Technical Specification of Mobile Single-Cell Nanobubble Injector Unit

Nanobubble Technologies (NBT) is a global leader in nanobubble innovation. With over 15 years of research and expertise, we have developed a new generation of nanobubble injectors (Titanium and Stainless Steel) that have been scientifically tested and validated by researchers at the University of New South Wales (UNSW) in 2024. Our innovative NB solution provides significant benefits across a range of industries, including lakes and ponds, wastewater treatment, agriculture & irrigation water, and aquaculture, as outlined below:

Lakes & ponds	Wastewater	Agriculture	Aquaculture
			
• Increasing DO level • Reducing foul odours • Suppressing blue-green algae growth • Reducing sediment accumulation • Improving overall water quality and clarity	• Increasing oxygenation • Improving coagulation and flotation • Reducing sludge volume • Decreasing chemical dosage • Reducing energy consumption	• Increasing DO level • Improving root growth and water infiltration • Increasing nutrient uptake • Reducing water usage • Pathogens Control • Increasing yields & quality	• Increasing oxygen transfer efficiency • Rearing water quality • Reducing chemical application and energy consumption • Reduction of stress in fish

The NBT mobile single-cell nanobubble injector unit (Photo A) is a compact, trailer-mounted, fully self-contained unit. This innovative system includes an oxygen cylinder (Supagas) ozone generator (Atlas 30), single-cell titanium injector (NBT), pump (Lowara), 1000L IBC tank & frame (Verdex), control system (Smithtek), with all components and connections securely housed within a robust caged trailer for maximum mobility, protection, and durability. The mobile design makes this unit the ideal tool for treating on-course dams, irrigation lakes, ponds, and water features plagued by poor water quality.

This mobile unit offers an outstanding on-site demonstration platform, allowing customers to see measurable results within 30–60 minutes. This real-time transformation provides compelling, empirical evidence of the system's ability to increase DO level, eliminate algae blooms, remove odours, correct discolouration, and restore healthy aerobic conditions all without chemicals. As a compact demonstration unit, it effectively showcases how the nanobubble system works, giving customers a clear and practical understanding of the technology.

