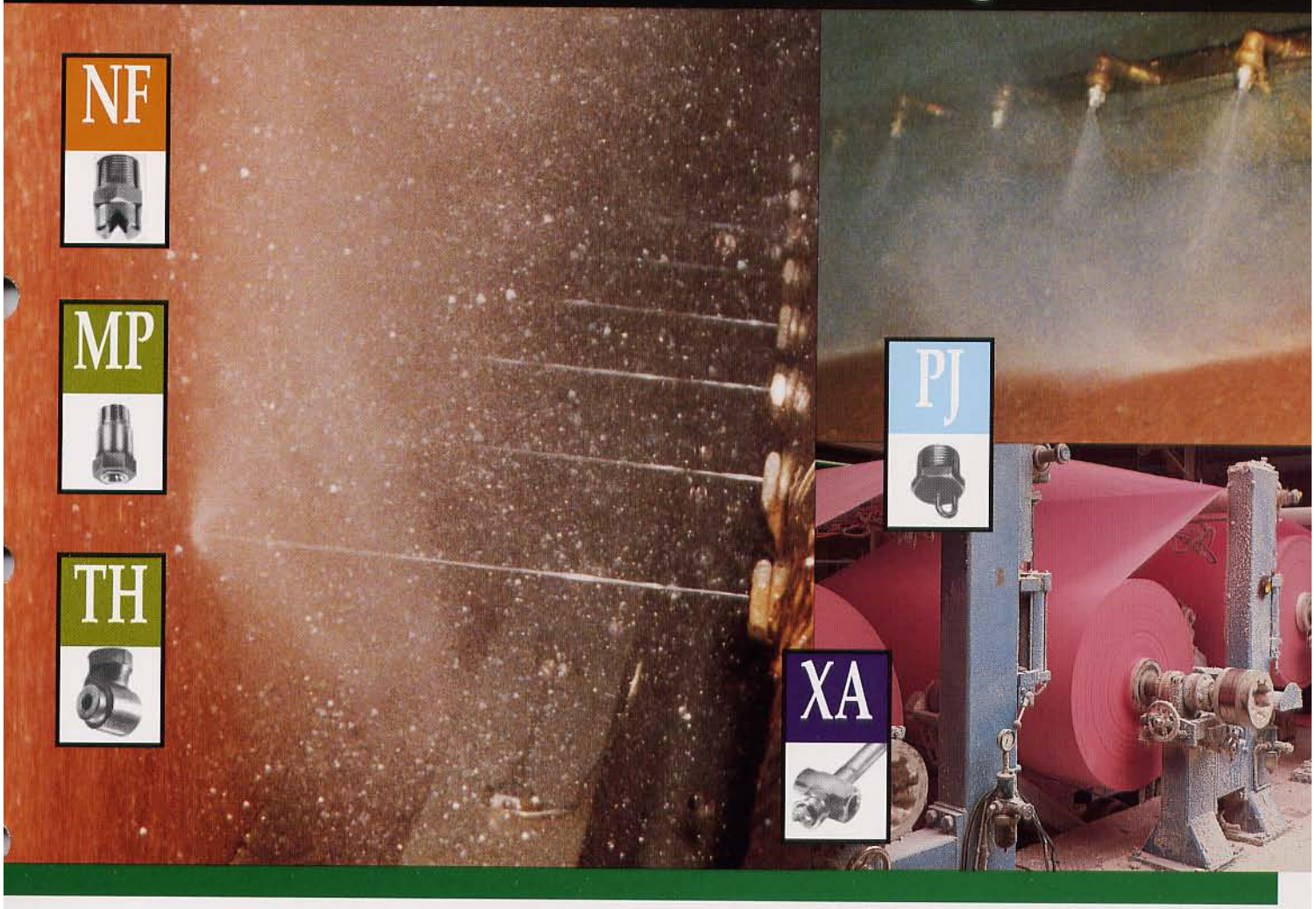
SPN
- Deflected shower spray ideal for directing at difficult locations

