

Chemical-free water purification system

Supported by:

Federal Ministry for Economic Alfairs and Energy









Federal Ministry for Economic Cooperation and Development The company with competence and responsibility

The principle

As a result of our extensive collaboration with leading scientists and laboratories, NECON has succeeded in redefining the age-old principle of electrophysical water purification. The NECON system consists of the patented treatment electrodes, which release ions into the water precisely controlled by a microprocessor unit.

We have made enormous efforts to ensure that our claim of "100% chemical-free" water purification is fulfilled. Advanced automation technologies and novel electrode materials stabilize the ionization process even with fluctuating water quality and volume flow. Analytical data available from successful international NECON GmbH projects have repeatedly confirmed best water quality.

The NECON system efficiently eradicates bacteria, fungi, algae and biofilms from water and water supply systems, without being corrosive, irritant or caustic, is taste and odour-neutral and, according to the WHO and national guidelines is safe for humans even on long-term exposure – is there a more suitable water for the widest range of applications? The most important advantage of the ions is that they are retained in the water and continue to provide longterm protection by purifying the water without the use of toxins. Even after the filter system has been switched off this depot effect persists for several months. Constant adjustments and permanent monitoring, which require continuous supervision, are therefore unnecessary. The NECON water purification system is easy to operate and requires minimal maintenance.

It has been demonstrated that just micrograms of copper and silver ions are sufficient for elimination of Cryptosporidium, E. coli bacteria, Pseudomonas, Legionella and many other pathogenic species. This method of water disinfection technology can be used in practically all situations where permanent eradication of bacteria, pathogenic microorganisms, algae and even fungal contamination is required.

Average copper concentration in nutritional products

Cow milk	0.4 mg/kg
Beef	0.9 mg/kg
Pork	2.0 mg/kg
Game	2.1 mg/kg
Cod	5.5 mg/kg
Poultry	3.4 mg/kg
Hens egg	2.5 mg/kg
White bread	2.0 mg/kg
Rye bread	3.5 mg/kg
Oats	8.8 mg/kg
Rice	1.8 mg/kg
Potatoes	2.2 mg/kg
Various types of cabbage	1.5 mg/kg
Dried vegetables	9.0 mg/kg
Various types of nuts	5.0 mg/kg
Apples and pears	0.9 mg/kg
Bananas	1.3 mg/kg

NECON purified water (higher concentrations in some special applications) 0.5-1.0 mg/L



LONG-LASTING RESIDUAL EFFECT

Searching for a balance for their positive polarity, the ions attach themselves to and penetrate the walls of bacteria and pathogenic microorganisms.

The NECON treatment electrode produces positively charged ions.

Photosynthesis and nutritional uptake of the cells is prevented; they rapidly succumb.

0

Residual effect: Free ions remaining in the water prevent recontamination.

0

Certificates & laboratory tests























Agricultural applications

In the cultivation of crops NECON prevents the majority of fungal diseases, i.e. all those that rely on airborne transport. The advantage of the method is that the surrounding flora and useful microorganisms in the earth are hardly affected by the treatment, as the ions sprayed with the irrigation system develop their effects on the plant leaves. In addition, the method is safe for humans, as NECON-purified water is effectively of drinking water quality. Correspondingly there are no principle restrictions with regard to the frequency or duration of the treatment.

Other positive effects include strengthening of the plants due to the copper uptake from the earth and a marked improvement in root growth, together with the prevention of Legionella particularly in the context of overhead sprinkler irrigation, as the whole water supply system is kept free of pathogenic bacteria starting from the point of ionization.

NECON purified water can also prevent the spread of pathogenic bacteria and microorganisms in the fields of animal breeding, livestock husbandry and processing.

Medical and cosmetic applications

Particularly dentists have discovered the advantages of the "NECON system" for ensuring the safety of patients and staff associated with a simplification of hygiene management. Reports from installations in the practice setting confirm reductions in bacterial counts to well below the regulatory limits or even to zero with a parallel simplification of the hygiene management. Even installations with older equipment and dentist's chairs were permanently cleared of bacterial contamination even without conventional decontamination; in a further study not a single pathogenic microorganism was detected even after a vacation break of several weeks.

