

Application

The Oxynaut can be used for the refitting of existing multi-chamber sumps or for new fully biological small-scale clarification plants for 4 to 12 residents. The unit is completely pre-assembled and can be installed inside the tank with a few easy steps. Its modular construction makes for easy handling and therefore offers great advantages for maintenance.

The Oxynaut is based on the proven SBR technique. From the large-scale pre-treatment stage (in accordance with the DIN 4261 standard), the pre-treated wastewater is transferred to a buffer chamber and is then fed, time-dependently, via a system dosing pump into the SBR chamber of the plant.

At this stage, a mounted submersible aerator inserts ultra-fine oxygen bubbles into the pre-treated wastewater. The aerator is switched on - in intervals - by an automatic control unit. The special feature of the Oxynaut is the flexibility of its submersible aerator.

When idle, the aerator is located close to the bottom of the tank. When switched on, the aerator moves to the surface and initially stirs up the flakes of activated sludge throughout the entire tank. This, combined with complete aeration throughout the entire tank, results in excellent mixing conditions and an oxygen-rich environment. This creates the ideal conditions for the clarification process.

Due to its flexibility the aerator always adjusts to the water level inside the SBR chamber even when it fluctuates. Consequently, the Oxynaut always meets the requirements for optimal oxygen insertion and the highest possible, consistent clarification performance.

Each Oxynaut unit is adapted to the specific conditions of the user. The unit can be adjusted for the user in just a few steps. A user-friendly control unit controls the entire process and monitors all components. Due to the modular design and the open principle of the control unit, the Oxynaut can be adjusted for future requirements at any time. All components have been specifically developed for economical operation.

Thanks to the integrated "energy saving mode" the control unit recognises low inflow when the user is not present and adapts automatically to the changed conditions.

Performance data

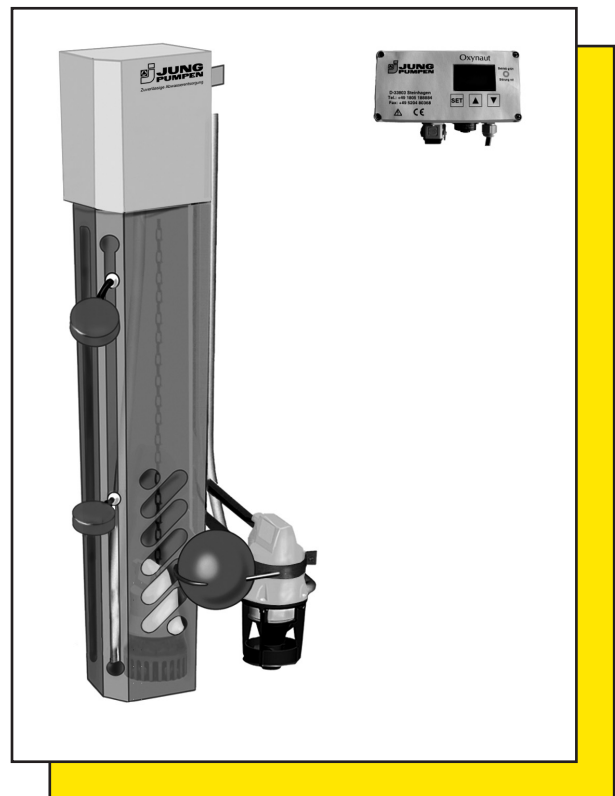
$BSB_5 < 15 \text{ mg/l}$

$CSB < 75 \text{ mg/l}$

$NH_4\text{-N} < 10 \text{ mg/l}$

N_{total} : concentrations up to 25 mg/l, according to DIBt (German Institute for Structural Engineering).

