

# How To Detect & Prevent Nozzle Wear

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## Why Is Nozzle Maintenance Essential

Spray nozzles are designed to deliver precise performance in terms of flow rate, spray pattern, and droplet size, ensuring the effective and efficient operation of an application or spray system. However, wear and tear on the nozzle's internal structure and orifice can lead to various problems, such as distortion of the spray pattern, larger droplet sizes, and increased flow rates. These issues can negatively impact other equipment, overall process efficiency, and product quality. In this article, we will learn how to detect and prevent nozzle wear.

## How Erosion and Corrosion Can Affect Nozzle Performance

The two main factors of nozzle wear that cause degradation of spray performance are nozzle erosion and corrosion.

1. Erosion is the nozzle material and structure degradation caused by abrasive wear from the spray media or surrounding environment.
2. Corrosion is the degradation of the nozzle material caused by a chemical attack and reactions between the nozzle material and spray media or environment.



New



Erosion/Wear Damage

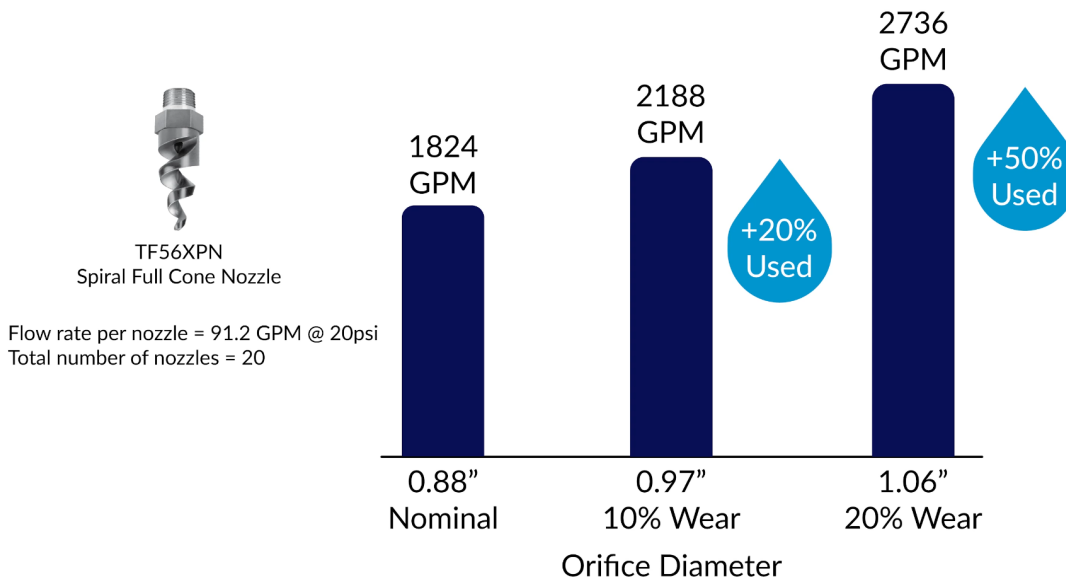


New



Corrosion Damage

In this example, a 10% increase in orifice diameter can result in more than a 20% increase in nozzle flow rate. In comparison, a 20% increase in orifice diameter can result in more than a 50% increase in nozzle flow rate and water consumption. The result can lead to unintended consequences such as excessive usage of resources or equipment malfunction.



## What Measures Can Be Used To Prevent Nozzle Wear

Opting for suitable materials is the most effective approach to preventing excessive nozzle wear, but implementing additional preventive measures such as filtration can significantly prolong the nozzle's lifespan. It's crucial to monitor spray nozzle performance closely to notice and prevent potential issues from arising. There are several ways to do this.

- Visually inspect the nozzle for wear or damage.
- Visually observe the spray pattern for irregular streaks or uneven coverage.
- Monitor system performance and effectiveness by measuring flow rate and pressure to compare with the target values such as outlet temperature and pollutant levels.

## More Information on Optimizing Nozzle Performance With Monitoring & Maintenance

Implementing an effective nozzle maintenance program can pinpoint issues early, averting unplanned production halts that can lead to increased operational expenses and avoidable waste. BETE provides numerous maintenance tips for extending the nozzle lifespan, and our Applications Engineering department is available to address any further questions.

Contact us to learn more about how you can optimize your spray process and save resources with BETE spray technology.