



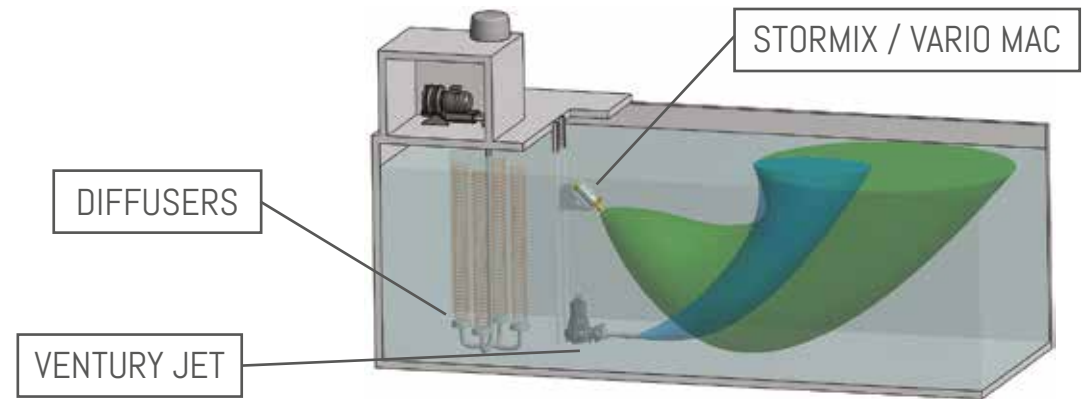
# OXYGENATING WATER TECHNOLOGY

ACQUAECOREMEDY

# TECHNOLOGY COMPARISON








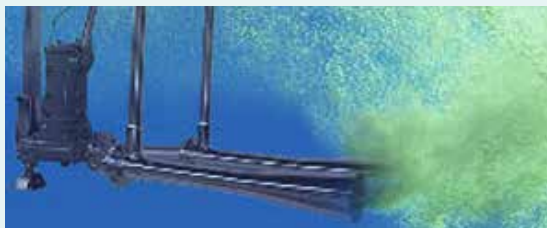
There are several oxygenation solution in the water treatment plants, but the most commonly used are blowers with diffusers or venturi-jet, depending on the size and kind of treatment.

In the table below, we compare these traditional technologies with the innovative Stormix submersible aerators that offer both process and maintenance benefits as well as initial investment.



	STORMIX / VARIO MAC	BLOWERS + DIFFUSERS	VENTURI JET
DISSOLUTION EFFICIENCY	<p>UP TO 50%</p> <ul style="list-style-type: none"> <li>• Performance is more closely linked to the water column and the resulting bubble retention time, rather than to installed power.</li> <li>• Technical gases like ozone and oxygen can be injected in its standard configuration as well. This feature makes it the perfect solution whenever a strong chemical oxidation is required.</li> </ul>	<p>UP TO 7%</p> <ul style="list-style-type: none"> <li>• Its performance can be increased using add-on components (circulators)</li> <li>• They can only inject air.</li> <li>• As the water column increases, the power required for operation will increase accordingly.</li> </ul>	<p>UP TO 25/30%</p> <p>The installed power is directly linked to the depth of the tank and to the resulting pressure that the pump has to overcome. It can only inject air.</p>
BUBBLE SIZE	<p>The high rotation speed of the propeller generates a large amount of MICRO-BUBBLES having a diameter less than 1 mm. As a result, a very large air-water exchange surface is created.</p> 	<p>Medium or large-diameter bubbles can be generated depending on the type of diffuser. Smaller bubbles can be generated provided that the blower's power is significantly increased. The plates with micro-holes can get easily clogged.</p> 	<p>Medium-large diameter bubbles. Since air comes into contact with water inside an ejection tube, the bubble diameter is only reduced by the turbulence of the flow.</p> 
MIXING	<p>Great capacity of mixing and homogenization. Bubbles follow the flow generated by the impeller and afterwards rise vertically to the surface. The spreading of the bubbles all over a large surface prevents them from aggregating, that would lead to a lower dissolution efficiency. Its circulation capacity makes the entire volume's treatment easier, avoiding the settling of solids and the appearance of dead zones with a low oxygen concentration.</p>	<p>Low mixing and homogenization capacity. Bubbles rise to surface following a vertical trajectory, causing a shorter contact time with water. While rising, bubbles aggregate, increasing their average diameter and reducing the air-water contact surface. As a result, the dissolution efficiency drops.</p>	<p>Low mixing capacity. Starting from the bottom, bubbles rise to the surface with a strongly vertical trajectory. The mixing effect is very moderate and it is generated by the water flow of the pump, which is determined by its specific flow rate.</p>
AIR TEMPERATURE	<p>It injects air taken directly from outside without changing its temperature.</p>	<p>The blower and the air distribution tubes heat up during operation, increasing the temperature of the injected air. Consequently, injected air will contain a lower percentage of oxygen.</p>	<p>It injects air taken directly from outside without changing its temperature.</p>