(Proven by a 1 year test phase at the university of Hanover)



- ▶ Ready-to-connect
- ▶ Rated for 500 l pre-treatment volume per resident
- ▶ Real buffer chamber for wastewater batches
- ▶ Flexible submersible aerator
- ▶ Fully automatic control unit and monitoring
- ▶ Individual setting
- ▶ Easy to install
- ▶ Sampling bottles included in the scope of supply
- ▶ Approved by the German Institute for Structural Engineering Z-55.3-61
- ▶ Battery-operated power failure monitor





Technical data

Type	Height x Width x Depth (max.)	approx. weight	Code No.
Oxynaut 4 up to 4 res.	1370 x 371 x 794 mm	36 kg	9361
Oxynaut 6 up to 6 res.	1370 x 371 x 794 mm	36 kg	9362
Oxynaut 8 up to 8 res.	1370 x 371 x 794 mm	36 kg	9363
Oxynaut 10 up to 10 res.	1370 x 371 x 794 mm	36 kg	9364
Oxynaut 12 up to 12 res.	1370 x 371 x 794 mm	36 kg	9365

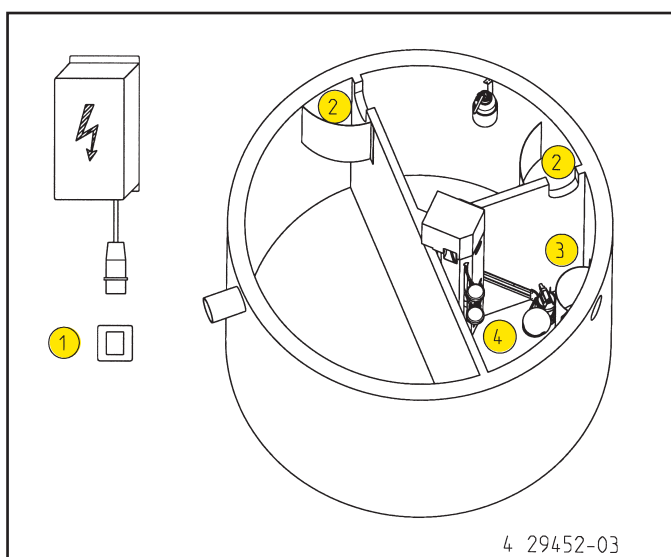
Electrical data

Type	Type of current	Voltage Volt	Motor rating P1 (W)	Max. Current Amp.	Cable (0,75 m) control unit-plug	plug
Oxynaut 4	1-phase	1N~230	350	1,4	H03VV-F-3Gx0,75	CEE2+PE/16A
Oxynaut 6	1-phase	1N~230	350	1,4	H03VV-F-3Gx0,75	CEE2+PE/16A
Oxynaut 8	1-phase	1N~230	350	1,4	H03VV-F-3Gx0,75	CEE2+PE/16A
Oxynaut 10	1-phase	1N~230	350	1,4	H03VV-F-3Gx0,75	CEE2+PE/16A
Oxynaut 12	1-phase	1N~230	350	1,4	H03VV-F-3Gx0,75	CEE2+PE/16A

Accessories

	① wall socket CEE 2 + PE 230 V	Code No. 29628
	② Scum baffle quarter-circle with 4 pirot nails	Code No. 29444
	③ Scum baffle semi-circle with 4 pirot nails	Code No. 29445
	④ Submersible ball contact switch with flood alarm with clamping screw	Code No. 29443

