

# **N**ANO **B**UBBLE **G**ENERATOR

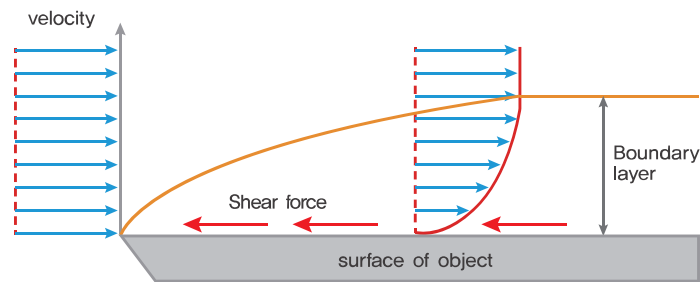
2024 Ver.



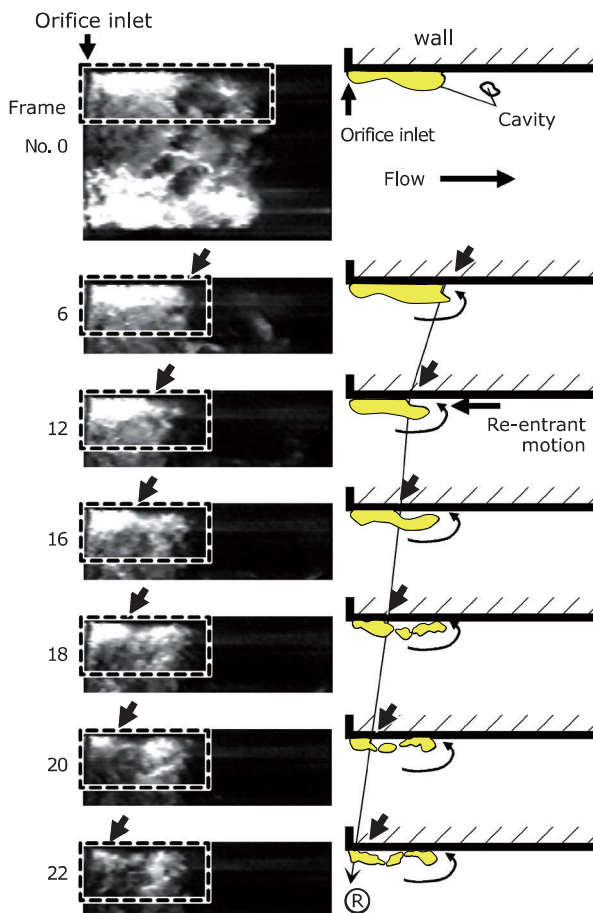
NEWMANTECH Co., Ltd.

## Nanobubble Technology

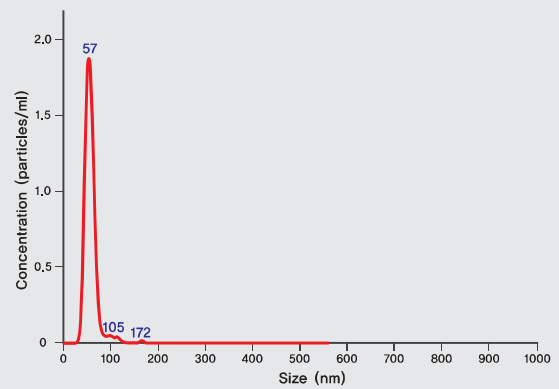
It is a technology developed by applying the shear resistance relationship between the interface of the object and the adjacent area. When gas(ex. oxygen) is splitted into nanosize by the shear force generated at the interface of the object, dissolved gas is increased. Nano-sized bubble(gas) exists in water for a long time without degassing, and dissolved gas is maintained high for a long time.



Splitted Bubble by shear force



Bubble size



Mean	61,9 nm
Mode	56,9 nm
SD	20,7 nm
D10	47,3 nm
D50	58,8 nm
D90	73,9 nm
Concentration	5,11e+08 particles/ml

