Patent Search

Invention Title	Automated Aquaculture Feeding and Oxygenation System (AAFOS)
Publication Number	20/2026
Publication Date	15/05/2026
Publication Type	INA
Application Number	202641057359
Application Filing Date	06/05/2026
Priority Number	
Priority Country	
Priority Date	
Field Of Invention	MECHANICAL ENGINEERING
Classification (IPC)	A01K 61/80, A01K 63/04, G05B 19/042, G05B 15/02, C02F 3/20

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Abstract:

The present disclosure relates to systems and methods for aquaculture management, and provides an Automated Aquaculture Feeding and Oxygenation System (10 to integrate automated feed dispensing with aeration monitoring and control using an embedded microcontroller unit (102) to synchronize feeding and aeration proc Automated Aquaculture Feeding and Oxygenation System (100) includes a microcontroller unit (102), a GSM communication module (104), a relay module aeration in and a synchronized feeding-aeration control sequence (126) wherein aerators are deactivated prior to feed dispensing and reactivated upon completion of the feedir system is configured to integrate automated feed dispensing with aeration monitoring and control in response to continuous operational demands. This configuratio feed wastage, minimizes manual intervention, and optimizes energy consumption in aquaculture environments such as shrimp ponds and fish farms.

Complete Specification

Description:TECHNICAL FIELD

[001] The present invention relates to the field of aquaculture systems and automation technologies, and more particularly to an Automated Aquaculture Feeding a Oxygenation System integrating automated feed dispensing with aeration monitoring and control in aquaculture environments such as shrimp ponds and fish farm

BACKGROUND

[002] Aquaculture has emerged as a critical sector for global food production, particularly in the cultivation of shrimp and fish species. Efficient farm management i aquaculture environments depends heavily on two interdependent operational factors: timely and uniform distribution of feed to the cultivated organisms, and maintenance of adequate dissolved oxygen levels in pond water through the continuous or scheduled operation of aeration equipment. Historically, both of these functions have been carried out manually or through independent, non-integrated mechanical systems, which may introduce significant operational variability and inefficiency.

[003] Manual feeding practices in conventional aquaculture setups typically result in inconsistent feed distribution across the pond surface. Uneven dispersion of fe cause localized accumulation of uneaten material at the pond bottom, leading to water contamination, deterioration of water quality, and suboptimal growth rates cultured species. Additionally, manual methods are associated with increased labor costs and a dependence on operator availability, which may not align with the b feeding requirements of the farmed organisms, particularly during nighttime or adverse weather conditions.

[004] Existing automatic feed dispensers address some of the shortcomings of purely manual feeding by enabling timed release of feed. However, such devices typi operate on fixed schedules without consideration of real-time environmental parameters such as dissolved oxygen concentration or water turbidity. These systems

View Application Status