Initial applications in the cosmetic field are relevant to ensuring a germ-free water supply for production equipment and the prevention of bacterial burden due to contamination over the shelf life of the product. In addition, it can be assumed that the application of bactericidal and fungicidal ions increases the skin-improving effects of the products; relevant largescale trials are currently underway in the context of research projects.

Treatment of Legionella

Copper-silver ionization is the most effective method of eliminating Legionella in water supply systems. In the United Kingdom alone, systems of this type have been installed in more than 1100 hospitals and nursing facilities.

NECON offers all the technical requirements for eradication of Legionella: volume flow-dependent dosing, automatic monitoring and regulation of copper levels, remote access to the operating parameters and recoding of parameter changes.

Cooling systems present a particularly broad spectrum of challenges with regard to water quality. The NECON system represents the most economic solution to organic contamination of the cooling water required for the installations (bio-fouling): Without additional chemicals it prevents bacteria, fungi and algae, eliminates any microbial contamination present and is completely non-corrosive. The need to drain water systems on account of accumulation of corrosive agents is avoided.

Together with the low maintenance requirement and extensive automation of the process, the NECON system represents both an efficient and economic solution for the prevention of microbes in cooling systems.



Comparison of water purification system methods

Method	Corrosion damage to pipes	Toxic	Temperature- dependent	pH- dependent	Development of lime scale	High energy consumption	Rapid re-contamination with microorganisms after treatment	Residual effects	Simple application	Evaluation
Heat shock	×	_	×	×	×	×	×	—	_	 Unsuitable for large-scale units, hot water hazard
Maintenance of constant high temperatures	×	_	×	×	×	×	×	_	_	 Unsuitable for large-scale units, hot water hazard
Pulse chlorination/ shock over-chlorination	×	×	×	×	×	—	×		_	 Precautionary measures for operation Waste water restrictions
Continuous chlorination	×	×	×	×	×	—	×	×	_	Precautionary measuresfor operationWaste water restrictions
Chlorine dioxide/ monochloramine	×	×	×	×	×	—	×	×	—	 Precautionary measures for operation and against explosion
Use of ions	_	—	—	—	—	—	—	×	×	 Highly effective, with long-term protective effects
Hydrogen peroxide ("active oxygen")	×	×	—	×	—	—	×	×	_	 Water clouding due to carrier chemicals or degradation products
Ozone	×	×	—	—	—	×	×	—	_	 Water clouding due to carrier chemicals or degradation products
Ultraviolet light	_	_	_	×	_	×	×	_	×	 Not safe for humans as a sole method of disinfection

 \times = applies

— = does not apply

Water purification for swimming pools and whirlpools

Banish chlorine and all other chemicals from your swimming pool with the "NECON system"! If you have your own swimming pool, you, your family and guests can enjoy pure, natural fresh water of the best quality. With the "NECON system" public swimming pool operators create a safe environment free of pathogens even under peak load conditions, so that visitors return again and again for a sustainable, relaxing wellness experience or sport activities, without health risks.

As far as sport swimming is concerned, there are good reasons for the 100% chemical-free purified water long-preferred by athletes and trainers in the previous Eastern-block countries. The athletes swimming at the Olympic games in 2004 in Athens were privileged to compete under optimum conditions in NECON-water.



