

Abnahmeprotokoll Wartung  
Maintenance acceptance certificate

**OSEC-NXT 12-60 kg/d**

	Date: Performance date
Project/location: e.g. Wet fun pool, Anytown	Sales order number
Capacity: e.g. OSEC-NXT 60kg/d	Serial No.:
Name: Service technician	Company: Service technician
Name: Customer:	Company: Customer:

**Important: The following tools and/or meters are required for maintenance of the system:**

- Thermometer
- Multimeter
- Clip-on ammeter
- Stop watch
- Water hardness test kit
- Flow-rate measuring device (e.g. Kestrel 1000)
- Salinometer (density range 1.18 – 1.24 g/cm<sup>3</sup>)
- Titration kit for chlorine

**1. Maintenance work to be performed while the system is running**

Operation (for details, see OM)	Data	Comment
<b>1.1. System in general</b>		
<b>Condition of the system</b> First overall impression of the appearance of the system in terms of care and maintenance.	<ul style="list-style-type: none"> <li>·· Clean and well cared for</li> <li>·· In working order</li> </ul>	
<b>Corrosion of the system frame</b> Is any corrosion visible on metal parts of the system or the system frame? If so, eliminate the cause.	<ul style="list-style-type: none"> <li>·· NO (OK)</li> <li>·· YES (Please comment)</li> </ul>	
<b>System signage</b> Are all of the signs as specified in the operating manual fitted to the outside of the door to the room where the system is located?	<ul style="list-style-type: none"> <li>·· YES (OK)</li> <li>·· NO (Please comment)</li> </ul>	
<b>Operating journal</b> Is an operating journal kept regularly and comprehensively in accordance with section 10 of the operating manual?	<ul style="list-style-type: none"> <li>·· YES (OK)</li> <li>·· NO (Please comment)</li> </ul>	
<b>Temperature at the exact location where the system is installed</b> Exact measurement in °C when the system is running (after operating for at least 15 min.)	_____ °C <ul style="list-style-type: none"> <li>·· 10-30°C (OK)</li> </ul>	
<b>Outdoor temperature</b> Exact measurement taken in the shade, in °C.	_____ °C	

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<b>1.2. PLC controller</b>		
<b>Recording the operating data</b> Read out the number of operating hours and enter in both the system's operating journal and the comment column on the right.	.. Operating hours entered in the operating journal .. Operating hours entered under comments (right-hand column)	Preparation total: _____h Average preparation: _____h Preparation count: _____ Preparation total: _____h
<b>Current error messages</b> If there are any current error messages, enter them in the comment column on the right or overleaf.	.. NO (OK) .. YES (Enter under comments)	
<b>Error messages in the error message log</b> Read out the last 20 error messages from the error message log and, if necessary, make a note of the error number and the date/time the occurred overleaf.	.. YES (OK) .. NO (Please comment)	
<b>1.3. Water supply</b>		
<b>Inlet temperature</b> Measure the inlet temperature of the operating water in °C.	_____ °C .. 8-20°C (OK)	
<b>Operating water pressure</b> Operating water pressure when taken from the water pipe is >1000 l/h (e.g. when the cooling water valve or the valve for refilling the salt dissolving tank etc. are opened).	_____ bar .. ≥ 3.7 bar (OK)	
<b>Operating water pressure reducing valve</b> Set the operating water pressure reducing valve to 3.5 bar when taking a sample from the pipe at >1000 l/h.	.. YES (OK) .. NO (Please comment)	
<b>Electrolysis water pressure reducing valve</b> Set the electrolysis water pressure reducing valve to 0.8 bar when taking a sample from the pipe at >1000 l/h.	.. YES (OK) .. NO (Please comment)	
<b>Check electrolysis water flow rate</b> Set the electrolysis water flow rate to the value specified for the system in use.	.. YES (OK, enter reading under comments) .. NO (Please comment)	_____ l/h
<b>Calibrate the flow meter</b> Calibrate the electrolysis water flow meter via the service menu.	.. YES (OK, enter reading under comments) .. NO (Please comment)	_____ l/h
<b>Pipe leaks</b> Are all of the pipes free of leaks? Remove any dried efflorescence completely and clean the affected area.	.. YES (OK) .. NO (Please comment) .. Dried efflorescence removed	
<b>Chlorine separator leaks</b> Is the chlorine separator free of leaks? Remove any dried efflorescence completely and clean the affected area.	.. YES (OK) .. NO (Please comment) .. Dried efflorescence removed	
<b>Reactor leaks</b> Is the reactor free of leaks? Remove any dried efflorescence completely and clean the affected area.	.. YES (OK) .. NO (Please comment) .. Dried efflorescence removed	
<b>1.4. Hydrogen vent pipe</b>		
<b>Signage</b> Is the vent opening of the hydrogen vent pipe fitted with all of the signs specified in the operating manual?	.. YES (OK) .. NO (Please comment)	

