

UNDINE®

CLEANINGTECHNIQUE

The new 21st century standard for industry



How Undine® works

patented cleaning technique

Undine® is a unique patented spray concept, based on the mixing of water and air, for the cleaning of surfaces and spraying of crops. It is a nozzle fitted with two mixing chambers. The first chamber has a conical shape where water is mixed with compressed air.



High pressure sprayer



Undine®

This results in a very small droplet size. In the second chamber the droplet/air mixture is expelled at very high speed -due to the pressure differential- through the mouth of the nozzle.

The speed of the flow of a conventional high pressure washer (at 40bar) is approximately 120km (75 miles) per hour. The flow of Undine® is approximately 900 km (560 miles) per hour. The combination of miniscule water droplets, which attack dirt as little “needles”, and the very high velocity of the flow, results in a unique cleaning effect. Contrary to what would be expected, the spray feels soft, thus resulting in less damage to machinery and products. Therefore Undine® is a very safe and effective way of cleaning of all kinds of materials: from fruit to stainless steel. By adjusting the dosage of water and air in the mixing chamber, the system can be modified very accurately to each specific application and any degree of pollution.

By mixing the water with air, the overall water consumption can drop by 90% (depending on applications). This also leads to minimal aerosol (no recontamination of other surfaces) and a considerable reduction in energy costs when cleaning with warm water. Another benefit is the reduction of (chemical) effluent. Since Undine® can be fixed in almost any position (CIP), it is possible to reduce labour intensive cleaning to an absolute minimum.

The Undine® technique requires lower pressures than in conventional cleaning methods, resulting in less physical load.

Applications



In principle wherever water and high pressure is used for cleaning or spraying, Undine® can be applied. In many sectors of industry enormous benefits can be achieved. Undine® has been successfully tested and applied in for example the following sectors:

- Food processing industry (cleaning of products, machinery and conveyor belts)
- Bottle and crate cleaning
- Car washes
- Agriculture and horticulture (product- and machine cleaning and crop protection)
- Paper and cardboard industry
- Ceramic industry
- Dust control

The Result

better cleaning and considerable reduced cost

Using Undine® you may expect remarkable results in cost saving, environmental requirements and product improvement.

Cost Reduction:

- Up to 60% on labour costs
- Up to 90% on water and energy costs*
- Quick and automated cleaning
- Shorter changeovers/minimum production loss
- Less (chemical) waste effluent

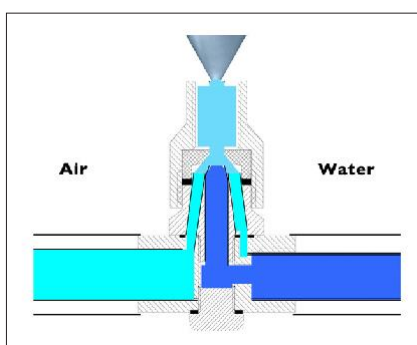
* Depending on application

Product Improvement:

- Considerable better cleaning (optical and biological)
- Minimal machine and product damage
- Minimal aerosol
- No blocked nozzles

Undine® mixing chamber

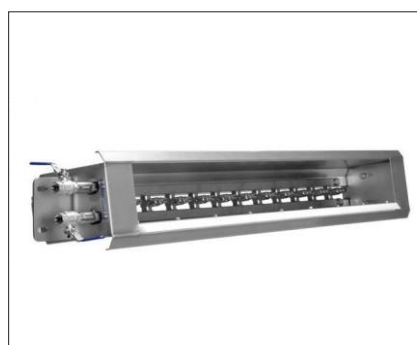
Due to the small size (20x45x85mm), the chambers can be installed even in the smallest spaces. For example in bottle filling machines, industrial washers and slaughtering conveyors. One mixing chamber can be equipped with two nozzles. In order to reach every small area of the machine, the endnozzles can be installed on a tube away from the mixing chamber.



Undine® Manifolds

Undine Manifolds are supplied with several mixing chambers and nozzles. In this modular system, Manifolds of 200 mm up to 3 meter are available. Straight, square or round. Also mounted in a cabin if you like.

To operate these Manifolds, in general a water pressure between 2 and 40 bar can be applied, depending on the application. Air pressure should be around 6-8 bar. Anything can be cleaned now, better and more cost efficient than ever before.



Undine® turbo-series

With open conveyor belts regularly contamination remains amongst the hinges. The Undine® Turbo system offers a perfect solution for this problem. Depending on the type and width of the belt and the degree of contamination, 2 to 5 Undine® mixing chambers are coupled. This mixing-unit is connected to a spraybar, resulting in a very thorough and equal cleaning with substantial savings on water, energy and labour.



Fast return on investment

In the next years, the cost of water, energy and labour will continuously increase, resulting in an overall cost increase of the conventional cleaning technique (high pressure cleaner). Due to the extensive savings which can be achieved by the use of Undine®, the efficiency of the cleaning process is improved. Therefore an investment in Undine® pays back in a short period of time.

Awards

Undine® was chosen by Novem as one of the twelve most innovative and creative environmental projects of the 20th Century



Undine® is an award winner of the ID-NL year prize 2002. The best invention of 2002 based on innovation, market opportunities, technical renewal and durability.

