

NJWEA Fall 2023 Tech Transfer

Sewer Nozzles

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Sewer Cleaning • Hydroblasting • Hydro Jetting • Hydro Blasting
Sales • Service • Rental • Retrofits
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Cleaning with the Wrong Nozzle...

...is expensive!

The right nozzle:

- Cleans faster and efficiently
- Saves up to 50% energy (diesel, water, maintenance)
- Conserves the environment
- Little or no maintenance

= more competitive

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Investment means: Making the Right Decision

Water?	Fresh water or recycled water
Vehicle?	Manufacturer, chassis
Structure?	Tank size, system, type
Pump?	Output, size, pistons or pressure transformer
Hose?	Size, length, material

and finally...

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Finding the Optimal Nozzle

First you need to know why, what and where you will be cleaning

Why clean:

- General maintenance, blockage, prepping for relining, repairs, etc.

What to clean:

- Debris, grease, mineral deposits, roots, gravel, concrete... etc.

Piping:

- Made of clay, PVC, cast iron, concrete, HDPE... etc.
- Dimensions – ID of the pipe
- Condition – broken, offsets...

Where to clean:

- Against the flow, with the flow, Location, access, always being safe
- Street, private or public
- In town or remote areas

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Investment and Savings

\$400,000 – \$1,000,000

\$2,000 – \$6,000

2 – 4% truck = \$6,000 – \$24,000

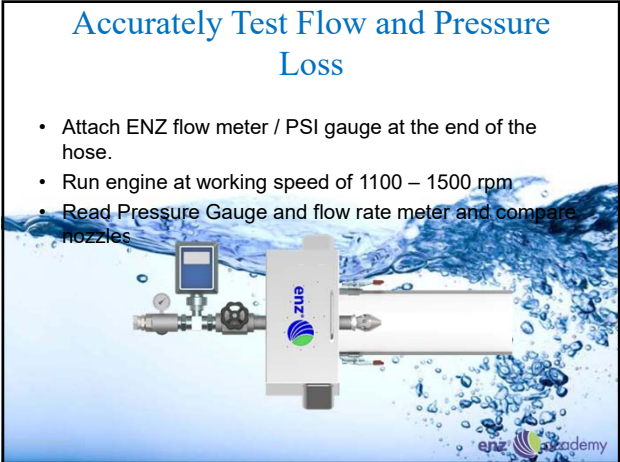
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Applications

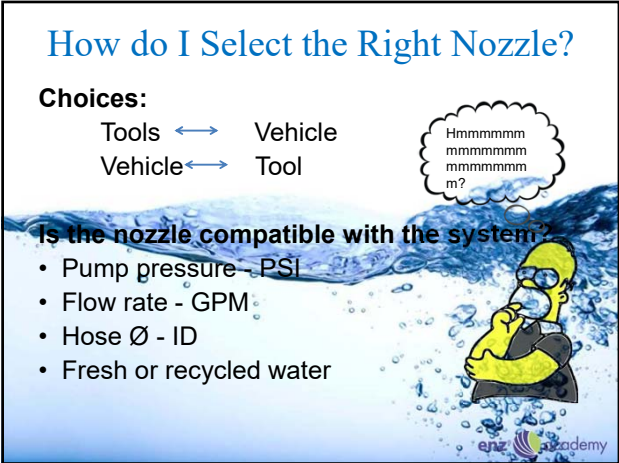
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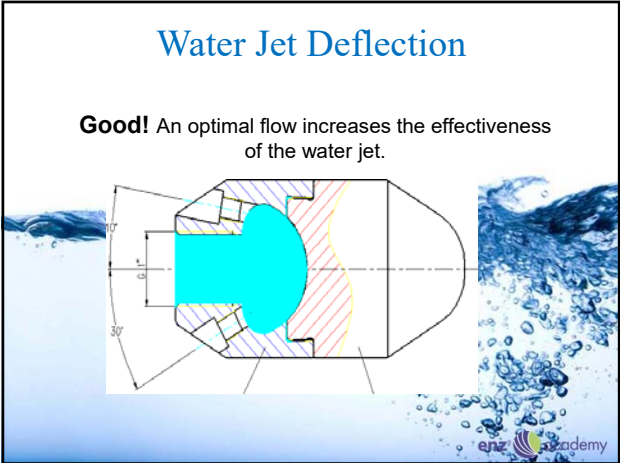
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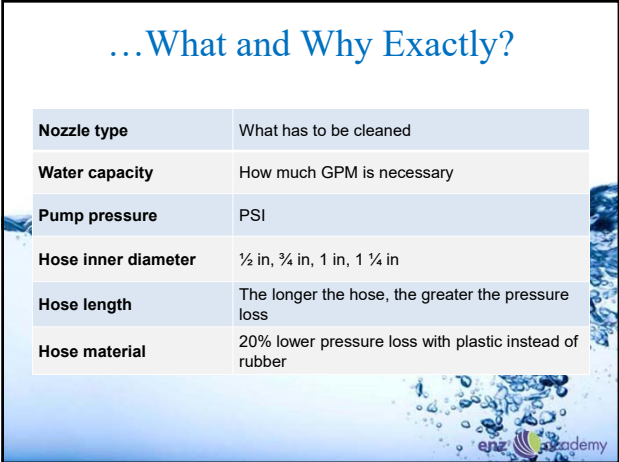
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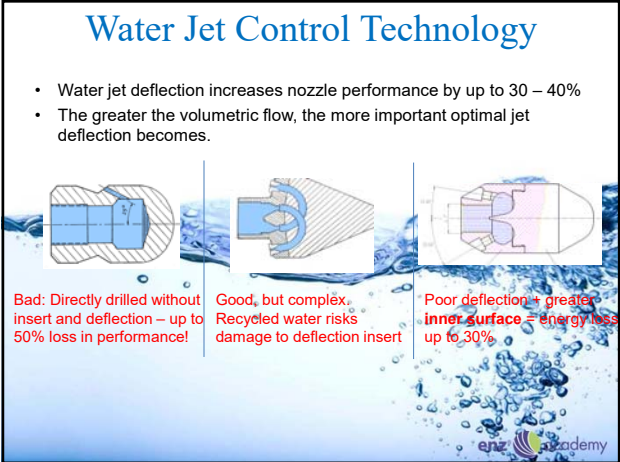
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Selecting the Right Nozzle
Water Jet Cleaning