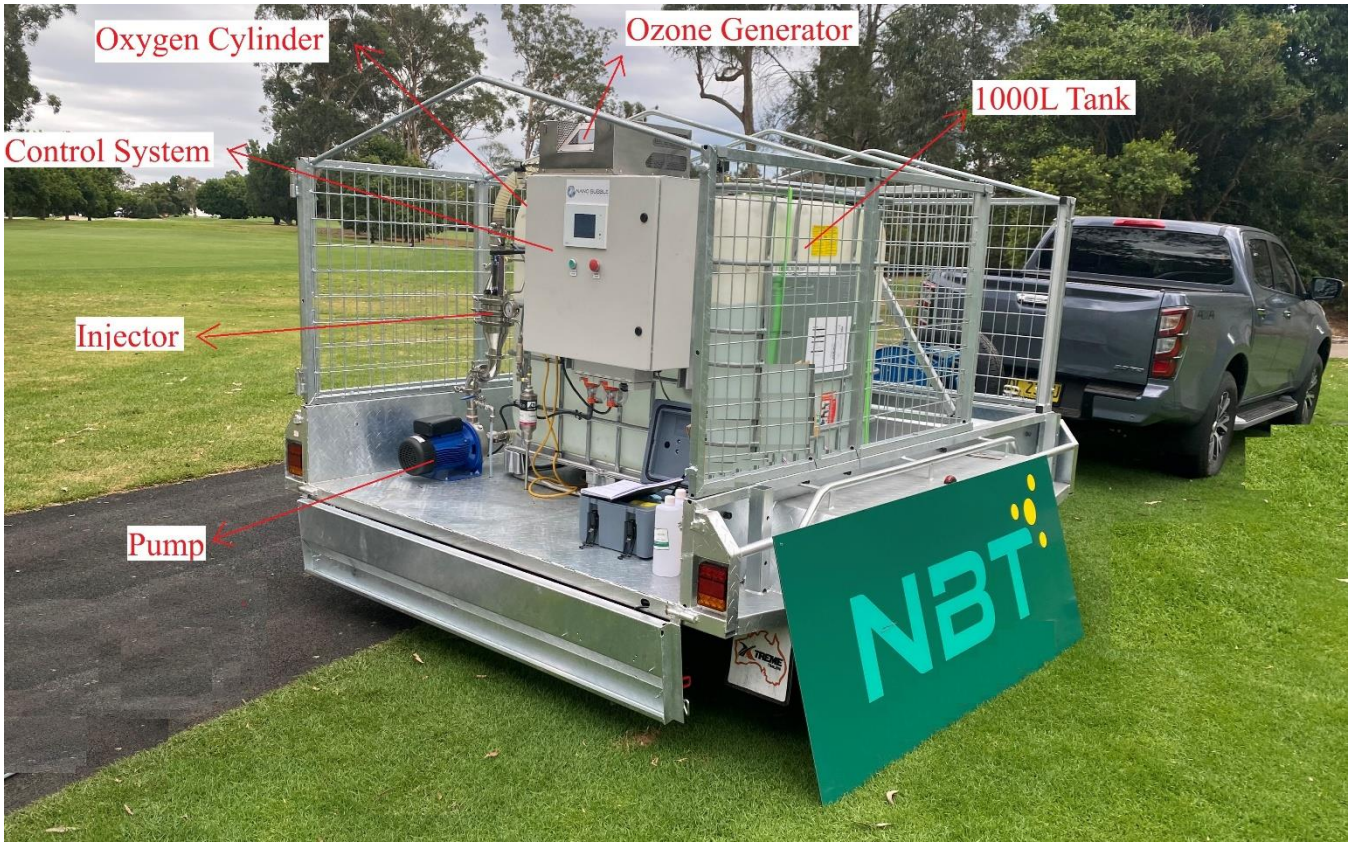

Photo A: Mobile 1-Cell Nanobubble Injector Unit

LIQUID FLOW CAPACITY (WATER)	
Flow Rate (Max)	250 L/min
Maximum Liquid Pressure	300 kPa
GAS FLOW CAPACITY (O_2, O_3)	
Flow Rate	1 L/min per Injector
Maximum Gas Pressure	400 kPa
OPERATING PARAMETERS	
Temperature Tolerance	4-65 °C
Solids	14 mm
PROCESS CAPACITY	
Water	250 L/min
Oxygen Delivery	0.5 kg O_2/hour (≈ 12 kg/day) dissolved oxygen at 85% OTE
Ozone Delivery (Based on the application requirements)	30g/h

OXYGEN CYLINDERA

A 10 kg oxygen cylinder contains 10,000 liters of oxygen; since a 1-cell nanobubble injector unit consumes 480 liters during 8 hours of daily operation (1 liter per minute)

Model	Supagas
Cylinder/Pack (101.325kPa @15°C) - m^3	4
Outlet Connection AS 2473	Type 10
Cylinder Dimensions	780 x 230

Ozone (O_3) generator: included optionally, depending on application requirements

Model	Atlas 30 (15-75 psig)
Ozone Output Capacity:	30g/h
Working Pressure:	20 PSIG
Feed Gas (O_2) Flow Rate:	0.1-5 SLPM
Control Power Requirements:	120 V ~ +/-10%, 50/60 Hz, Single Phase, 5.5 A 230 V ~ +/-10%, 50/60 Hz, Single Phase, 2.75 A
Max Power Consumption	350W
Dimensions	35 × 38 ×17 cm (W×D×H)
Weight	35 lbs (15.88 kg)
Safety Features:	Pressure Transducer

Control Panel

Features	• Easy-to-use remote control, Wi-Fi-enabled control panel with cloud function • Integrated modular PLC with both digital and analog inputs, compatible with a wide range of devices such as DO sensors and pressure transducers

PUMP 	
Model	ESHS 32-200/30/P25VSSA (Lowara)
Power	3 kW
Head/Max Operation Pressure	31.48 m/ 3,85.67 mbar
Voltage	220-240/380-415 V
Phase / Frequency	3/50
Casing and Impeller Material	Stainless Steel (AISI 316L)
Weight and Dimensions	44kg
TANK 	
Dimensions	1 metre cubed (100cm x 100cm x 100cm)
Weight	30kg when empty
INJECTOR CHARACTERISTICS (Dimension & Weight, Materials, Unit Connections) 	
1. DIMENSIONS & WEIGHT	
Size	34.5 x 160 x 112 cm (L x W x H)
Weight	5.8 kg
2. MATERIALS	
Cone/ Housing	316 Stainless Steel
Membrane	**<u>Titanium Membrane NB Generator</u>** • *NB Size*: Mode diameter of 75 nm • *NB Concentration*:1.13 billion bubbles/mL • Gas Transfer Efficiency: 85%
3. UNIT CONNECTIONS	
Unit Inlet	50 mm
Unit Discharge	50 mm

Note: All specifications are subject to change