



## Individual solutions for industrial cleaning

The demands on the cleanliness of surfaces are customer-specific; whether water-based or closed, non-chlorinated solvent units, spray cleaning or ultrasonic units, Amsonic cleaning machines meet the needs of various industries.



## Water-based precision cleaning

Amsonic's water-based precision cleaning units are applied to clean industrial high-tech surfaces (e.g. precision mechanics, optics, watch making, semiconductor, turned parts, medical technology, automotive, aerospace and electronics industry). They fulfil highest requirements related to the production of optical lenses, raw wafers, engine blades, tools, ceramic parts, implants etc.

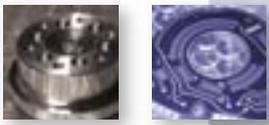
## Amsonic CleanLine

This concept offers first-class performance features regarding efficiency, particle cleanliness and ease of maintenance for subcontracting industries (e.g. subcontractors to automotive manufacturers).

The cleaning machine's modular construction system permits an easy, individual adaptation to customer requirements. Computer-controlled, equipped with a fully automatic transport system (with or without basket rotation) and integrated into the customer's process of manufacture and process control system, this concept achieves astounding results. The high-performance vacuum dryer, the automatic loading and unloading system, the demagnetisation station as well as the software option for maintenance planning are only a few of the key technologies that account for the success of this machine.

The entirely encapsulated cleaning machine with an integrated laminar flow system enables highest quality cleaning results that would have been unimaginable only a few years ago.





## Amsonic AquaLine

AquaLine units with various configurations and tank sizes are used in a great variety of cleaning applications worldwide. Not only the manual unit (MB) but also the version equipped with an automatic transport system and PC control (AL) will convince you by their efficiency.

Depending on the application the tanks and piping are made of different materials and qualities. The PC control with its visualisation offers not only easy operation but also full documentation of the cleaning processes (e.g. important asset for medical technology).

Loading and unloading systems, complete encapsulation, integrated laminar flow systems as well as e.g. integrated pure water components (DI water) enable "turnkey" production units from one supplier.



### **Equipment components: e.g. vacuum drying**



For special applications the cleaning units are equipped with vacuum dryers. When hot air drying encounters its limits, e.g. drying of complex parts with minimal capillaries or cavities, vacuum drying solves the problem efficiently using less energy.

The patented process of the WetEx dryer has been developed in collaboration with the Fraunhofer Institute in Brunswick (Germany). It uses vacuum, hot air and even inert gas phases in order to prevent corrosion problems. These phases are electronically controlled, synchronised and carried out according to exact presettings. They correspond to process technologies that have been developed over years of work.

Vacuum drying modules can be integrated into various cleaning units.



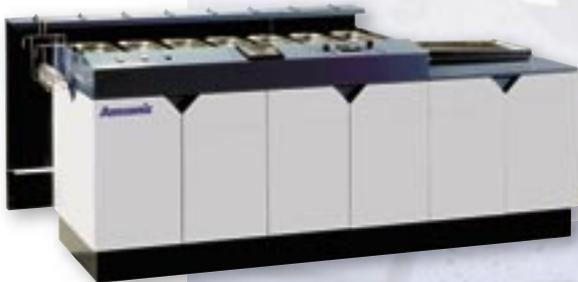
## *Amsonic AquaJet 21*

This compact spray cleaning and drying unit with process validation has been developed for various industries (medical, precision, electronics, watch making, ophthalmology etc.) and is available with one or two doors.

The loading/unloading of baskets is carried out manually or automatically (option) by trolleys. The AquaJet 21 is operated and monitored via a user-friendly and freely programmable control.

## *Amsonic HandyClean*

HandyClean is a compact cleaning unit for small parts and batches. This machine works fully automated as a lift / thrust system but can also be used manually as flexible laboratory equipment at any time (e.g. customer service centres).