Installation example

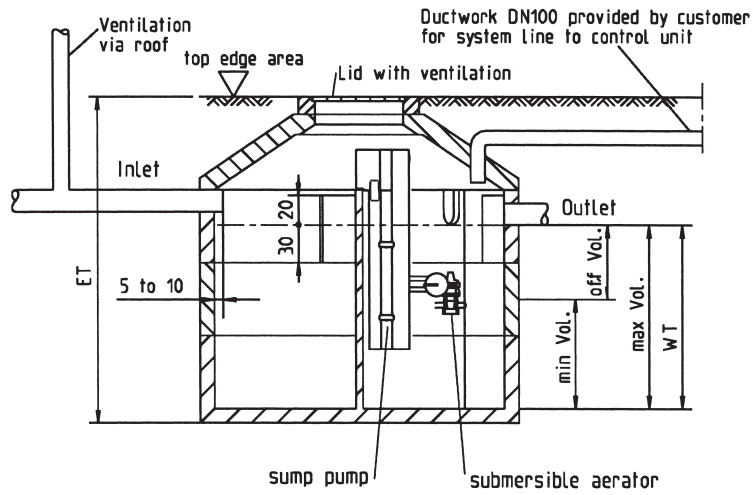


Technical information

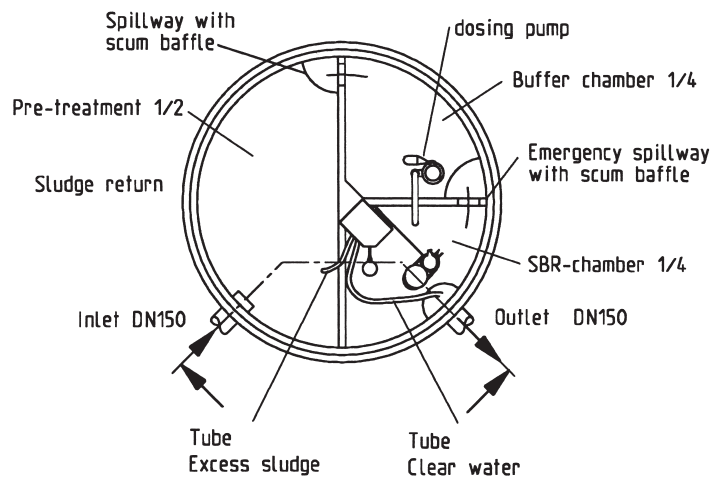
Sampling equipment (included in the supply package) must be installed such that the surveillance authority can take samples. In accordance with the EN 12566 standard, the openings in the partition walls and the outlet have to be secured with immersed filters, e. g. scum baffles (see accessories) to prevent floating sludge from overflowing.

The submersible ball contact switch for the flood alarm alerts, independently of the cycle, in case of unacceptable water levels inside the tank, for example due to backpressure.

One chamber facility
 (Existing multi-chamber pit in accordance with DIN 4261-1)