PSR
- Smallest mounting clearance with inverted orifice

EZ-Change
- Interchangeable tips enabling easy variation of setups and reduced maintenance

Finishing and Converting

Dry End, Press Section and Converting



Press Section

MP large free-passage nozzles
- Unique, S-shaped vane easily handles lumpy liquid
- Full cone, medium flow rate and impact provides excellent uniform deluge coverage
- 3/8" - 4" male or female pipe sizes

TH hollow cone nozzle
- Vaneless design utilizes less water than the MP but produces a coarser shower spray

Dry End

XA Air Atomizing nozzles
- Excellent for profiling the web
- Produce extremely fine atomization for humidification and remoistening

Finishing and Converting

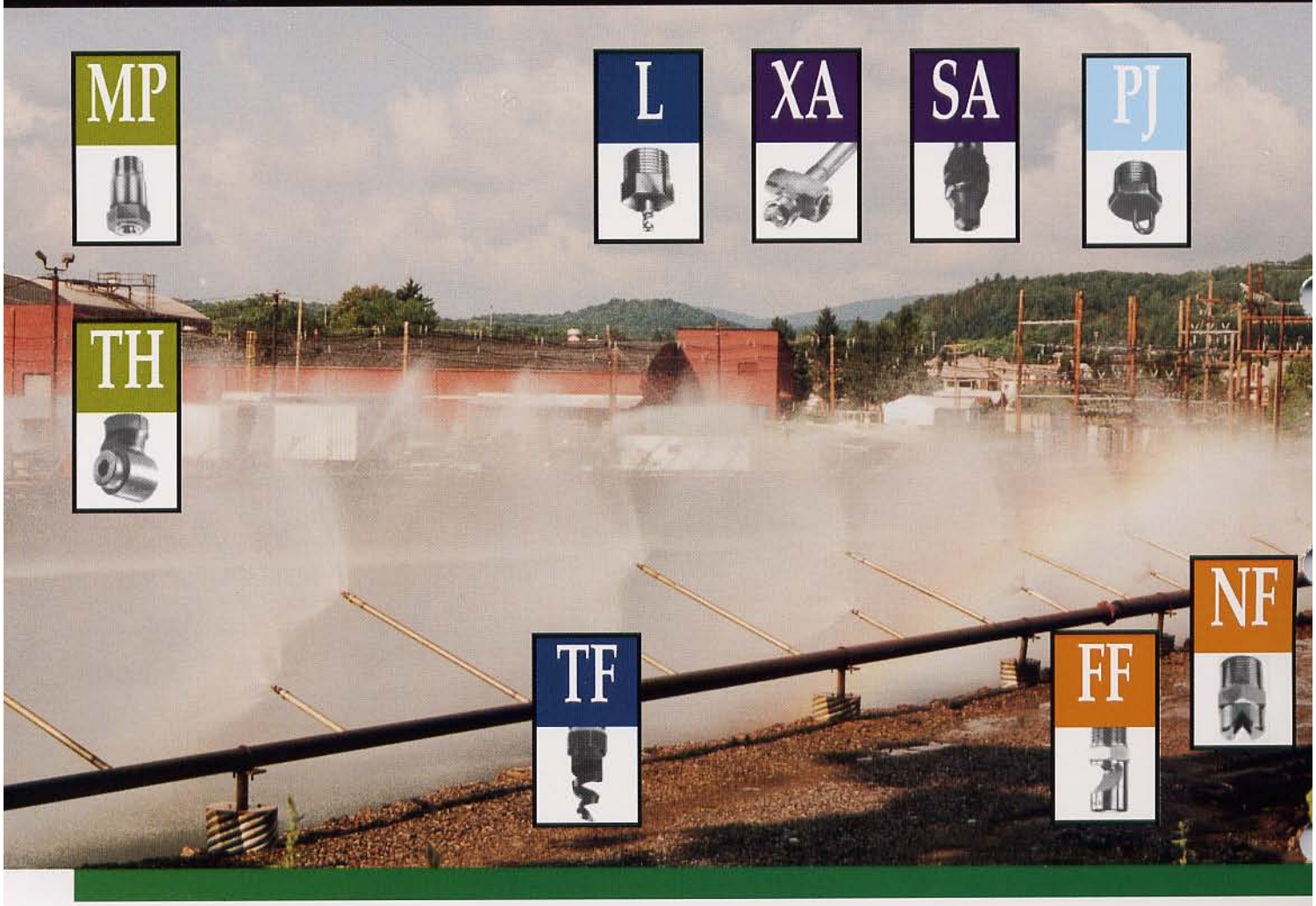
XA Air Atomizing series and **PJ Impingement** series produce fine mists with low water consumption