► Test conditions : No water recirculation, Pressure : 3,7kg/cm<sup>2</sup>

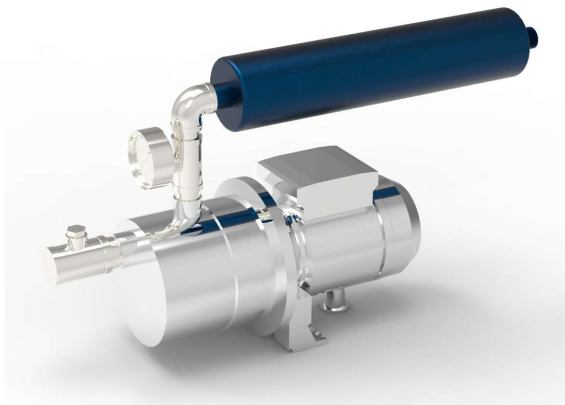
## Newmantech Nano Bubble Generator (N2BG)

The 2024 version of the N2BG consists of one pump and one bubble generator. The configuration is simpler than the previous N2BG, making installation and maintenance easier. The pressure of the pump is  $4\text{kgf/cm}^2$ , and this pressure is the energy for making shear forces, and the higher the pressure, the smaller the bubble. Gas is injected in front of the pump and in an amount that will not cause cavitation in the pump. The 2024 version of the N2BG has no blockage caused by solids. So It can be applied to water with high solids concentration such as fish farms and wastewater treatment plants. And it is possible to install the bubble generator in parallel, so the capacity can be increased to  $2,000\text{m}^3/\text{day}$  or more.



### N2BG Installation

▶ Small & Middle Capacity (Hydroponics & Precision Industry ...)



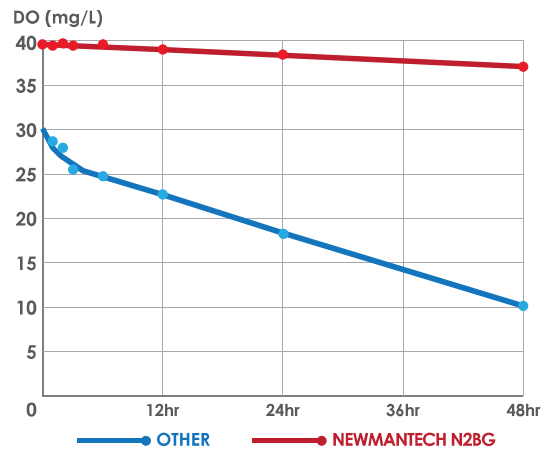
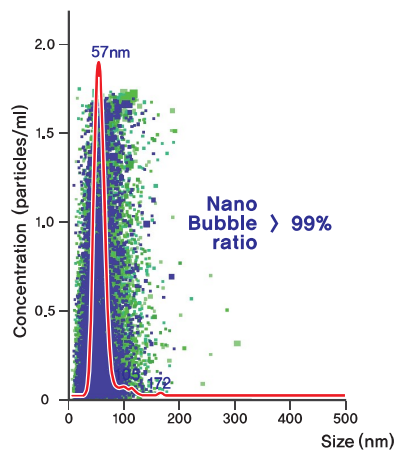
▶ Large Capacity (Aquaculture, Lake ...)



## N2BG Advantages

### ■ Pure Nanobubble

The smaller the bubble, the larger the contact area with the liquid and the longer the contact time, increasing the solubility of the gas. NEWMANTECH's nanobubble device (N2BG) generates pure nanobubbles with a nanobubble ratio of over 99%. More than 100 million nanobubbles increase gas solubility by more than 90%, and the dissolved gas concentration remains very high compared to other techniques over time.



### ■ No Circulation, No Clogging

NEWMANTECH's nanobubble technology is different from existing microbubbles or nanobubble technologies, generating nanobubbles without circulation. Our nanobubble generator generates nanobubbles without clogging even when water with a high concentration of solids flows in. Our nanobubble generator is operating normally in a bioreactor at a livestock wastewater treatment plant where SS is over 20,000 mg/L.



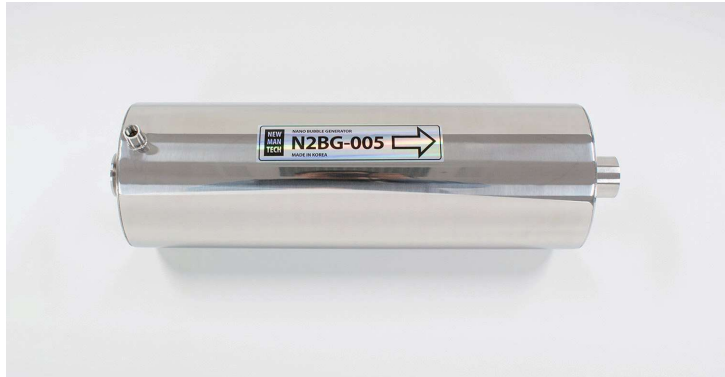
## N2BG Advantages

### Large Capacity

▶ Nanobubble Device



▶ Nanobubble Generator (Single model : Q = 1~50m<sup>3</sup>/hr)