Comparison of NECON with conventional disinfection: example: swimming pool application

Conventional (chlorine)

NECON (copper/silver)

Causes reddened and stinging eyes	No stinging eyes
Dry, brittle skin	Silk-soft skin
Active odour, especially in indoor pools	Odourless water
Respiratory tract irritation	No irritants present in the water
Chlorine represents a health hazard	Copper is healthy (essential element)
Requires use of flocculation agents	Natural flocculent formed
Special winter agents required during operational shutdown	No development of algae over winter
Requires additional anti-algae agents	No additional agents required
Storage and stockpiling of the treatment products	No storage space requirement
Permanent chlorine value measurements, at least once per week	Copper concentration measured only once every 3 months
Risk of caustic burns if liquid chlorine is used	Fully automatic ionization
Additional agents required for pH adjustment	No additional agents required for pH adjustment
Risk of corrosion for swimming pool equipment and environment	No corrosive properties
Poor buffer capacity	Constant formation of ions
Water treated with chlorine needs to be replaced once yearly	No replacement of the water required
Filter sand requires replacement every 2–3 years	Filter sand replacement only every 10 years
Rapid loss of effectiveness under strong sunlight	Temperature-independent
Backwashing water requires special disposal	Backwashing water ideal for plant irrigation

Latest model ranges

nec-One



System for flow rate-controlled treatment of water volumes up to 15 liters/minute, for example in the dentist practice or for individual taps in the domestic environment.



System for time-controlled treatment of water volumes of up to 40 m³, including jacuzzis and above-ground pools.

NEC-10000 is a skid-mountable unit for supply of potable water in disaster relief or any situation where rivers, lakes or polluted ground water are the only available water sources.

Besides removing sediments and pathogen bacteria from the source water, its treatment adds a residual bactericidal effect to the water for long-term storage.



NEC-9000

NEC-4000



NEC-9000 and NEC4000 combine electrode with straightforward-operated controller to robust units, de-signed as the most universally applicable and powerful single-electrode NECON systems.

NEC-6000



NEC-6000 is an optional add-on controller for NEC-9000 or NEC-4000 electrolysis units to provide comfort functions (centralized control of up to 16 attached units, may be equipped with special-purpose plug-in boards).

NEC-4000 NEC-9000

Technical dat<mark>a</mark> Single System Units

- Voltage supply 88~264 VAC 47~63 Hz (NEC-4000) / 90~280 VAC 45~65 Hz (NEC-9000)
- Electrode current adjustable
 0.5–12.0 A (NEC-4000) / 30.0 A (NEC-9000) with max. output 23 VDC (NEC-4000) / 48 VDC (NEC-9000)
- Power consumption max.
 322 Watt (NEC-4000) / max. 1600 Watt (NEC-9000)
- 4. Dimensions (W × H × D) 185 × 365 × 244 mm (NEC-4000) / 185 × 610× 254 mm (NEC-9000)
- 5. During continuous service 1 switching per day, multiple settable via timer switch
- 6. Supports flow control (start/stop), optionally proportional control (water volumedependent performance) in combination with NEC-6000 add-on controller
- 7. IP protection class 54
- 8. Metal-cast treatment cell with drinking water-certified coating and 10 bar pressure rating (optionally 16 bar)
- 9. Connection threads 2 x 2" BSP female



design integrates compact, cost-efficient The simplified-to-thecontrol electronics with functionality and operation, plus single essential pre-installed sacrificial electrode which is in various sizes depending on project available requirement and budget.

Combining powerful performance with drinking watercertified treatment cells, the units are highly versatile and suitable for treatment of potable, grey and process water as well as of irrigation water applied to greens and crops, notably winegrowing. Further applications include treatment of water used in animal production, and in bathing pools. Multiple units can be operated simultaneously in one installation and optionally ordered rack-mounted and piped (photography shows setup example including 6 units of NEC-4000):



NEC-4000 mobile

Technical Data

- 1. Dimensions (W × H × D): 950 incl. sediment purge valve/pipe × max. 1300 depending on pump height × 900 mm
- 2. Weight: approx. 50 kg. -- Weight and further specifications of the electrode cartridge built into the NEC-4000 unit and of included test kit: cf. NEC-4000 model table
- 3. Flow range: min. 3 up to 8 m3/h
- 4. Supply power:230 VAC 50~60 Hz
- 5. Power consumption (of standard integrated pump plus NEC-4000 unit): max. 1.2 kW
- 6. Suction strainer to prevent intake of floating debris (enclosed separately): as per client requirement depending on specifications of hose intended for water uptake
- 7. Inlet (of standard integrated pump): 1-1/2"
- 8. Centrifugal filtration stage #01: for filtering sediment that is heavier than water; manual backwash (requires 15 liters flushing water)
- 9. Fine particles filtration stage #02: preinstalled container for 20" filter cartridge; cartridges in various pore sizes available at extra cost for factory preinstallation; alternatively integration of carbon filtration for treatment of water against bad odors.
- 10. Outlet: standard integrated 1-1/2" PVC handle valve to regulate pump performance
- 11.Cart material, tires: steel-tubing; pneumatictired, alternatively fitted with tri-star stair climber at extra cost