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<b>Fan</b> Is the fan free of dirt and contamination, e.g. at the inlet, and with no abnormal running noise?	.. YES (OK) .. NO (Comment)	
<b>1.5. Electrolysis cell(s)</b>		
<b>Check for leaks</b> Is (or are) the electrolysis cell(s) free of leaks? Remove any dried efflorescence completely and clean the affected area.	.. YES (OK) .. NO (Please comment)	
<b>Retighten flange screws</b> Retighten all 10 flange screws on all cells with a torque wrench. Torque <b>50 Nm</b> .	.. Flange screws retightened with an applied torque of 50 Nm.	
<b>Cell voltage</b> Measure the cell voltage of each individual cell – if the readings deviate markedly from each other or if any of the readings exceeds 19 V consult the manufacturer.	.. Cell voltage OK (OK) .. > 19 V (Please comment)	Cell 1: _____ V   Cell 2: _____ V Cell 3: _____ V   Cell 4: _____ V Cell 5: _____ V
<b>Cell current</b> Measure the cell current using a clip-on ammeter.	.. Reading entered under comments (right-hand column)	_____ A
<b>1.6. Electrolysis process</b>		
<b>Brine pump runtime</b> Record the brine pump runtime over a 5 min. period while preparation is running. The runtime should be < 70 %	.. Runtime < 70 % (OK) .. > 70 % (Please comment)	
<b>Product concentration</b> Take a sample of the sodium hypochlorite straight from the sodium hypochlorite pipe and titrate.	.. ≥ 20g/l (OK) .. < 20g/l (Please comment)	
<b>Product temperature</b> Take a sample of the sodium hypochlorite straight from the sodium hypochlorite pipe and measure its temperature.	.. < 35°C (OK) .. > 35°C (Please comment)	
<b>1.7. Salt dissolving tank</b>		
<b>Temperature at the exact location where the system is installed</b> Exact measurement in °C.	.. Same as that of the system or colder (OK) .. Higher than that of the system (Consult the manufacturer)	_____ °C
<b>Condition of the salt dissolving tank</b> What is your first overall impression of the appearance of the salt dissolving tank in terms of care and maintenance?	.. Clean and well cared for .. In working order	
<b>Visual inspection of the refilling device</b> Is the refilling device free of salt residues, dirt and contamination? Does the float on the level switch have freedom of movement?	.. YES (OK) .. NO (Please comment)	
<b>Brine</b> Is the brine itself and the rim of the container free of dirt and contamination?	.. YES (OK) .. NO (Please comment)	
<b>Salt level</b> Is the level of the undissolved salt in the salt dissolving tank > 40 cm?	.. YES (OK) .. NO (Please comment)	
<b>Salt quality</b> Is OSEC-Salin used for the system? If not, please specify the type of salt used.	.. OSEC-Salin (OK) .. NO (Specify the type of salt comment)	

Operation (for details, see OM)	Data	Comment
<b>1.8. Storage tank</b>		
<b>Condition of the storage tank</b> What is your first overall impression of the appearance of the storage tank in terms of care and maintenance?	.. Clean and well cared for .. In working order	
<b>Leak test</b> Is the storage tank free of leaks?	.. YES (OK) .. NO (Please comment)	
<b>Tank test (only for tanks with compliance plates)</b> Has the operator been informed of the mandatory biennial inspection by a certified inspection agency (e.g. SKZ Würzburg)?	.. YES (OK) .. NO (Please comment)	