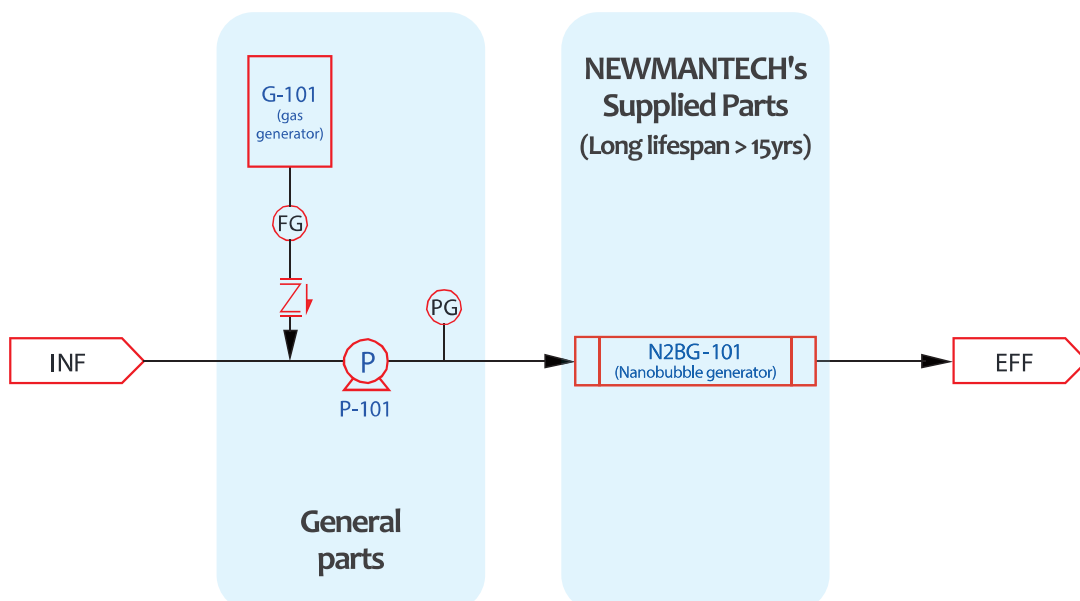


▶ Large Capacity Nanobubble Generator (Q = 1,000 ~ 20,000m<sup>3</sup>/day)



### Simple Configuration

NEWMANTECH's nanobubble device consists of a pump and a nanobubble generator. All general pumps, including non-self-priming types, can be used. Our nanobubble device can be assembled by anyone with just a nanobubble generator and a pump. So, we also sell the nanobubble generator separately if the buyer wants it.

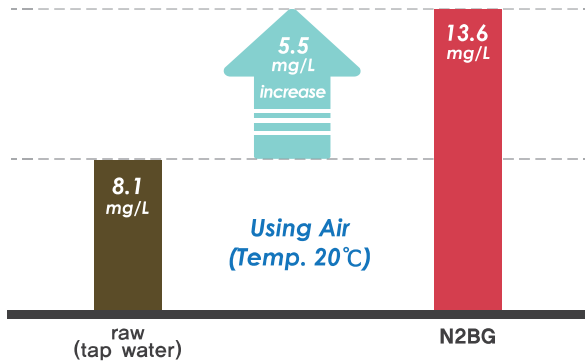


## N2BG Advantages

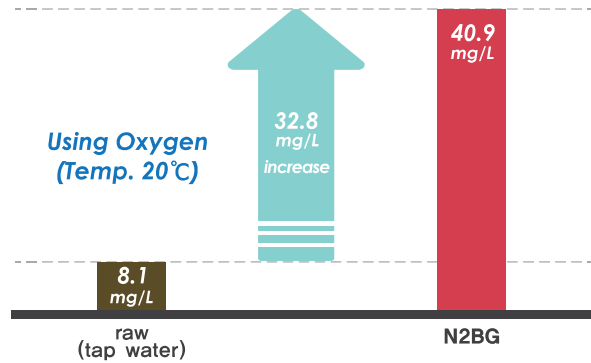
### High Dissolved Gas Concentration

When air is used in N2BG, the dissolved oxygen solubility increases to over 150%. This device can maintain dissolved oxygen above 13mg/L using air in water at a temperature of 20 degrees. Using oxygen gas in N2BG can increase dissolved oxygen to more than 40mg/L.