<p>INSTALLATION</p>	<p>Low installation costs. Easy system with self-standing components. No additional spaces are required. It can be installed on floating supports for test purposes without stopping the system.</p> 	<p>High installation costs. Complex system: valves, downpipes, pipes, diffusers. A dedicated, soundproof and air-conditioned technical room is needed for the blower.</p> 	<p>Low installation costs. Easy system with self-standing components. No additional spaces are required. It cannot be installed for test purposes, because it needs to be installed on the bottom and motors are usually heavy and cumbersome.</p> 
<p>MAINTENANCE</p>	<p>Self-standing components. It does not require the system to be emptied or stopped and it can be handled from the surface or through inspection. Easy and quick handling that can be carried out by just one operator. All motors can be fully reconditioned through agreed maintenance programmes.</p> 	<p>Single system. The water treatment system has to be stopped and the compartment needs to be emptied and sanitised before having access to diffusers. Complex maintenance due to the high number of elements to be installed, which are also difficult to be reached for checking purposes.</p> 	<p>Self-standing components. It does not require the system to be emptied or stopped and it can be handled from the surface or through inspection. Easy and quick handling that can be carried out by just one operator only for the smallest models.</p>
<p>NOISE AND HEATING</p>	<p>The submersible motor does not heat up and it is very smooth-running.</p> 	<p>The external blower generates noise and can reach high temperatures.</p> 	<p>The submersible motor does not heat up and it is very smooth-running.</p> 
<p>ENERGY CONSUMPTION / EFFICIENCY</p>	<p>Higher energy efficiency. Since the aerator is installed a few centimetres away from the surface, the pressure that needs to be overcome to inject air is really low. The bubbles trajectory is the longest possible. Starting from the surface, they reach the bottom and spread all over a large area, then they slowly rise towards the atmosphere.</p>	<p>The deeper the tank, more power will be needed to allow the blower to suck in air from the surface. Injection is performed on the bottom and without using mixers. This causes a quick rise of the bubbles towards the surface.</p>	<p>The deeper the tank, more power will be needed to allow the pump to suck in air from the surface. Injection is performed on the bottom and without using mixers. This causes a quick rise of the bubbles towards the surface.</p>



## VARIO MAC (MULTIPLE AERATION CONTROL)

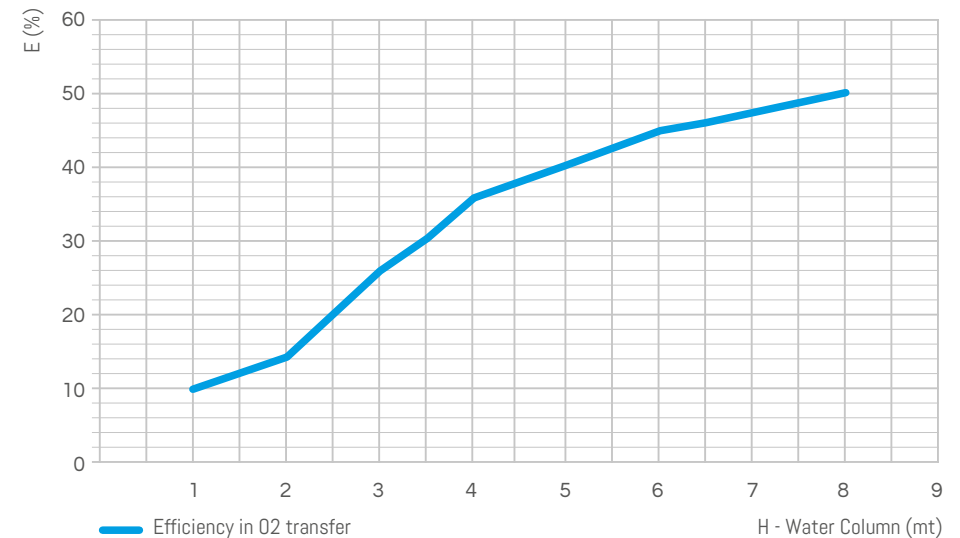
Vario MAC (Multiple Aeration Control) is a range of EI 1 electric motors with variable speed control for total control of performance and power consumption. Brushless models operate with an inverter and can be controlled to maximise performance and consumption, for professional and prime quality applications. It is now possible to operate the aerator at the power required by the process in real time, thanks to a control system that can be manual or automated by a dissolved oxygen probe. The motor body is the lightest available on the market and it is easily handled, versatile and slender provide impressive performances and is perfect for revamping of existing treatment plant as well as be applied as the main aeration and mixing solution for brand-new treatment, as a winning commercial and technical solution.



