

## FUNCTIONAL WATER SYSTEMS

### SEMICONDUCTOR/ELECTRONICS

SOLAR  
PHARMA  
POWER GENERATION  
FOOD & BEVERAGE  
PULP AND PAPER  
CHEMICAL  
OIL AND GAS  
MINING  
AEROSPACE AND TRANSPORT



# Functional Water Systems: Improve Component Cleaning Efficiency

## *What is Functional Water?*

Functional Water is Ultrapure Water to which a small concentration of a pure gas has been added. It is not always appreciated that Ultrapure Water on its own is actually quite “aggressive”. However, when one adds a small concentration of a number of pure gases, this property increases dramatically, to the extent that it can be used for a range of component cleaning duties with a number of major production benefits. The actual use of the Functional Water and the consequent benefits to the user depend on which gas is dissolved in the Ultrapure Water. A range of different types and sizes of units is available.

### **Range of Hydrogen Functional Water Units**

The standard range of units available produces from 300 to 3,600/h of Hydrogen Functional Water. Larger capacity units can be produced where required.

### **Other Functional Water Types**

As mentioned before a range of unit types is available, including Ammonia, Nitrogen and Ozone.

## Hydrogen Functional Water units offer a number of very significant benefits to the user:

### Virtually Zero Chemical Consumption

The normal range of chemicals used in the “standard” SC-1 process is no longer required. Use of hydrogen Functional Water is sufficient to ensure ultra-efficient removal of particles from components. In fact, as the graph below shows, it can do so in less time than the classic process, thereby helping to improve production output. Cleaning takes place at room temperature, thereby also eliminating heating costs.

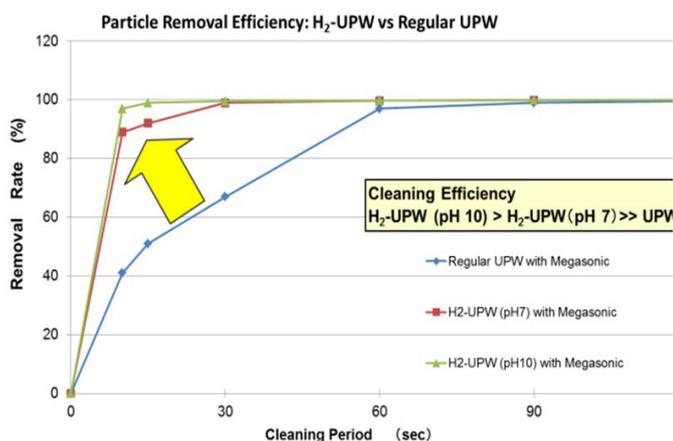
### Reduced Ultrapure Water Consumption

If you don't use large quantities of chemicals for removal of particles, you do not then need to rinse those chemicals from the components. This makes the cleaning process quicker and dramatically reduces consumption of the expensive-to-produce ultrapure water.

### Reduced Wastewater Production

Clearly, if you consume less Ultrapure Water, you also have less wastewater to then treat, and what you do produce contains very little chemical contaminants. This means that you also:

- Reduce the amount of chemical used in your wastewater treatment plant and
- Produce less sludge that must be removed off-site for disposal and
- Reduce the overall Environmental Impact of your production.
- Have the possibility to recycle and re-use the water.



Outline Specification for H-300	
Max hydrogen water flow rate	5l/min, 300l/h
Hydrogen gas purity	99.99% (excluding moisture)
Dissolved H <sub>2</sub> concentration	Adjustable up to approx. 2mg/l
Power supply:	Single phase, 200~240VAC, 50/60 Hz, 600VA
Weight	18kg approx.
External dimensions	300 x 430 x 380mm (w x h x d)
Operating ambient temperature	5~40°C
Operating ambient humidity	≤80%
Installation location	Indoors
UPW supply	≥300l/h at 0.2MPa or less
Compressed air supply	0.4-0.5MPa
External input signals	Generating, alarm reset, pressure setting
External outputs	Normal operation, critical failure & failure alarms

## Additional Services Available

We have long-established experience in designing and building a huge range of water and wastewater systems for companies all across the world. In fact, since its inception, H+E has built more than 30,000 water and wastewater treatment plants! We always strive to offer our customers the best solution for them, one that precisely meets their needs both technically as well as economically.

This is how we make sure that we contribute to cost optimisation in all its forms, as well as providing a system with a long life!

### On-going Support

To ensure that your system continues to operate and benefit your business, we do of course offer all our customers technical support, spare parts etc. for the long-term.

Outline details for the smallest model, the H-300, are shown in the table above:

- Fully automatic control system
- Accepts external stop / start signal
- Adjustable hydrogen gas concentration
- Small size (300mm x 380mm x 430mm)
- CE and SEMI S-2 compliant

These units can be used for cleaning a wide range of components, including:

- Semiconductors
- Optical lenses
- Masks
- Magnetic heads
- Hard Disk Drives
- LCD