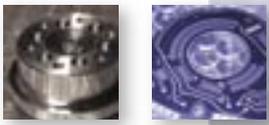


Amsonic HandyClean is available with an integrated pure water treatment system (reverse osmosis with circulation pump, UV lamp and particle filter) and corresponds to the highest demands on cleanliness.

### ***Equipment components: e.g. pure water treatment system***

Our longtime experience in pure water treatment systems is your guarantee therefore that we pay due attention to this important function of water-based cleaning within our machine concept. Only what is properly rinsed after the cleaning process can be stainlessly clean after the drying process. Our pure water modules and complete systems, developed and built by partners, guarantee optimal adaptation to the cleaning unit.





## *Solvent based precision cleaning (Class A3 hydrocarbons)*

The toxicity of chlorinated hydrocarbons (CHC) and the outstanding cleaning results achieved with A3 solvents point out the future trend of industrial parts cleaning. Especially when parts are contaminated with oil or grease, A3 solvents guarantee optimal cleaning results.

Very low emissions due to the closed system, complete recycling of the solvent with the help of an optimal distillation and excellent degreasing results with the correct solvent; all these points explain the increasing use of solvent based cleaning technology. Our success with industry leaders proves the quality of A3 cleaning to be a substitute for tri- and perchloroethylene processes.

The various machine types' (single chamber cleaning units) cleaning processes consist of several phases, e.g. ultrasonic immersion cleaning, spray cleaning, flooding, micro filtration, vapour phases and finally vacuum drying.



A3 solvent cleaning units and processes are especially suitable for steel, stainless steel, ferrite, carbide after chip removing or chipless machining etc. Their use has also been proven successful within many other applications.

## *Amsonic EgaClean 4100/4200*

### *A3 solvent based cleaning above the flashpoint*

EgaClean cleaning units use class A3 solvents (hydrocarbons, modified alcohols etc.). They correspond to the latest VOC regulations and work under vacuum, above the flashpoint, during the cleaning process.

This proven concept is used for large capacities (e.g. the EgaClean 4200 cleans up to 4 tons of parts within 8 hours). This productivity is linked to a high cleaning quality that is equal to results achieved with former CHC processes.

The quality of A3 solvent cleaning depends on various process parameters. This is why all cleaning units are equipped with a PC control system that also allows remote machine diagnosis via modem.

Our know-how regarding A3 solvent processes (distillation, vapour phase) guarantees a constant cleaning quality; a specially designed EgaClean model can also be used with NMP.





## *Amsonic 4000*

### *A3 solvent based cleaning above the flashpoint*

The Amsonic 4000 is a compact, closed single chamber cleaning unit for A3 solvents. It corresponds to the latest VOC regulations and is used for small to medium capacities.

This concept has been developed especially for smaller businesses; due to its compact construction the Amsonic 4000 requires only little floor space. The cleaning unit is loaded/unloaded manually.

## *Amsonic StepEx*

### *Aqueous & A1 solvent based cleaning above the flashpoint*

ATEX certified cleaning system with integrated hot air dryer. Both water-based detergents and fluids with a min. flashpoint of 26°C (alcohol, petrol or certain derivate solvents) can be used in the up to five working tanks (3 litre operating volume per tank).

Depending on the process instruction, the automatic tri-axial linear transfer system with basket rotating device (up to 1000 rpm) allows processing 3 to 5 charges per hour.

PC controlled, incl. charge documentation, suitable for smallest precision parts and applications with highest demands.



### *Equipment components: e.g. integration into a process of manufacture*

By combining Amsonic cleaning units with transport systems and automatic loading/unloading conveyors, various requirements can be satisfied.

The integration into a customer's process control system using automation modules, e.g. a bar code reader (program identification system) that automatically reads the correct cleaning program, represents Amsonic's competence in engineering.