### VARIO MAC 50 - 60 HZ WITH DRIVE

Model	Tension (V)	Drive Power	Nom. Pow. kW	Amperage	r.p.m. / 1"	Weight kg
VARIO MAC 30 M	200 - 240 M	2.2	0.2 - 24	1 - 10.5	3600	10
VARIO MAC 30 T	200 - 240 M	2.2	0.2 - 24	1 - 10.5	3600	10
VARIO MAC 30 T	380 - 480	2.2	0.2 - 24	1 - 5.8	3600	10
VARIO MAC 70 T	200 - 240	5.5	0.2 - 64	1 - 24	3600	24
VARIO MAC 70 T	380 - 480	5.5	0.2 - 64	1 - 14	3600	24
VARIO MAC 150 T	380 - 480	15	0.2 - 13.9	1 - 30	3600	26

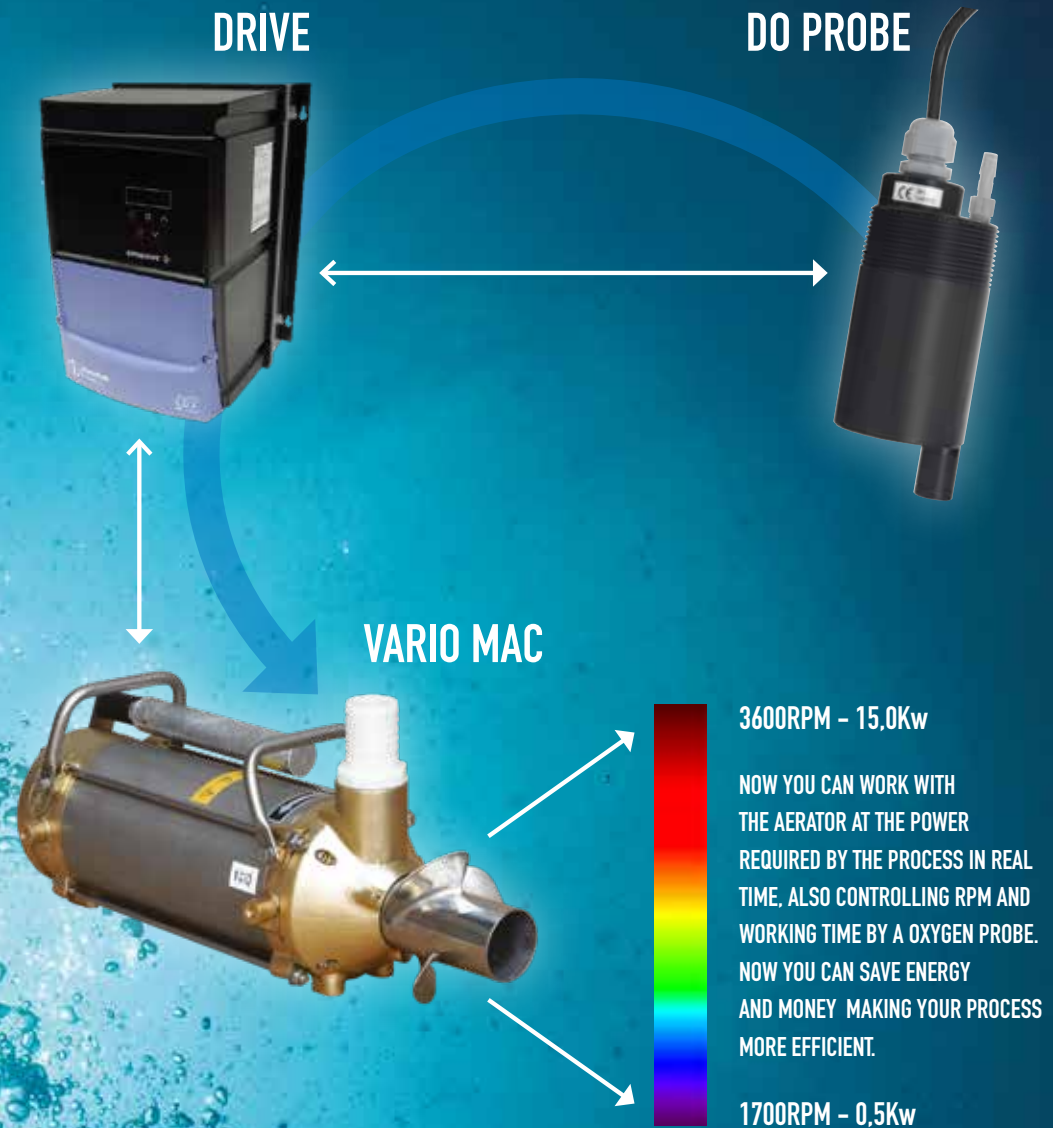