Accessory	Standard nozzle	Rotating nozzle
Roller guides Flex guides Swivel joints Ceramic inserts Reductions Extensions	Loose and light deposits	Grease, hard deposits, roots
Spray guns Safety liner Tool carry case Laser labeling JetCalc	- Standard nozzles - Roto drill - Grenade bomb nozzles - Gutter nozzles - Pointed nozzles - Flounder - Ejector - Directional nozzle	- RGS radial nozzles - Semi-radial nozzles backward (HRH) - Semi-radial nozzles forward (HRV) - Combined semi-radial nozzles KBR/KBRV - Bulldog® - Propeller nozzles - Gliding nozzles - Surface cleaner

soft

→

hard

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Standard Nozzles

- Standard cleaning nozzle
- Rotodrill™
- Grenade bombs
- Guiding nozzles
- Drainage channel nozzles
- Chisel nozzles
- Flounder
- enz® Bulldozer
- Ejector nozzles

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Selecting the Right Tool
Water Jet Cleaning

Vibration rotating nozzles	Rope and chain scraper	Cutters
Hard and mineral deposits, cement, concrete, limescale	Semi-hardened deposits, wood, limescale edges after vibrating, steel anchoring	Limescale, concrete, concrete sludge, mineral deposits, tree roots, wood
- Rotopuls - Turbopuls - Directional nozzle	- Chain scraper - Wire rope scraper - Diamond crowns	- Impact milling cutters - Recycling impact milling cutters - Recycling cutters - Cutting ball - Diamond crown

hard

→

extremely hard

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Standard Cleaning Nozzles

- Ideal for removing soft deposits – sand and silt – optional front jet for blockages
- General maintenance cleaning
- Front jet insert or blind plug (interchangeable)
- Pipes 1" to 16"

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Summary of the Most Important Points

- Ensure the hose inside diameter is suitable for your pump
- Use nozzle with the correct parameters – psi/gpm length of hose
- Recommended pressure on the nozzle = 1400 PSI
- Soft → hard
- How fast to jet up and back when cleaning – 5-10 feet per second is ideal
- Step cleaning is always recommended
- If possible, always work **against the direction of flow**

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Rotodrill™

- Used to open up main line sewers, laterals and residential piping
- Opens up blocked lines caused by grease, soap, ice, roots, other residual deposits

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Grenade Bombs

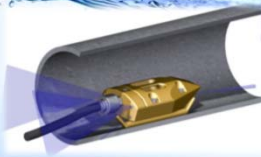
- Used to flush loose rocks and gravel, soft deposits
- Pre-cleaning prior to use of cutters, chain scrapers
- Available with fan jet
- Optional front jet
- Optimal water diversion = higher efficiency



