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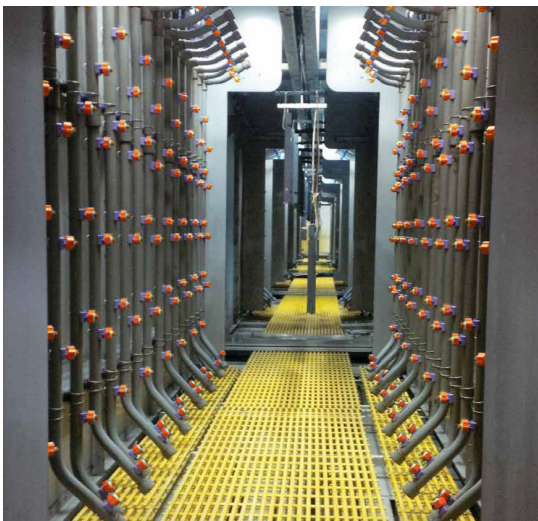
[www.spray-nozzle.co.uk](http://www.spray-nozzle.co.uk)

# INDUSTRY FOCUS

## SURFACE FINISHING

Spray nozzles are used extensively in the surface finishing industry, particularly in applications such as the pre-treatment of metal. While their function is seemingly basic and, as such, they do not receive much of the limelight, the right nozzles maintained in the right way can do much to improve efficiency and control costs.

There are two key metal pre-treatment systems that use spray nozzles: **pre-treatment tunnels** and **dip tanks**. The former is our main focus but we also explore the use of nozzles in dipping tanks.



### PRE-TREATMENT TUNNELS

Pre-treatment tunnels are a series of stations spraying a variety of chemicals or water. Some chemicals like the phosphates used for anti-rust conversion coating are specifically used because they react with metals. The whole point of the phosphate spray is to cause a reaction on the surface of the metal being sprayed to form a corrosion resistant film before other treatments such as powder coating or painting can take place.

Spraying chemicals through metal nozzles is thus problematic. There are metals that are resistant to the actions of phosphates but they tend to be more expensive and, as pre-treatment plants run at temperatures below 100 degrees, plastics like glass filled polypropylene tend to be the more cost effective choice of nozzle and piping system material as can be seen in the picture to the left.

### ► CHALLENGES

#### Maintenance

Because of their very nature (they contain highly corrosive, unpleasant materials), pre-treatment tunnels are not the nicest of environments and, as such, they don't tend to get much attention unless it is desperately needed, usually when the treatment is not working as it should. The first line of enquiry when this happens is usually to blame the chemicals used - surely they are not working effectively. The culprit is, however, more likely to be the nozzles. It only takes a little bit of wear or clogging to change a spray pattern. Nozzles operate by forcing liquid through a precisely machined hole with the shape of the hole determining the spray pattern and spray angle of the fluid. Even a small amount of particulate build up can seriously alter the resulting pattern. Pre-treatment tunnels can involve hundreds or even thousands of spray nozzles across multiple spraying stations. Due to the sheer numbers of nozzles involved, maintenance and cleaning of a pre-treatment tunnel can be time consuming and a nozzle audit is no maintenance manager's favourite job!

#### Configuration

Configuring the tunnel to spray only in the right areas can be difficult and the optimum configuration is often a matter of trial and error. Many minor adjustments may need to be made to the nozzle angles, the spray angle or the individual nozzle and the positioning of nozzles on the risers. This can be a time consuming process. Matters are made worse if different products are being treated in the same tunnel. This can lead to areas being missed completely or undertreated, areas being over treated, chemicals being sprayed off target completely, all of which will have negative impact on the quality of the process and ultimately costs money.

