

# FREYA™

## NANOBUBBLE GENERATOR



### BENEFITS

- Best-in-class oxygen transfer efficiency (OTE)
- Reduce oxygenation costs
- Stable, uniform oxygenation
- Reduce energy costs
- Improve fish welfare
- Reduce fish stress

### OXYGENATION APPLICATIONS

- RAS & hatcheries
- Net pens
- Fully enclosed & semi enclosed systems
- Emergency deployments

### Introducing the Moleaer Freya™ Nanobubble Generator: Revolutionizing Submersible Oxygenation

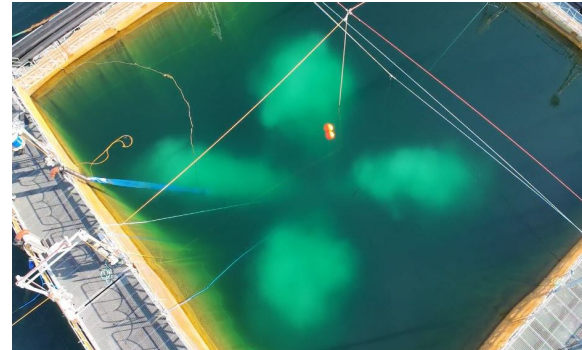
Experience the cutting-edge technology of the Moleaer Freya™ Nanobubble Generator, a groundbreaking submersible oxygenation system designed to dramatically improve oxygen use efficiency and operational costs. Improve fish welfare with superior oxygenation and enhanced key water quality parameters.

**Unmatched Performance:** With a focus on durability and efficiency, the Moleaer Freya™ utilizes our patented nanobubble technology to provide the most reliable and effective oxygenation device on the market. Not only does it transfer more oxygen per kW than any system on the market but it's powerful yet efficient motor, provides superior dissolved oxygen distribution and mixing.

**Powerful Water Enhancement:** The Moleaer Freya™ generates millions of electrochemically charged and neutrally buoyant nanobubbles that significantly improves water treatment processes and water quality, resulting in a healthier environment for fish.

**Versatility & Rapid Deployment:** Engineered for versatility and easy integration, the Moleaer Freya™ Nanobubble Generator is highly adaptable, reducing time and installation cost. Achieve immediate results with minimal effort, risk or cost.

Witness the transformative potential of nanobubbles with enhanced oxygen levels and water quality like never before. With the Moleaer Freya™, you'll experience unparalleled performance and efficiency, improving fish welfare and reduced production costs.



### Features:

- <200 nm-sized bubbles
- Saltwater compatible
- Horizontal or vertical installation
- Deployable down to 30 meters
- Best in class oxygen transfer rates and energy usage
- Durable and reliable design
- High-performance pump

TECHNICAL SPECIFICATIONS	55F0-100	55F0-110	55F0-111
<b>LIQUID FLOW CAPACITY</b>			
Flow Rate (m <sup>3</sup> /hr)	60 – 70		
<b>ENVIRONMENTAL PARAMETERS</b>			
Temperature Tolerance, (°C)	4 – 45		
Max Working Immersion Depth, (m)	30		
Installation Orientation	Horizontal or Vertical		
Max Diameter Solids, (mm)	2		
<b>GAS SUPPLY</b>			
Gas Source	Off-board Oxygen Gas		
Minimum Gas Feed Pressure, (Bar)	4		
Suggested Gas Flow Range <sup>1</sup> , (SLPM)	0 – 650		
<b>ELECTRICAL POWER</b>			
Voltage (V)	400 / 440	400	400 / 440
Phase (F), Frequency (Hz)	3, 50 / 60	3, 60	3, 50 / 60
Total Amp Draw (A), Nominal	16.3 / 14.5	18.4	16.3 / 14.5
Rated Power Consumption (kW)	2.9 Steady State; 7.5 Max		
<b>PUMP</b>			
Stator Housing, Impeller, Motor	SS AISI 316 & Duplex	SuperDuplex 5A (CE3MN)	
<b>CUSTOMER CONNECTIONS</b>			
Electrical Cable	Polyurethane, 50m, 10/4 600V Conductor Cable		
Gas Fitting (in)	½" Male BSPP		
<b>MATERIALS, DIMENSIONS AND WEIGHT</b>			
Shell Material, Internal Materials	HDPE, PVC SCH 80		
Fittings and Hardware	SS AISI 316 & Duplex	SuperDuplex 5A (CE3MN)	
Dimensions L x W x H, (cm)	174 (201 w/ Nozzle) x 32 x 32		
Weight, (kg)	115		

<sup>1</sup> Gas flow rate to be controlled by Moleaer Gas Panel accessory or customer-supplied rotameter or mass flow controller.

## OXYGEN INJECTION RATES AT 10M SUBMERGENCE

O <sub>2</sub> Supply Pressure (Bar)	O <sub>2</sub> Injection Rate (SLPM)	O <sub>2</sub> Injection Rate (nm <sup>3</sup> /hr)	O <sub>2</sub> Injection Rate at 100% (kg/hr)	O <sub>2</sub> Injection Rate at 92% (kg/hr)
4	267	16	23	21
5	383	23	33	30
6*	583	35	50	46
7	800	48	69	63
8	967	58	83	76

\*Recommended Gas Control Range

SKU	DESCRIPTION
55C0-013	Discharge Nozzle, Blank Body
55C0-022	Discharge Nozzle, 4x Outlet, Horizontal
55C0-023	Discharge Nozzle, 8x Outlet, Horizontal
55C0-024	Discharge Nozzle, 4x Angled Down
55C0-025	Discharge Nozzle, 8x Outlet; 4x Angled Up, 4x Angled Down
55C0-026	Discharge Nozzle, 4x Outlet, 2x Horizontal, 2x Angled Down
55C0-021	Intake Filter Basket
55A0-017	Filter Basket Hardware Kit, 316SS
55A0-018	Filter Basket Hardware Kit, Duplex
55E0-001	Electrical Box, Soft Starter, 400V/50Hz
50A0-413	Gas Control Box
99K0-043	CIP Bottle Field Tool, 32oz Metric (Freya)

Note: All accessories can be purchased separately.

The information and data contained herein are deemed to be accurate and reliable and are offered in good faith, but without guarantee of performance. Moleaer assumes no liability for results obtained or damages incurred through the application of the information contained herein. Customer is responsible for determining whether the products and information presented herein are appropriate for the customer's use and for ensuring that customer's workplace and disposal practices are in compliance with applicable laws and other governmental enactments. Specifications subject to change without notice.

Copyright © 2023 Moleaer. All trademarks stated herein are the property of their respective company. All rights reserved. This document is confidential and contains proprietary information of Moleaer Inc. Neither this document nor any of the information contained herein may be reproduced, redistributed or disclosed under any circumstances without the express written permission of Moleaer Inc. Rev. A.1