## 2. Maintenance work to be carried out with the system turned off

<b>2.1. Water softener</b>		
<b>Operating water hardness (inlet water)</b> Make a note of the water hardness to date, displayed under data in the service menu (right-hand column). Measure the water hardness to check the reading and enter the new value in the service menu if necessary.	.. Value in service menu noted .. Water hardness checked .. Reading entered in service menu	Value displayed in service menu: _____°dH Reading taken: _____°dH
<b>Soft water hardness (after softener)</b> Measure the water hardness. Is the water hardness <0.25°dH?	.. YES, value < 0.25°dH (OK) .. NO (Please comment)	
<b>2.2. Hydrogen vent pipe</b>		
<b>Hydrogen vent pipe</b> Does the hydrogen vent pipe still comply with the installation specifications along its entire length and it is undamaged and clean?	.. YES (OK) .. NO (Please comment)	
<b>Hydrogen vent pipe opening</b> Is the vent opening protected from rain entering it by way of a hood/arch and it is undamaged and clean?	.. YES (OK) .. NO (Please comment)	
<b>Air flow monitor installation</b> Does the air flow monitor still comply with the installation specifications?	.. YES (OK) .. NO (Please comment)	
<b>Air flow monitor function</b> Has the air flow monitor been tested to ensure it is functioning correctly?	.. YES (OK) .. NO (Please comment)	
<b>Air flow measurement</b> Is the air flow rate measured by the air flow monitor at the vent opening > 3.5 m/s?	.. YES (OK) .. NO (Please comment)	
<b>2.3. Salt dissolving tank</b>		
<b>Refilling device level switch</b> Is the solution water feed level switch in the salt dissolving tank functioning correctly?	.. YES (OK) .. NO (Please comment)	
<b>2.4. Electrolysis cell(s)</b>		
<b>Check the cell connections</b> Have the cell connections been checked to ensure they are firmly seated and checked for corrosion?	.. YES (OK) .. NO (Please comment)	

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<b>Rinse the anode chamber</b> Has the anode chamber been drained and rinsed for approx. 30 min?	.. YES (OK) .. NO (Please comment)	
<b>Rinse the cathode chamber</b> Has the cathode chamber been drained and rinsed for approx. 30 min?	.. YES (OK) .. NO (Please comment)	

### 3. Maintenance work to be performed while the system is off

#### 3.1. Maintenance work to be performed annually – not at 2 or 5 year intervals

<b>Operating water filter</b> Has the operating water filter on the operating water pressure reducing valve been cleaned?	.. YES (OK) .. NO (Please comment)	
<b>Sieve tube W3T169064 (2x)</b> Have both the sieve tube in the brine inlet filter <u>and</u> in the electrolysis water filter been replaced?	.. YES (OK) .. NO (Please comment)	
<b>O-ring W3T173010 (4x)</b> Have the o-rings in the reactor outlet (3x) and on the screw-in fitting for the level sensor at the top of the chlorine separator been replaced?	.. YES (OK) .. NO (Please comment)	
<b>O-ring W3T172718 (5x)</b> Have the o-rings in the cell cathode inlets (electrolysis water) been replaced?	.. YES (OK) .. NO (Please comment)	
<b>Spiral hose W2T505082 (2m)</b> Has the spiral hose between the blow-out head and the permanently installed hydrogen vent pipe been replaced?	.. YES (OK) .. NO (Please comment)	
<b>O-ring W3T168863 (1x)</b> Has the green o-ring on the titanium level switch in the chlorine separator been replaced?	.. YES (OK) .. NO (Please comment)	
<b>Float W3T168367 (1x)</b> Has the level switch float in the chlorine separator been replaced?	.. YES (OK) .. NO (Please comment)	
<b>Securing ring W3T168368 (1x)</b> Has the level switch securing ring in the chlorine separator been replaced?	.. YES (OK) .. NO (Please comment)	
<b>O-ring W3T164866 (1x)</b> Has the spiral hose between the blow-out head and the reactor been replaced?	.. YES (OK) .. NO (Please comment)	
<b>O-ring W2T507273 (2x)</b> Have the o-rings on the screw connections before and after the ball valve of the cathode inlet been replaced?	.. YES (OK) .. NO (Please comment)	
<b>Activated carbon mixture W3T161729 (2500ml)</b> Has the activated carbon mixture in the activated carbon filter on the storage tank been replaced?	.. YES (OK) .. NO (Please comment)	
<b>Check valve W3T164321</b> Has the check valve at the upper end of the brine flowmeter been changed?	.. YES (OK) .. NO (Please comment)	
<b>Cleaning the water softener injector</b> Has the injector for adding salt to the water softener been cleaned?	.. YES (OK) .. NO (Please comment)	