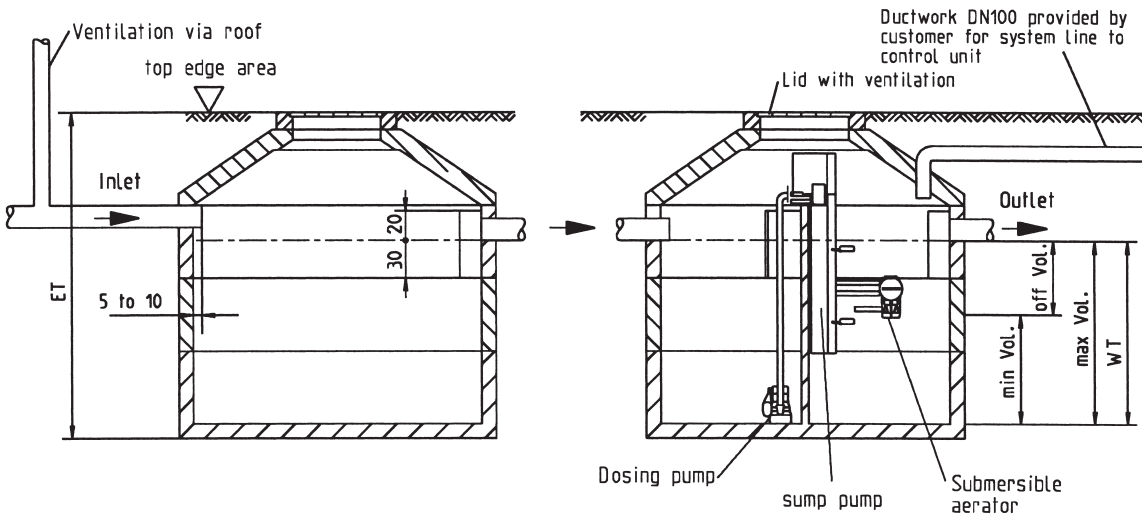


Top view without covering

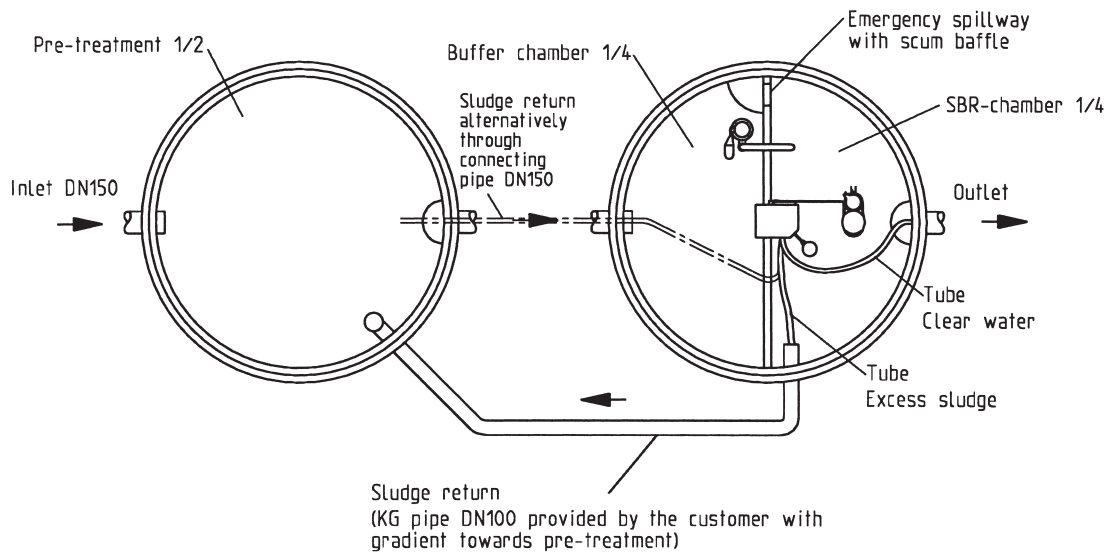


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Two chamber facility
 (Existing multi-chamber pit in accordance with DIN 4261-1)



Top view without covering



4 29451-02

■ Technical data table for clarification plants

Type		Oxynaut 4	Oxynaut 6	Oxynaut 8	Oxynaut 10	Oxynaut 12
No. residents connected	res.	4	6	8	10	12
amount of wastewater	m ³ /d	0,600	0,900	1,200	1,500	1,800
daily dirt load	kgBSB5/d	0,16	0,24	0,32	0,40	0,48
tank						
min. total volume	m ³	4,000	6,000	8,000	10,000	12,000
Pre-treatment						
min. pre-treatment volume	m ³	2,000	3,000	4,000	5,000	6,000
special pre-treatment volume	m ³ /res.	0,500	0,500	0,500	0,500	0,500
Buffer chamber						
required volume	m ³	0,720	1,080	1,440	1,800	2,160
existing volume	m ³	1,000	1,500	2,000	2,500	3,000
Biological clarification phase						
min. volume in SBR chamber	m ³	1,000	1,500	2,000	2,500	3,000
cycle frequency	cycles/d	2	2	2	2	2
cycle duration	h	12	12	12	12	12
reaction phase	h	10,5	10,5	10,5	10,5	10,5
sedimentation/discharging phase	h	1,5	1,5	1,5	1,5	1,5
wastewater volume per cycle	m ³ /cycle	0,33	0,50	0,66	0,83	0,99
% wastewater volume	%	55	55	55	55	55
swap rate	%	33	33	33	33	33
dirt load per cycle	kgBSB5/cycle	0,09	0,13	0,18	0,22	0,26
volume load	kgBSB5 (m ³ xcycle)	0,10	0,10	0,10	0,10	0,10
sludge load	(kg/kgxcycle)	0,025	0,025	0,025	0,025	0,025
excess sludge	m ³ /d	0,012	0,018	0,024	0,030	0,036
Aeration						
oxygen insertion	kg/h	0,18	0,18	0,18	0,18	0,18
required aeration time	h/d	3,8	5,7	7,6	9,5	11,4

Subject to technical changes

■ Min water depth (WT) for pre-treatment [m]

	res.	4	6	8	10	12
1 tank Ø 2,0 m		1,27	1,91	-	-	-
1 tank Ø 2,3 m		1,20	1,44	1,93	2,38	-
1 tank Ø 2,5 m		1,20	1,22	1,63	2,04	2,45
2 tank Ø 2,0 m		1,20	1,20	1,27	1,59	1,91
2 tank Ø 2,3 m		1,20	1,20	1,20	1,22	1,45
2 tank Ø 2,5 m		1,20	1,20	1,20	1,20	1,22

