

*The ultimate treatment for leisure waters chemicals-free*

L'innovation for a unique comfort!

**ChemFree Pool™** is an innovative system of water disinfection for swimming pools, water parks, and fountains, based on the principle of electrolytic generation of disinfectants and reagents. It is entirely different from the conventional electrolysis. In fact, this equipment produces sodium hypochlorite, starting from a salt concentration of 3 to 6 g/liter.

**ChemFree Pool™** owes its effectiveness to its unique mode of operation. The electrochemical module is made of dedicated compartments for the production of disinfectants and reagents. The cells are provided with nano-technologically manufactured boron-doped diamond electrodes (BDD).

The conception of this equipment consists of two automated and interrelated systems:

- A platform for the continuous analytic surveillance of the main physical and chemical water parameters, such as pH, ORP, free chlorine in ppm, conductivity;
- A platform for the production of disinfectants and reagents, synched to the surveillance platform. Production is continuously linked with the surveillance of the set quality requirements versus the monitored quality of the water.

This production unit is coupled with a water line dedicated to analytic control and therefore produces exactly the disinfectants required according to the settings required and measured against the water circulating in the pool. At the same time, the **ChemFree Pool™** station automatically corrects the pH the water, by producing of the appropriate reagents without any external input.

The **ChemFree Pool™** central comprises one or more specialized electrolysis cells, according to the volume of water to be treated. These cells contain several compartments and permit the automated generation of a combination of very stable and complementary disinfectants, such as:

- Active Oxygen
- Hydrogen peroxide
- Ozone
- Persulfates, percarbonates,
- Chlorine



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In parallel, the ChemFreePool™ unit produces automatically the reactive agents permitting the correction of the pH to the determined set point.

This new alternative will greatly simplify maintenance and reduce the operation strains for the treatment and disinfection of leisure waters.

This technology has already been the object of many publications that point out its remarkable power of inactivation of pathogen organisms, as well as its residual disinfection capacity.

For example, the inactivation of E. coli is up to 3 times faster with the electrochemical procedure than with standard chlorine disinfection.

### **ChemFree Pool™:**

*Ecology and reduction of greenhouse gases effect (GES)*

This new technological approach to the problem of disinfection provides a reliable solution both for the designer and for the operator. This technology supports the sustainable development concept, which becomes, in some way or other, mandatory for any responsible operation.

**ChemFree Pool™** can equip the existing installations as well as new builds. For pools that were treated with bromine, a careful cleaning of the pool with fresh water including all filter components is mandatory.

To enable optimal operation for the ChemFreePool™ station, a low salinity of the water (< 1 g of salt / liter) is ideal. The station is provided with a continuous control of this salinity and it will improve automatically the mineralization of the water, if required.

### *Carefree installation!*

**ChemFree Pool™** can be installed very easily, ideally branched and retrofitted near the charge gate of the heating system, for example.

The branching will ensure water supplying of the ChemfreePool™ unit without excessive hardness. A water softener is supplied according to parameters set for the pool operations, ensuring the protection of the heating system.

The electrical connection (to be protected by a differential circuit breaker) to be provided is: 120-240 V, 50-60 Hz.

The parameters and adjustments of the control system are very simple and intuitive thanks to the LCD display and its keyboard.

The sensors permit the continuous measurement of the water flow, the temperature, the water conductivity, chlorine level read in ppm, and of the redox potential. These data points permit ongoing information check, at any moment, during the operation of the unit.

**ChemFree Pool™** keeps you informed of the state of the cells and warns you of upcoming maintenance.

Maintenance is simple: simply verify and clean periodically the inlet filter.

The station is equipped with networking capabilities (requiring a simple telephone line and which allows for remote query, transfer of operation and alert data). Other functions are available on request.

### **ChemFree Pool™:**

#### *Installation*

The production station receives two flows:

- A line of water quality control. This line will be connected to the continuous analysis station. Generally, this line is supplied from the pressure valve of the filtering pump (tubing 8 x 12 mm)
- A line of water to be treated: it is sampled on the return line of the filtered water to the pool (DN 1")

The treated water is redirected to the pool (DN 1") after passing through the station.

Connection to the drainage pipe is required for the waste originating from the softener and from the ChemFreePool™ station (DN 1")

**ChemFree Pool™:**  
*Advantages*

This solution provides a clear and ecological answer. It eliminates usage of harsh chemicals such as chlorine, bromine and the need of plastic containers, hydrocarbon-based products, recycling, or discharge.

The operation of the pool is truly streamlined, automated and clean. The scheduling, delivery or purchase of chemical products, is no longer part of daily activities.

The main technical advantages are:

- A completely automated and very efficient disinfection system
- Low electrical consumption, in continuous improvement
- **ChemFree Pool™** station is preceded by a UV sterilizer. This combination ensures that the pool water is at any moment in a constant state of disinfection. This is a very effective device for fighting legionella, particularly in the case of warm waters or waters of ornamental fountains.
- No addition of chemical products, such as anti-alga products, disinfectants (chloride, bromide, etc.) or reagents for pH correction
- Crystal-clear and odorless water all the time
- No corrosion of the pool equipments and of the metallic sculptures in the case of ornamental fountains
- Environmental contribution: the back wash water waste of the pool has a low salinity and can, therefore, be easily assimilated by different environments

*Remark:*

*This high-performance solution cannot represent, in any case, a substitute for standard best practices maintenance of the pool (brushing, aspiration of decanting or floating substances, cleaning and maintenance of the skimmers, regular backwash of the filters).*

**ChemFree Pool™:**

Main characteristics

Configurations

Type of ChemFree Pool™	A	B	C	D
Volume of the pool (m³)*	≤ à 50	50-100	100-150	150-200
Recommended flow of the by-pass (m³)	0,2	0,4	0,6	0,8

\* Frequency for normal private use (4-5 persons / day), as a rough guide

The type of ChemFree Pool™ has to be validated in accordance with the local conditions of utilization of the pool.

Configurations common to all models

Size / weight / softener connection	60 x 25 x 48 cm / 25 kg/ PVC DN20 (3/4'')
Size / weight / Cupboard	172 x 61 x 20 cm/ 55 kg
Pressure loss 18 °C (kPa)	20/ 50 kPa (2,9-7,3 psi)
Operation temperature	min. 5°C / max. 45°C
Recommended water conductivity	1.5 -3.0 mS/cm (approx. 1g/L of salt)

Electrical specifications

Supply voltage (AC)	120-240V ± 10%, 50-60Hz
Approx. energy consumption	0.005 à 0.15 kWh/m³ per day
Installed power	A= 1000 W

Hydraulic specifications

Supply pressure	100 - 300 kPa (15-43 psi)
Analytic line supply	Tubing 8/12 mm
Softener supply	DN 1'' PVC
Production line supply	DN 1'' PVC
Softener drainage pipe	13 mm
Too full brine tub	13 mm
Production unit drainage pipe	3/4''

## Softener specifications

Supply pressure	100 - 300 kPa (15-43 psi)
Volume of regeneration water	18 litres
Salt consumption / regeneration	0.3 kg
Regeneration time	15 mn
Maximum temperature	40°C

## Electrolysis compartment specifications

Number of cells:	Type A : 1
Number of compartments	2
Voltage	24 VDC
Current	Max 40A
Control of the flow to be treated	yes
Control of the flow per compartment	yes