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<b>3.2. Maintenance work to be performed after 2 years of operation – not at 5 year intervals</b>		
<b>Operating water filter</b> Has the operating water filter on the operating water pressure reducing valve been cleaned?	.. YES (OK) .. NO (Please comment)	
<b>Sieve tube W3T169064 (2x)</b> Have both the sieve tube in the brine inlet filter <u>and</u> in the electrolysis water filter been replaced?	.. YES (OK) .. NO (Please comment)	
<b>O-ring W3T173010 (5x)</b> Have the o-rings in the reactor outlet (3x), on the screw-in fitting for the level sensor at the top of the chlorine separator <u>and</u> in the inlet of the storage tank been replaced?	.. YES (OK) .. NO (Please comment)	
<b>O-ring W3T172718 (5x)</b> Have the o-rings in the cell cathode inlets (electrolysis water) been replaced?	.. YES (OK) .. NO (Please comment)	
<b>Flat gasket W3T172958 (2)</b> Have the flat gaskets on the screw connections before and after the electrolysis water pressure reducing valve been replaced?	.. YES (OK) .. NO (Please comment)	
<b>Flat gasket W3T172988 (2)</b> Have the flat gaskets on the screw connections before and after the operating water pressure reducing valve been replaced?	.. YES (OK) .. NO (Please comment)	
<b>Spiral hose W2T505082 (2m)</b> Has the spiral hose between the blow-out head and the permanently installed hydrogen vent pipe been replaced?	.. YES (OK) .. NO (Please comment)	
<b>O-ring W3T168863 (1x)</b> Has the green o-ring on the titanium level switch in the chlorine separator been replaced?	.. YES (OK) .. NO (Please comment)	
<b>Float W3T168367 (1x)</b> Has the level switch float in the chlorine separator been replaced?	.. YES (OK) .. NO (Please comment)	
<b>Securing ring W3T168368 (1x)</b> Has the level switch securing ring in the chlorine separator been replaced?	.. YES (OK) .. NO (Please comment)	
<b>O-ring W3T164866 (1x)</b> Has the spiral hose between the blow-out head and the reactor been replaced?	.. YES (OK) .. NO (Please comment)	
<b>O-ring W3T172724 (18x)</b> Have all of the o-rings for the D 20 screw connections in the PVC pipes been replaced? (See also the drawing in the OM)	.. YES (OK) .. NO (Please comment)	
<b>O-Ring W3T172822 (4x)</b> Have the o-rings before and after the brine rotameter and before and after the salt dissolving tank filling flow control valve been replaced?	.. YES (OK) .. NO (Please comment)	
<b>O-ring W3T169068 (5x)</b> Have the o-rings on the inlets and outlets (2 of each) on the softener bottle and on the discharge connection to the water softener been replaced?	.. YES (OK) .. NO (Please comment)	
<b>Flow control valve W3T164406</b> Has the flow control valve in the filling line to the salt dissolving tank been replaced?	.. YES (OK) .. NO (Please comment)	
<b>Screw-in fitting W2T504094 (1x)</b> Has the lockable PVDF screw-in fitting at the bottom of the chlorine separator (to which the brine inlet is connected) been replaced?	.. YES (OK) .. NO (Please comment)	
<b>Spiral hose W3T164726 (2m)</b> Has the spiral hose between the fan and the blow-out head been replaced?	.. YES (OK) .. NO (Please comment)	