#### Dissolved Oxygen using Air

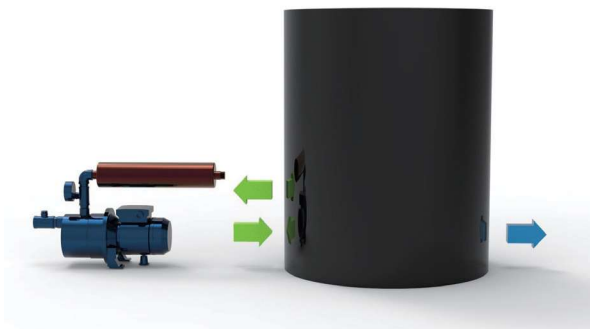


#### Dissolved Oxygen using Oxygen

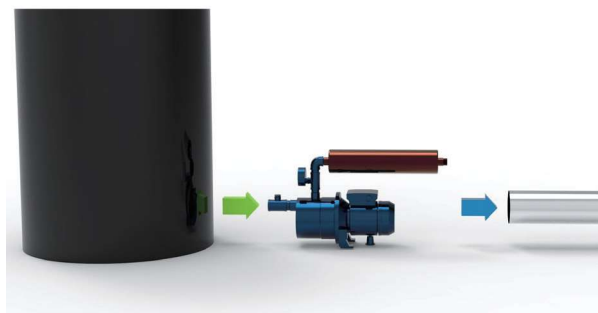


### Excellent Field Applicability

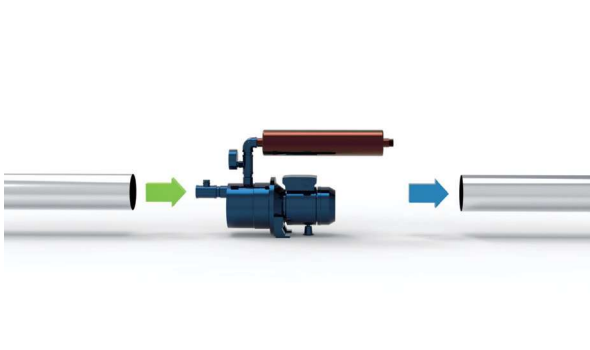
#### Generating Nanobubble in the Tank



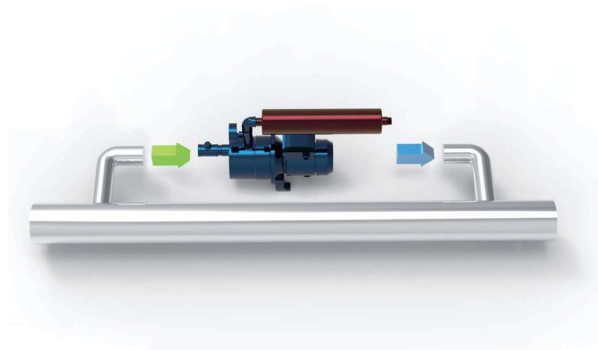
#### Generating Nanobubble between tank and pipe