XA Air Atomizing nozzle
- Available with siphon, gravity, or pressurized liquid feed
- Automatic cylinders can be changed out without tools - a real boon in tight locations
- Interchangeable caps for variable spray effects and quick replacement
- Available with automatic shut-off and clean-out options for high speed spray shut-off and/or self cleaning
- Extremely low water consumption, 0.4 - 30 gph
- Ideal for spraying laminates, glue and photographic coatings
- Automatic XA's are ideal for high speed intermittent fluid applications

PJ Impingement nozzle
- Direct pressure nozzle
- One-piece compact design excellent choice for humidification when compressed air is not available
- Available with mesh filters

Heat Recovery

Cooling Ponds, Odor Control and Water Pollution



Heat Recovery

MP, TH and **THW** are the nozzles of choice for maximizing heat recovery for your mill.

MP nozzles

- High energy efficiency
- Easily handles white water and recirculated water with superior clog-resistance
- 30° - 120° provides wide coverage

TH and **THW Whirl**

- Large free passage
- **THW** -Wide, even spray band
- Right angle design
- Flange connection available

Cooling Ponds

TFXP, TF, TH and **MP** nozzles

TFXP and **TF**

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

TH

- Coarser atomization than TF's and TFXP's

MP

- Excellent for lumpy liquids, provides medium atomization

Odor Control

L Spiral, PJ Impingement, and **XA, SA Air Atomizing** nozzles

XA

- Generate extremely fine atomization for injecting deodorants in open tower mist reactors at flow rates under 2 gpm

SA

- Generate fine droplets at higher flow rates (between 1 and 20 gpm)

L Spiral

- This direct pressure nozzle produces a slightly greater dropsize than **XA, SA**, or **PJ**

PJ Impingement

- Direct pressure nozzles produce a finely atomized mist at lower flow rates than the **L**