"NEC-4000 mobile"

is designed as a hand-carried water treatment system for transport, setup and operation by a single person, for filtration and disinfection of service or drinking water.

Due to the low space requirement, the system can be set up practically anywhere and can be moved just as flexibly between different locations.



With its integrated pump, the system is expressly designed for intake of water from collector basins and surface waters.

The water is then processed through two separate filter stages and finally treated with the NECON residual effect, for prolonged prevention of pathogen bacteria.

Hand-hauled "Komplett-Technik" on two-wheeler

Product variants	Measurement system included	Treatment electrodes
 NEC-4000.5 Treatment of flows with 0.5–1.0 ppm: 4.500– 9.000 m³ service life For private pools up to 60 m³ 	Cu-Testkit Comparator	1 × C4000.5 5.2 kg
NEC-4000.9	Cu Test kit Comparator	1×C4000.9
 9.000–18.000 m³ service life 		
- For private pool up to 100 m ³		
 For public pool up to 60 m³ 		9.5 kg
NEC-9000.9	Cu Test kit Comparator	1×C9000.9
15.000–30.000 m ³ service life		
- For private pool up to 200 m ³		
- For public pool up to 120 m ³		
		17.5 kg

Technical data Control panel plus Add-in boards

- 1. Voltage supply 110–240 V full-range 50/60 Hz
- 2. Power consumption 60 Watts
- 3. Dimensions (W × H × D) $335 \times 270 \times 150 \text{ mm}$
- 4. IP protection class 54
- 5. Centralized control for up to 16 units of NEC-4000 or NEC-9000
- Max. cable connection length between NEC-6000 and NEC-4000 or NEC-9000 unit(s) 25 m
- 7. Optional add-on board to monitor operation via Modbus protocol (RS485)
- Optional add-on board for automated flow-dependent amperage control; specifications for supported meters:
 - Pulse output min 300 CPM eq. 5 Hz (pulses per second), max 180 000 CPM eq. 3 000 Hz
 - Output wiring type Open Collector / NPN standard
 - Flow meters requiring power over connection cable may get 5V or 24V DC supplied



NEC-6000 is an optional add-on controller for NEC-4000 and NEC-9000 base systems to provide comfort functions.

Firstly, NEC-6000 panel allows centralized control of up to 16 NEC-4000 or NEC-9000 units.

Furthermore, NEC-6000 may be equipped with special-purpose plug-in boards depending on project requirements.

Currently available are interfaces to...

2	-	-	aî,	
Г			U.	
4	_	-	۴	1
U		_		1

...Building management systems for complete monitoring of all operation parameters via Modbus protocol (RS485)

	-	_	_	-	÷
1ź	÷	-	-		
П				11	
Į L	-	_	-	٢	
۰.	-	-	-		

...Pulse-emitting flow meters to enable flow-dependent ionization performance (automated proportional amperage control depending on variations of flow)

T-NEC

Technical data

- Power supply: External plug-in voltage transformer (included; input 180-240 V - 50/60 Hz), required output to system 24 V DC, tip of plug to T-NEC device with positive polarity, mind. 1250mA
- 2. Power consumption 28 watts max.
- Space requirements in vertical installation (strongly recommended): H = 288 mm, W = 122 mm each incl. the supplied shut-off valves D = 176 mm plus clear depth min. 230 mm to detach control head for electrode maintenance
- Connection threads 1" BSP male (included shut-off valves: 1"/1" BSP female)
- 5. Feed-through: 3/4" (DN20)
- 6. Pressure rating: 16 bar
- 7. Weight incl. electrode: 4 kg
- 8. IP rating: IP 54
- 9. Treatment cell: stainless steel
- 10. Drinking water qualification acc. to WRAS (UK), DVGW (Germany)



T-NEC is intended for electro-physical treatment of feed water for control and prevention of bacteria, esp. pathogens like legionella bacteria.