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enz® Bulldozer

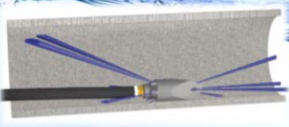
- The low and compact design allows for diverse uses and cleaning in pipes with heavy debris.
- Floor and bottom of the pipe cleaning
- Heavy – does not lift when cleaning



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Pointed Nozzles

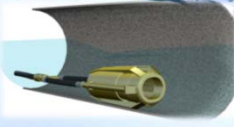
- Used to break through completely clogged pipelines
- Can clear out tree and plant roots and opens up frozen lines
- Flush out steel pipelines after pipe-jacking



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Ejector Nozzles

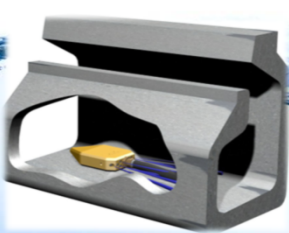
- Outstanding flushing performance in water pipelines
- Gently cleaning
- Large profiles 20 inches up to 180 inches
- Pump output 50 GPM = flushing capacity up to 200PGM



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Flounder

- Ideal for removing mud and loose debris in flat pipes and drainage channels
- Outstanding glide features



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Rotating Nozzles

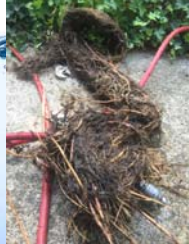
- RGS radial rotating nozzles 75°
- Semi-radial nozzles backward HRH
- Semi-radial nozzles forward HRV
- Rotating combination nozzles KBR/Rotating combination nozzles forward KBRV
- Bulldog®
- Bulldog® Antiblast
- Manhole nozzles
- Rotopuls
- Guiding nozzles
- Propeller nozzles
- Gliding nozzles
- Surface cleaner



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Bulldog®

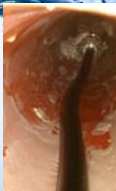
- Removes grease and harder incrustations
- Can be operated using recycled water
- Minimum maintenance necessary



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Vibration Rotating Nozzles

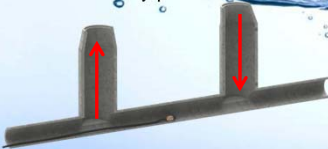
- Can remove medium-hard to the most stubborn deposits in plastic, steel and concrete pipes
- Can break apart deposits up to 10 cm thick
- Careful when working in thin-walled plastic pipes, fragile concrete pipelines and PVC pipes! Do not use in clay



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Bulldog® Antiblast

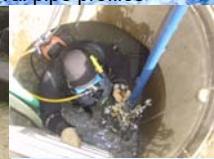
- Removes grease and harder deposits
- Can also be operated using recycled water, accommodates particles up to Ø 1 mm
- Minimum maintenance necessary
- Controls the pressure through odor traps or toilets at max. 1, 150 PSI at the nozzle
- Scientifically proven and tested



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Propeller Nozzles

- Thorough all-around cleaning in large sewers Ø 300 – 2000 mm
- Can be operated with recycled water
- Optimized water demand
- The skids are adjustable and can also be adapted to egg-shaped or oval pipe profiles.



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Manhole Nozzles

- Streak-free all-around cleaning of vertical pipes (shafts, fountains)
- Can thoroughly clean conical shafts
- Almost no maintenance necessary
- Are multi-functional thanks to a thrust stop piece



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Rope and Chain Scrapers

- Used to prepare for restoration work, such as laying liners, applying coatings or injections
- Ideal for removing entire roots, incrustations and other deposits
- Remove concrete residues in newly laid sewer pipelines (for acceptance inspection)



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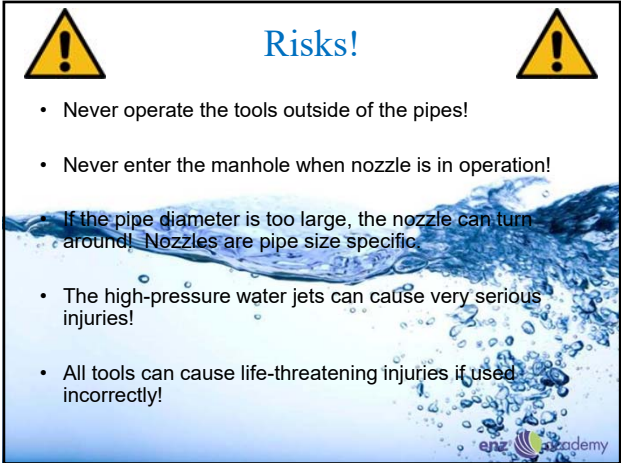
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