VARIO MAC - EFFICIENCY IN O2 TRANSFER



# VARIO MAC

## MULTIPLE AERATION CONTROL

CIRCULATION AND AERATION COMPLETELY UNDER CONTROL  
OF CONSUMPTION AND PERFORMANCES





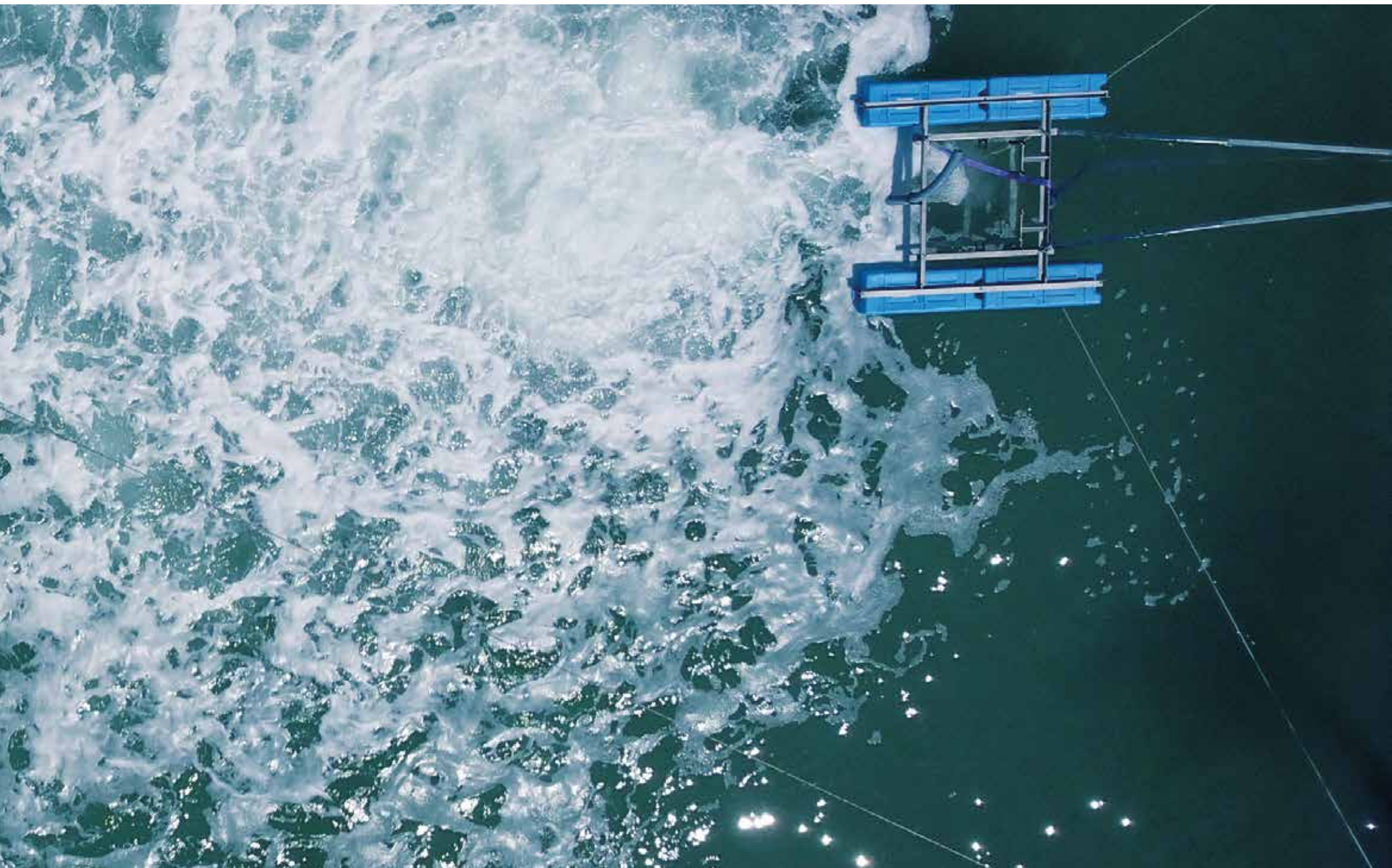
# **VARIO MAC**

## **MULTIPLE AERATION CONTROL**

**UP TO 450M<sup>3</sup>/H OF AIR AND STRONG MIXING ACTION AVAILABLE  
WITH STATIC SUPPORT AND RAIL OR FLOATING STRUCTURES  
DOPPEL CONTROLLED**









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