The system has been designed specifically for application in domestic water supply installations. Designed like a pipe tee, it seamlessly integrates itself into existing pipe networks.

The dosage is controlled fully automatically by a patented, integrated control intelligence and does not require any settings on the part of the user.

Technical data

- 1. Power supply:
 - Integrated wide-range power supply: 85-264 VAC, output max. 24 VDC
 - Frequency range: 50/60 Hertz
 - Connection to power source via supplied Euro power cable with IEC-60320-C7 ("figure of 8") plug to unit's built-in IEC-60320-C8 socket
- 2. Power rating: max. 36 Watt depending on preset performance and water conductivity
- 3. Operating controls:
 - BCD switch for presetting electrode performance in 0.16 A steps (max. 1.5 A)
 - BCD switch for setting electrode runtime (0.5 h to 4 hours; continuous operation)
 - ON/OFF push-button for runtime start and abortion; timer recommended (not included in scope of delivery).
- 4. IP rating: IP54 (splash-water protection)
- 5. Dimensions: 200 x 215 x 115 mm
- 6. Empty weight: 4,2 kg
- 7. Electrode cartridge: 2.3 kg standard made up of 5 plates each 5 mm
- 8. Connections: 2x 2-inch BSP internal threads



NEC-2000 is designed as a compactsize water treatment system for...

- bathing pools or supply tanks with water volumes of up to 40 cubic meters, as well as for
- flows with rates of up to 3 cubic meters per hour

Just as its larger sister model, the NEC-4000, the NEC-2000 is characterised by a number of key features...

- precise control of the electrode performance
- high output voltage to the electrode
- rated for water pressures up to 16 bar
- WRAS-certified (i.e. drinking water suitable) coating of the treatment cell

Batch of units at the NECON production halls in

South-West Germany



Ready to go - wherever in the world people thirst for clean and safe water!



Supply Water from Rivers and Lakes to the Consumer

Water is taken up with pump

Optional water pump and optional equipment for power supply:



Field test:

Deployment to treat lake water

Impressions of a stagnant pond in the backwoods.

This kind of water is the only drinking water supply available to millions of people worldwide.

Yet the solution ready to go!



Field test:

Deployment to treat water from sludge basin

Target applications of the Drinking Water Mobile System

- Emergency situations where geographic areas are cut-off from supply of treated water because of environmental disasters
- Communities that are not at all connected to municipality water supply networks and have no other option than to use untreated water sources



So much more than just filtration:

The long-lasting safeness of NECON water.

Achieved by combining filtration with the NECON electrolytic process:





Treatment cells and electrodes for NEC-5000 model range

Doublesize-Combi electrode XL – C9000.9

Electrode weight:	17.5 kg
Treatment cell:	Double-Size extra large (cast metal,
	identical with cell of NEC-9000 units)
Cell dimensions (H x W x D):	610 × 185 × 180 mm
Connector thread:	2× 2" female thread
Cell pressure resistance:	16 bar
Cell temperature resistance:	70 Grad Celsius



Figure on the following pages:





Maxi-Combi electrode – C21035 (Maxi-Ag electrode – C21038)

Electrode weight:	8 kg
Treatment cell:	Maxi-Size
	(plastic, optionally cast metal)
Cell dimensions $(H \times W \times D)$:	340 × 225 × 200 mm
Connector thread:	2× 2" BSP
Cast metal version:	2× 2" BSP
Blanking plug thread:	– 1× ¾" BSP for optional
	venting valve
	$-1 \times \frac{1}{2}$ " BSP for optional
	paddle-wheel flow monitor
Cell pressure resistance:	3 bar
Cast metal version:	6 bar
Cell temperature resistance:	70 degrees Celsius