Water Pollution

Settlement Ponds

FF, NF and **MP** for wall wash and sludge removal from ponds

FF and **NF**

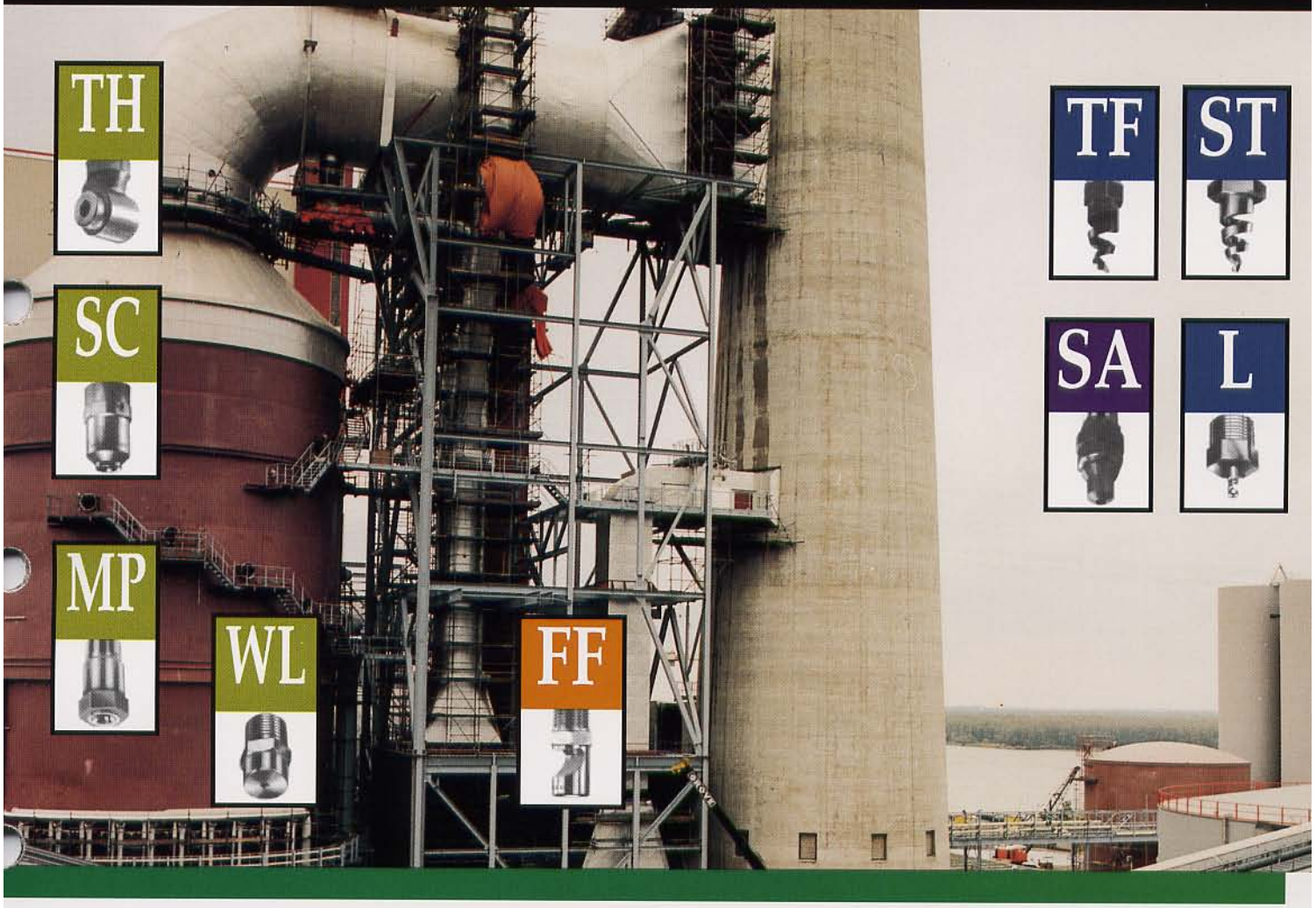
- Driving, medium and high-impact, wide fan sprays - move sludge off walls and floor and into removal drains

MP

- Full cone pattern, medium impact, used for wall wash

Pollution Control

Water and Air Pollution



Foam Control

MP, WL, TFXP and **FF** nozzles for controlling foam in settling basins, below weirs and spillways

- Require low pumping pressure and produce moderate-to-high flow rates.

MP

- Handles lumpy white water best, **TFXP** is also a good choice

FF

- High impact and wide spray angle make it excellent for perimeter weir foam control

Aeration

TF, TFXP and **MP** nozzles provide optimum performance in waste-water 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

Mist Eliminator

Nozzles keep mist eliminator blades clean and maintain high mist removal efficiencies.

WL

- Excellent low flow, wide coverage nozzle

SC Whirl nozzle

- Effective for higher flow rates

MP Whirl

- Best in high or low flow rates when particulates are present in the spray water



BETE Fog Nozzle, Inc.

PO Box 311, 50 Greenfield Street
Greenfield, MA 01302-0311 USA

Telephone: 413-772-0846 • 413-772-0174
Toll Free: 800-235-0049 • FAX: 413-772-6729