#### Generating Nanobubble between pipes



#### Generating Nanobubble through side stream



## N2BG Application Field



Hydroponics



Aquaculture



River, Lake Water Quality Improvement



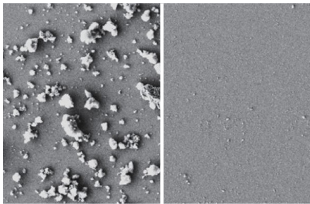
Wastewater, Sewage Treatment



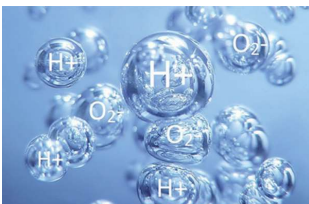
Ozone Oxidation



Cooling Tower Energy Saving



Water Cleaning



Oxygen Water

## N2BG Field Photo





## Technical Specifications

Model		N2BG-001(Lab-scale)	N2BG-003
Components		Nanobubble generator(N2BG-001) & Pump	Nanobubble generator(N2BG-003) & Pump
Water flow rate		10LPM	3m <sup>3</sup> /hr (50LPM)
Nanobubble size		62nm	
Nanobubble ratio		> 99%	
Nanobubble duration	atmospheric pressure state	> 12hr	
	Sealed state	> 100days	
Usage gas		Air, Oxygen, Ozone, etc.	
Gas flow rate		0.4~0.8L/min	1.5~3L/min
Required Gas Pressure		> 0.5kgf/cm <sup>2</sup>	
Nanobubble generator	Type	Pressure Vessel	
	Dimensions	D102mm × L300mm	D102mm × L500mm
	Liquid temperature	5 ~ 70℃	
	Material	STS304 or STS316L	
Pump	Type	Self priming or non-Self priming	
	Rated Power P2	0.75kW	1.1kW
	Supply voltage	110~230V / 50~60Hz	
	Liquid temperature	5 ~ 45℃	
	Material	STS304	
Housing	Dimensions	L500mm X W220mm X H400mm	L850mm X W270mm X H400mm
	Weight (Including device)	30kg	45kg
Pipe(Hose) connector	Gas inlet	D1/4in (6.35mm)	
	Water inlet	D20mm	D25mm
	Water outlet	D10mm	D25mm

## Technical Specifications

Model		N2BG-005	N2BG-010
Components		Nanobubble generator(N2BG-005) & Pump	Nanobubble generator(N2BG-010) & Pump
Water flow rate		5m <sup>3</sup> /hr (80LPM)	10m <sup>3</sup> /hr (160LPM)
Nanobubble size		62nm	
Nanobubble ratio		> 99%	
Nanobubble duration	atmospheric pressure state	> 12hr	
	Sealed state	> 100days	
Usage gas		Air, Oxygen, Ozone, etc.	
Gas flow rate		2.5~5L/min	5~10L/min
Required Gas Pressure		> 0.5kgf/cm <sup>2</sup>	
Nanobubble generator	Type	Pressure Vessel	
	Dimensions	D127mm × L500mm	D165mm × L500mm
	Liquid temperature	5 ~ 70℃	
	Material	STS304 or STS316L	
Pump	Type	Self priming or non-Self priming	
	Rated Power P2	1.8kW	2.8kW
	Supply voltage	220V~380V / 50~60Hz	
	Liquid temperature	5 ~ 45℃	
	Material	STS304	
Housing	Dimensions	L1000mm X W300mm X H600mm	L1000mm X W400mm X H700mm
	Weight (Including device)	45kg	50kg
Pipe(Hose) connector	Gas inlet	D1/4in (6.35mm)	
	Water inlet	D32mm	D40mm
	Water outlet	D25mm	D32mm

## Technical Specifications

Model		N2BG-020	N2BG-040
Components		Nanobubble generator(N2BG-020) & Pump	Nanobubble generator(N2BG-040) & Pump
Water flow rate		20m <sup>3</sup> /hr (330LPM)	40m <sup>3</sup> /hr (660LPM)
Nanobubble size		62nm	
Nanobubble ratio		> 99%	
Nanobubble duration	atmospheric pressure state	> 12hr	
	Sealed state	> 100days	
Usage gas		Air, Oxygen, Ozone, etc.	
Gas flow rate		10~20L/min	20~30L/min
Required Gas Pressure		> 0.5kgf/cm <sup>2</sup>	
Nanobubble generator	Type	Pressure Vessel	
	Dimensions	D216mm × L800mm	D267mm × L1000mm
	Liquid temperature	5 ~ 70℃	
	Material	STS304 or STS316L	
Pump	Type	non-Self priming	
	Rated Power P2	5.5kW	11.0kW
	Supply voltage	220V~380V / 50~60Hz	
	Liquid temperature	5 ~ 45℃	
	Material	STS304	
Pipe(Hose) connector	Gas inlet	D1/4in (6.35mm)	
	Water inlet	D50mm	D65mm
	Water outlet	D40mm	D65mm

※ Please inquire separately for flow rates over 50m<sup>3</sup>/hr.

**Total Solution to Water**



**NEWMANTECH Co., Ltd.**

<http://newmantech.co.kr>

E-mail. [dryjoo@newmantech.co.kr](mailto:dryjoo@newmantech.co.kr) or [dryjoo@gmail.com](mailto:dryjoo@gmail.com)

Mobile, WhatsApp. +821047950702

716-ho, 59-69, Seouldaehak-ro, Siheung-si,  
Gyeonggi-do, 15012, Republic of Korea