■ Min/Max water depth (min. vol./max. vol.) in SBR-chamber [m]

	res.	4	6	8	10	12
1 tank Ø 2,0 m		0,82 / 1,27	1,23 / 1,91	-	-	-
1 tank Ø 2,3 m		0,88 / 1,20	0,95 / 1,44	1,29 / 1,93	1,93 / 2,38	-
1 tank Ø 2,5 m		0,92 / 1,20	0,97 / 1,20	1,06 / 1,63	1,59 / 2,04	1,91 / 2,45
2 tank Ø 2,0 m		0,98 / 1,20	0,87 / 1,20	0,84 / 1,27	1,05 / 1,59	1,26 / 1,91
2 tank Ø 2,3 m		1,04 / 1,20	0,96 / 1,20	0,88 / 1,20	0,82 / 1,22	0,98 / 1,45
2 tank Ø 2,5 m		1,06 / 1,20	0,99 / 1,20	0,92 / 1,20	0,86 / 1,20	0,79 / 1,22

Technical data

Aerator

TMB 3 submersible aerator: pre-mounted on hinged arm for floating arrangement, insertable for easy maintenance, always optimal immersion depth and aeration, compact, powerful unit for the insertion of extra fine oxygen bubbles into the activated sludge stage of small-scale clarification plants, aerator impeller and aerator tubes optimised for flow, low power consumption during high oxygen insertion for up to 12 inhabitants, high penetration depth, particularly gentle treatment of the flakes of activated sludge, triple sealing through shaft sealing rings, intermediate oil chamber, safe to run dry, motor thermostat for automatic shut-off in case of overload, moisture sealed cable inlet, protection class IP 68, motor insulation class B.

Holder

Robust all-purpose holder made from stainless steel, continuously adjustable brackets for secure attachment to the partition wall of the tank, modular extendable construction for easy and quick installation of single components during installation and maintenance, continuously adjustable submersible switches and sump pump.

Dosing / sump pump

U 3 K Niro (sump pump) or U 3 KS Niro (dosing pump) submersible pumps for transportation of domestic wastewater, proven GID technology, reliable due to large inner passage, gentle delivery of the flakes of activated sludge, completely floodable motor, triple sealing through shaft sealing rings, intermediate oil chamber, safe to run dry, motor thermostat for automatic switch-off in case of excessive load, moisture sealed cable inlet, protection class IP 68, dosing pump with integrated float switch, pumps pre-assembled ready for use.

Control unit

Fully automated computer control unit with monitoring function of all units, open principle with input and programming option for optimal adjustment to individual conditions, parameters easily corrected when conditions change, logging of operating hours, display of operating status and malfunction (optically and acoustically) when message saved. Reduced inflow are automatically recognised and the process is adjusted (energy saving mode). Mistake-proof, simple line connectors via multi-pole plugs, 230 V operating voltage, wired ready for connection. Plastic casing, dimensions 160 x 80 x 90 mm

Power failure monitor

Power failure detector in connector shell inserted into a socket outlet. The socket must be on the same electrical circuit as the Oxynaut, but may be located separately. When a power failure lasts longer than 4 seconds, an intermittent alarm will sound which can be accepted by pressing a button. Under normal operating conditions the battery is recharged continuously. Additionally an external alarm can be connected to the potential-free contact. If this alarm is fed via another circuit, other possibilities are available for monitoring.

Materials

Aerator, holder, dosing pump, sump pump and valves made from wastewater-resistant, proven materials: stainless steel, plastic and elastomers.

Supply

Installation kit pre-assembled ready-to-connect for an existing three-chamber pit or for the installation in a new plant, dosing pump with pre-mounted pressure line, 20 m line between control unit and Oxynaut (30 m optional available), 0.75 mains cable (if desired with level transmitter for flood alarm), installation manual, operation manual, maintenance manual. 2 l sampling bottle with holder.

Dimensions (mm) SBR unit Oxynaut