## WHY CHOOSE SNP FOR YOUR SURFACE TREATMENT INDUSTRY NOZZLE NEEDS?

- The ability to solve unique and complex process challenges
- ISO 9001:2015 Certified
- Consistent quality assurance
- World-class customer support, service and advice



## ▶ THE SOLUTION

The solution to both these issues lies in making maintenance and configuration as easy as possible and this can be done with a simple but ingenious nozzle system:

### Quick-release tips.

Often it's just the nozzle tip that needs replacing. But most nozzles will then require re-aligning. A quick tip release system allows nozzle tips to be snapped in and out at the exact same angle thus there is no need to re-align. This dramatically reduces the time and hassle of changing over nozzles.

### Quick release couplers

Our range of quick release couplers, pipe saddles and pipe supports are designed to help make regular maintenance as hassle free as possible. With well designed coupler systems, whole riser pipes can be removed swiftly allowing the individual nozzles to be inspected and cleaned outside the tunnel.

### Colour-coded nozzles.

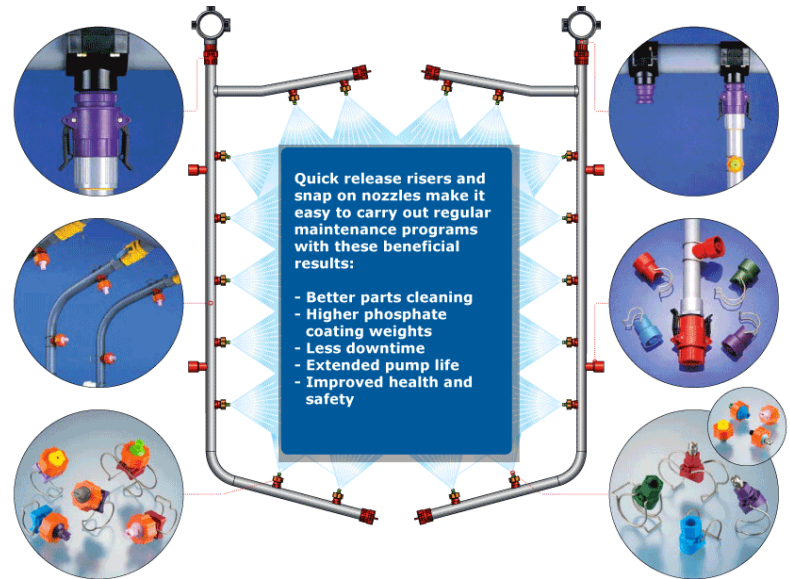
Spotting the difference between a 45 degree spray and 55 degree spray tip is almost impossible at the best of times. But if the different spray tips and nozzles are in different coloured plastics, it can really make a difference.

### Spare set

It is also good practice to hold a complete spare set of tips and nozzle holders that are always maintained in top condition. These can then quickly be snapped into place while the old set can then be checked, cleaned and any worn ones can be re-ordered.

## ▶ THE PRODUCT

### THE UNI-SPRAY SYSTEM



## DIPPING TANKS AND CHEMICAL RESERVOIRS

Dip tanks, or chemical pickling tanks use a recirculation pump to keep the chemical solution flowing. Chemical solution reservoirs also sit under pretreatment tunnels with the fluid pumped back up to be re-used.

### CHALLENGES

The continually reused cleaning and degreasing chemicals in pretreatment tunnels are often prone to sedimentation. This can cause pipe blockages if left unchecked.

### THE SOLUTION

Eductor nozzles, or agitators, sit in the tanks under the surface of the fluid that needs to be kept in motion and, as the fluid is circulated through the nozzle, the surrounding liquid is drawn in via venturi action.

In practical terms this means the volume of liquid moved is approximately 5 times the volume actually pumped through the eductor, keeping the chemical solution homogenous and preventing blockages. The eductors can be used in different configurations according to the size and shape of the tank.



### THE PRODUCTS

The TurboMix eductor comes in 1/4" to 1 1/2" thread in plastics or up to 8" in metals.

Often the TurboMix will be combined with the MK1 or MK3 adjustable nozzle holders to allow the eductor's direction to be adjusted within tank for optimum mixing/agitation.

The Uni Eductor from Uni-Spray in plastic forms part of their quick fit system.