## ***Combined precision cleaning***

# ***Amsonic Swash 4100/4200***

## ***Aqueous & A3 solvent based cleaning above the flashpoint***

The ideal cleaning process has to remove both polar and non-polar soiling. "Cleaning like with like" is an old principle amongst cleaning specialists. The Amsonic Swash concept consistently implements this principle.

The combined cleaning unit Amsonic Swash processes parts that are contaminated by oil and grease as well as salts, light oxide layers, fingerprints or other inorganic soiling. This equipment unites two complete cleaning systems (water and solvent based) in one cleaning chamber and is the result of Amsonic's entire know-how.

Amsonic Swash is controlled via PC and touch screen. The PC software, supplemented by an efficient visualisation, controls and monitors all process phases.



## ***Validated cleaning processes in the field of medical technology***

Within the medical device industry's production processes, cleaning processes are increasingly quality determining. Amsonic unites the know-how of clean surfaces and the requirements of modern medical technology.

Amsonic cleaning units correspond to the medical industry's current requirements (FDA's cGMP regulations) regarding material, design, software and documentation.

Special machine components (e.g. titanium tanks), software modules (e.g. operator logbook), qualification support documentation (QSD), professional project management (DQ, IQ, OQ, PQ) and validation support services provide an ideal basis for successful projects within the medical industry.





## Amsonic TTC

This small cleaning machine (table top unit) with 4 stations (cleaning, 2 x rinsing, drying) has been developed especially for cleaning small parts and batches.

The Amsonic TTC is operated via microprocessor controls that allow an individual setting of each station's cycle time and temperature etc.



## Amsonic BC

The ultrasonic cleaning tanks Amsonic BC have been developed for the use with water-based mediums. These table top units' tanks are made of stainless steel.

The ultrasonic generator is already integrated. Cleaning cycle times and temperatures are freely programmable.

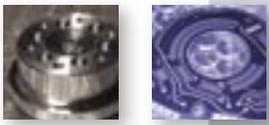


## Amsonic US components / Amsonic PreciClean

The Amsonic ultrasonic generator is the heart of the ultrasonic cleaning process and exists with various frequencies. The ultrasonic transducers are available individually for existing Amsonic tanks, Amsonic cleaning units or as immersible transducers.

The product line PreciClean consists of detergents for water-based processes and is the basic element needed to achieve good cleaning results.





## Clean surfaces without environmental pollution

Our profound knowledge is based on years of experience in cleaning technology (degreasing, precision cleaning, cleaning prior to inspection, assembly or vacuum coating, decontamination, cleaning under clean room conditions, hot air and vacuum drying) and on a wide spectrum of implemented solutions in many applications.



Should problems within the industrial production process not be solvable with the modular standard units, our engineers will develop a suitable individual solution in collaboration with you. Your requirements are our guiding principle: our know-how, experience and innovation as well as our knowledge of current and future regulations represent our technical advantage.

## Innovation and future: e!CO<sub>2</sub>

A few years ago the American aerospace industry developed a technology for cleaning high-tech and composite materials with supercritical fluids. These processes were adapted and CO<sub>2</sub> cleaning arose, achieving extraordinary results in industrial parts cleaning. At present, Amsonic's development department is designing CO<sub>2</sub> based cleaning machines and bringing them to the maturity phase.

## CO<sub>2</sub> cleaning is environmentally sound

Carbon dioxide is often mentioned in connection with environmental problems. Due to the increasing use of fossil fuels, the level of CO<sub>2</sub> in the atmosphere has risen over the past years (greenhouse effect). It is therefore important, to stop the production of further CO<sub>2</sub>.



That is why the CO<sub>2</sub> used for cleaning is regained gas from various industrial processes. Gas that would reach the atmosphere directly through e.g. chimneys is purified, used in cleaning processes and arrives at the atmosphere afterwards.

This means, CO<sub>2</sub> cleaning is environmentally "neutral", it does not contribute to global warming and therefore no VOC or CO<sub>2</sub> taxes have to be paid.