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<b>O-ring W2T507273 (2x)</b> Have the o-rings on the screw connections before and after the ball valve of the cathode inlet been replaced?	.. YES (OK) .. NO (Please comment)	
<b>Activated carbon mixture W3T161729 (2500 ml)</b> Has the activated carbon mixture in the activated carbon filter on the storage tank been replaced?	.. YES (OK) .. NO (Please comment)	
<b>O-ring W2T506945 (2x)</b> Have the o-rings between the top of the reactor and the spacer plate as well as between the spacer plate and the bottom of the reactor been replaced?	.. YES (OK) .. NO (Please comment)	
<b>O-ring W3T172861 (4x)</b> Have the o-rings in the cooling water inlets and outlets been replaced?	.. YES (OK) .. NO (Please comment)	
<b>Check valve W3T164321</b> Has the check valve at the upper end of the brine flowmeter been changed?	.. YES (OK) .. NO (Please comment)	
<b>Cleaning the water softener injector</b> Has the injector for adding salt to the water softener been cleaned?	.. YES (OK) .. NO (Please comment)	
<b>Brine pump (1x)</b> Has brine pump maintenance been performed using pump head service set W3T161025 (NXT-12), W3T161026 (NXT-24) or W3T161027 (NXT-36-60)?	.. YES (OK) Type: W3T16102___ .. NO (Please comment)	
<b>Rectifier fan</b> Have/ hast he rectifier fan(s) been changed?  OSEC-NXT 12: W3T364541 OSEC-NXT 24; 36: W3T364542 (2x) OSEC-NXT 48; 60: W3T364543 (2x)	.. YES (OK) .. NO (Please comment)	
<b>3.3. Maintenance work to be performed after 5 years of operation</b>		
<b>Operating water filter</b> Has the operating water filter on the operating water pressure reducing valve been cleaned?	.. YES (OK) .. NO (Please comment)	
<b>Sieve tube W3T169064 (2x)</b> Have both the sieve tube in the brine inlet filter <u>and</u> in the electrolysis water filter been replaced?	.. YES (OK) .. NO (Please comment)	
<b>O-ring W3T173010 (4x)</b> Have the o-rings in the reactor drain (3x) and on the screw-in fitting for the level sensor at the top of the chlorine separator been replaced?	.. YES (OK) .. NO (Please comment)	
<b>O-ring W3T172718 (5x)</b> Have the o-rings in the cell cathode inlets (electrolysis water) been replaced?	.. YES (OK) .. NO (Please comment)	
<b>Spiral hose W2T505082 (2m)</b> Has the spiral hose between the blow-out head and the permanently installed hydrogen vent pipe been replaced?	.. YES (OK) .. NO (Please comment)	
<b>O-ring W3T168863 (1x)</b> Has the green o-ring on the titanium level switch in the chlorine separator been replaced?	.. YES (OK) .. NO (Please comment)	
<b>O-ring W3T164866 (1x)</b> Has the spiral hose between the blow-out head and the reactor been replaced?	.. YES (OK) .. NO (Please comment)	
<b>O-ring W2T507273 (2x)</b> Have the o-rings on the screw connections before and after the ball valve of the cathode inlet been replaced?	.. YES (OK) .. NO (Please comment)	
<b>Activated carbon mixture W3T161729 (2500 ml)</b> Has the activated carbon mixture in the activated carbon filter on the storage tank been replaced?	.. YES (OK) .. NO (Please comment)	

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<b>Level switch W3T172135 (1x)</b> Has the titanium level switch in the chlorine separator been replaced?	<input type="checkbox"/> YES (OK) <input type="checkbox"/> NO (Please comment)	
<b>Air flow monitor W3T162371 (1x)</b> Has the air flow monitor at the end of the hydrogen vent pipe been replaced?	<input type="checkbox"/> YES (OK) <input type="checkbox"/> NO (Please comment)	
<b>Cation water softener W3T160935</b> Has the whole cation water softener been replaced?	<input type="checkbox"/> YES (OK) <input type="checkbox"/> NO (Please comment)	
<b>Replacement sieve W3T168512 (1x)</b> Has the sieve in the operating water pressure reducing valve been replaced?	<input type="checkbox"/> YES (OK) <input type="checkbox"/> NO (Please comment)	
<b>Replacement sieve W3T169348 (1x)</b> Has the sieve in the electrolysis water pressure reducing valve been replaced?	<input type="checkbox"/> YES (OK) <input type="checkbox"/> NO (Please comment)	
<b>Flow-through solenoid valve W3T172370</b> Has the electrolysis water flow-through solenoid valve been replaced?	<input type="checkbox"/> YES (OK) <input type="checkbox"/> NO (Please comment)	
<b>Low pressure fan W3T161074 (1x)</b> Has the low pressure fan for hydrogen degassing been replaced?	<input type="checkbox"/> YES (OK) <input type="checkbox"/> NO (Please comment)	
<b>Check valve W3T164321</b> Has the check valve at the upper end of the brine flowmeter been changed?	<input type="checkbox"/> YES (OK) <input type="checkbox"/> NO (Please comment)	
<b>Cleaning the water softener injector</b> Has the injector for adding salt to the water softener been cleaned?	<input type="checkbox"/> YES (OK) <input type="checkbox"/> NO (Please comment)	
<b>Hose connector PP W2T504091 (1-5x)</b> Have the hose connectors in the upper reactor part been replaced (Count depends on unit size)	<input type="checkbox"/> YES (OK) <input type="checkbox"/> NO (Please comment)	

**Date:** \_\_\_\_\_

**Service technician:** \_\_\_\_\_  
Name

\_\_\_\_\_  
Signature

**Customer:** \_\_\_\_\_  
Name

\_\_\_\_\_  
Signature