Mini-Combi electrode - C21031 (Mini-Ag electrode - C21036)

Electrode weight:	1 kg
Treatment cell:	Mini-Size
	(plastic, optionally cast metal)
Cell dimensions $(H \times W \times D)$:	200 × 115 × 100 mm
Connector thread:	2× 1 ½" BSP
Cast metal version:	2× 2" BSP
Blanking plug thread:	1 × ½" BSP for optional
	paddle-wheel flow monitor
Cell pressure resistance:	3 bar
Cast metal version:	6 bar
Cell temperature resistance:	70 degrees Celsius

NEC-5000 "FUNK"

Technical data Control unit

- Voltage supply 110–230 V switchable 50/60 Hz; contact rating filter pump max. 1.1 kW, can be replaced by optional external contactor
- Electrode current 1–7 A adjustable for the primary electrode(s) and 0.25–2.5 A for the optional auxiliary electrode (in 0.25 A-steps); with max. 15 V output voltage
- 3. Power consumption max. 370 Watts
- 4. Dimensions (W \times H \times D) 335 \times 265 \times 150 mm
- 5. Up to 3 programmable switching times per day
- Flow control by automatic filter-backwash control unit, paddle-wheel flow monitor or magnetic-inductive flow monitor for volume flow-dependant water treatment (each optionally available)
- 7. Heating control adjustable to 40 °C
- 8. IP protection class 54



NEC-5000



The special feature of the NEC-5000 "FUNK" model is its remote control, on the one hand via a local WLAN per App from an optionally available "touch" player, and on the other via NECON's own maintenance servers in Internet via an optional local Power-LAN- (dLAN, PLC) network connection.

The control unit has an optional touch screen operating display, which in addition to more convenient operation also provides a detailed Log history function.

Product variants	Measurement system included	Treatment electrodes
 NEC-5000.1 Treatment of flows with 0.5–1.0 ppm: 900–1.800 m³ service life For private indoor pools up to 40 m³ For private outdoor pools up to 30 m³ 	Cu-test kit Comparator	1 × C21031 (+ optional 1 × C21036) ■ + ■
NEC-5000.2 - Treatment of flows with 0.5–1.0 ppm: 7.500–15.000 m ³ service life - For private pools up to 80 m ³ - For public pools up to 50 m ³	Cu-test kit Comparator	1 × C21035 (+ optional 1 × C21036) + ■
 NEC-5000.4 Treatment of flows with 0.5 – 1.0 ppm: 15.000 – 30.000 m³ service life For private pools up to 160 m³ For public pools up to 100 m³ 	Cu-test kit Comparator	1 × C90009 (+ optional 1 × C21036)
 NEC-5000.5 Treatment of flows with 0.5–1.0 ppm: 30.000–60.000 m³ service life For private pools up to 320 m³ For public pools up to 250 m³ 	Cu-test kit Comparator	2 × C90009 (+ optional 1 × C21036)

Technical data Control unit

- Voltage supply 110–230 V switchable 50/60 Hz; contact rating filter pump max. 1.1 kW, can be replaced by optional external contactor
- Electrode current 1–7 A adjustable for the primary electrode(s) and 0.25–2.5 A for the optional auxiliary electrode (in 0.25 A steps); with max. 15 V output voltage
- 3. Power consumption max. 370 Watts
- 4. Dimensions (W \times H \times D) 335 \times 265 \times 150 mm
- 5. Up to 3 programmable switching times per day
- Flow control by automatic filter-backwash control unit, paddle-wheel flow monitor or magnetic-inductive flow monitor for volume flow-dependant water treatment (each optionally available)
- 7. Heating control adjustable to 40 °C
- 8. IP protection class 54



The next-generation model replacing our successful NEC-7000 control unit offers the same basic functions: operation of 2 primary electrodes and an additional optional electrode, controlled by a second regulator circuit, including control of the pool water temperature via a heat exchanger. At the same time the completely redesigned control unit offers the same professional functions as its sister models NEC-5000 and NEC-5010: ampere stabilized operation with combinable time and flow rate parameters, including volume flow-dependent electrolysis depending on the flow monitor installed.

The control unit has an optional touch screen operating display, which in addition to more convenient operation also provides a detailed Log history function.

Product variants	Measurement system included	Treatment electrodes
 NEC-5070.1 Treatment of flows with 0.5–1.0 ppm: 900–1.800 m³ service life For private indoor pools up to 40 m³ For private outdoor pools up to 30 m³ 	Cu-test kit Comparator	1 × C21031 (+ optional 1 × C21036) ■ + ■
 NEC-5070.2 Treatment of flows with 0.5 – 1.0 ppm: 7.500 – 15.000 m³ service life For private pools up to 80 m³ For public pools up to 50 m³ 	Cu-test kit Comparator	1 × C21035 (+ optional 1 × C21036) + ■
 NEC-5070.4 Treatment of flows with 0.5–1.0 ppm: 15.000–30.000 m³ service life For private pools up to 160 m³ Für öffentliches Bad bis 100 m³ 	Cu-test kit Comparator	1 × C90009 (+ optional 1 × C21036) + ■
 NEC-5070.5 Treatment of flows with 0.5–1.0 ppm: 30.000–60.000 m³ service life For private pools up to 320 m³ For public pools up to 250 m³ 	Cu-test kit Comparator	2×C90009 (+ optional 1×C21036)

Technical data Control unit

- Voltage supply 110–230 V switchable 50/60 Hz; contact rating filter pump max.1.1 kW, can be replaced by optional external contactor
- 2. Electrode current 1–7 A adjustable; with max. 15 V output voltage
- 3. Power consumption max. 370 Watts
- 4. Dimensions (W \times H \times D) 335 \times 265 \times 150 mm
- 5. Up to 3 programmable switching times per day
- 6. Flow control by automatic filter-backwash control unit, paddle-wheel flow monitor or magnetic-inductive flow monitor for volume flow-dependant water treatment (each optionally available)
- 7. IP protection class 54



The completely newly developed next-generation model replacing the successful NEC-1000 control unit was designed as the basic model for the 5000 series and meets the same basic requirements for a wide variety of applications like its sister models NEC-5070 and NEC-5000: ampere stabilized operation with combinable time and flow rate parameters, including volume flow-dependent electrolysis depending on the flow monitor installed.

The control unit has an optional touch screen operating display, which in addition to more convenient operation also provides a detailed Log history function.

Measurement system included	Treatment electrodes
Cu-test kit Comparator	1 × C21031
Cu-test kit Comparator	1 × C21035
Cu-test kit Comparator	1 × C90009
Cu-test kit Comparator	2×C90009
	Measurement system included Cu-test kit Comparator Cu-test kit Comparator Cu-test kit Comparator Cu-test kit Comparator

Test kits



Cu-test kit Comparator

Manual measurement case for rapid determination of copper levels by a colour comparison test.

Cu-test kit photometer

Manual measurement case for rapid determination of copper levels by a photometric measurement instrument.

Ag-test kit

Manual measurement case for rapid determination of silver levels by a colour comparison test.

iOn Testline

Fully automatic, rapid online determination of copper levels at adjustable time intervals by an integrated measurement instrument. The values shown on the display can be transmitted to control units of the NEC-5000 and NEC-8000 types for automatic adjustment to a preset Cu level. For NECON control units with Internet connection all values can be checked remotely, including data records.

Dimensions (control unit) $W \times H \times D$: 195 × 180 × 120 mm



Flow Metering for Volume-dependent Ionization

Proportional control

NECON controllers can be set to work with flow meters sending pulses, i.e. ON-OFF-switching of either the ground or the voltage signal that are sent by the flow meter.

The NECON-supplied NECflux flow meter includes an external power supply that outputs +24V and is standard set to ON-OFF-switch the voltage signal.

While NECflux measures flows by sending up to 240 pulses per second, Necon controllers allow to define any pulse value up to 1000 Hz at which target electrode performance (amperage) will be automatically set to system-supported maximum (cf. system specifications). In the range below the preset max Hertz value, target amperage is automatically preset up and down in incremental steps (cf. system manual).

NECflux

The NECflux flow meter includes a programmable sensor component and a fitting which can be ordered in different versions for DN06 to DN400 pipes. For standard available sizes cf. table on next page, details for other pipe sizes and flows are available upon request.

Sensor specifications:

- for neutral and slightly aggressive fluids with a conductivity of more than 20 μS/cm
- stainless steel sensor and fitting suitable for applications with higher pressures (PN16) and higher temperatures (150°C)
- protected against reversed DC polarity, 24V powered by external power supply
- Accuracy ±3.5% (standard K-factor; after teach-in
- $\pm 0.5\%$ at the teach flow rate value)
- Clean in place -compliant
- Reaction times: undelayed, 5 s, or 14 s presettable
- predefined measuring ranges: 0 to 2, to 5 or (standard) to 10 m/s flow velocity presettable





Fitting dimensions

Internal thread process connection	DN	Р	Α	D	L
G, NPT or Rc	[mm]	[mm]	[mm]	[inch]	[mm]
in stainless steel (316L - 1.4404)	20	77.8	94.0	G 3/4 NPT 3/4 Rc 3/4	17.0 18.3 16.3
	25	78.0	104.0	G 1 NPT 1 Rc 1	23.5 18.0 18.0
	32	81.6	119.0	G 1 1/4 NPT 1 1/4 Rc 1 1/4	23.5 21.0 21.0
	40	85.4	129.0	G 1 1/2 NPT 1 1/2 Rc 1 1/2	23.5 20.0 19.0
	50	91.5	148.5	G 2 NPT 2 Rc 2	27.5 24.0 24.0

Measuring ranges

Measuring range in liters / minute	ONSOCIO	Chest Colden	ONe200	ONGOLO ISAN	ONSOLO ILZEN	Outbut Dulges	ACOD.
Qmin	5.7	8.2	12.4	19.2	32.5	4.8 Hz	
Qmax @sensor preset 10m/s	285.1	410.4	622.1	961.9	1627.2	240 Hz	
Qmax @sensor preset 5m/s	142.6	205.2	311.0	481.0	813.6	240 Hz	

Measuring range in cubic meters / hour	ONSOLO	Collog Collog	Chester (11)	DN4010 Lon	DNSO CO	Outbut Dulges	Propo
Qmin	0.3	0.5	0.7	1.2	2.0	4.8 Hz	
Qmax @sensor preset 10m/s	17.1	24.6	37.3	57.7	97.6	240 Hz	
Qmax @sensor preset 5m/s	8.6	12.3	18.7	28.9	48.8	240 Hz	

Approvals, Standards

– F<u>DA</u>

- EMC EN 50081-1, EN 61000-6-2
- Low voltage (LVD) EN 61010-1
- Pressure CE directive 97/23, §3, article 3
- Vibration EN 60068-2-6
- Shock EN 60068-2-27

NECON agencies worldwide



About NECON

NECON GmbH was founded in 1981 by Dr.h.c. Klaus Gebhardt as an engineering company for automation technology and metal construction and is now a global player in the field of chemical-free water purification.

With the aim of developing a safe, economic, human and environmentally friendly alternative to chemical water purification systems, NECON GmbH has collaborated intensively for many years with well-known experts, laboratories and institutes. The "NECON system" redefines a century-old principle of electrophysical water purification that has now been patented and developed to the series production level.

A broad product range is available for private and public operators for a wide variety of applications.



Distributed by:

NECON GmbH Zeppelinstraße 2 79331 Teningen Germany

Fon +49 (0) 7641 9123-40 Fax +49 (0) 7641 9123-45

www.necon.de necon@necon.de