



## Automatic Dissolved Oxygen Control to Oreochromis Fish's Crop in Geomembrane Tank [

2020

text (article)

Analítica

Huila is a Colombian state with a high production of Oreochromis fish, its contribution to national production is of 53%, that is distributed in 338 hectares of ponds on land and floating cages. The environmental and climatic characteristics of the region allow having dissolved oxygen production in the ponds between 4ppm and 12ppm during the day, but at night the situation is unfavorable, since the amount of dissolved oxygen can decrease up to 1ppm while carbon dioxide increases. Therefore, it is necessary to have adequate oxygenation equipment and systems to prevent delayed in fish growth and to decrease death rates. This article presents the design and implementation of an automatic dissolved oxygen control system by manipulation of a water recirculation flow that operates in parallel with an industrial oxygen generator. The implemented system tracks and records the temperature and oxygen variables present in the geomembrane tank to evaluate the process evolution for different periods of the fish development cycle. The data was acquired using an Atlas Scientific dissolved oxygen sensor kit and a DS18B20 temperature probe they send the data directly to a Raspberry Pi that transmits by wireless the information collected from the process to the SISCEFA web server and a mobile application through which users can observe the data traceability. The dissolved oxygen concentration was maintained within the threshold established and the fish rate death decrease

Huila is a Colombian state with a high production of Oreochromis fish, its contribution to national production is of 53%, that is distributed in 338 hectares of ponds on land and floating cages. The environmental and climatic characteristics of the region allow having dissolved oxygen production in the ponds between 4ppm and 12ppm during the day, but at night the situation is unfavorable, since the amount of dissolved oxygen can decrease up to 1ppm while carbon dioxide increases. Therefore, it is necessary to have adequate oxygenation equipment and systems to prevent delayed in fish growth and to decrease death rates. This article presents the design and implementation of an automatic dissolved oxygen control system by manipulation of a water recirculation flow that operates in parallel with an industrial oxygen generator. The implemented system tracks and records the temperature and oxygen variables present in the geomembrane tank to evaluate the process evolution for different periods of the fish development cycle. The data was acquired using an Atlas Scientific dissolved oxygen sensor kit and a DS18B20 temperature probe they send the data directly to a Raspberry Pi that transmits by wireless the information collected from the process to the SISCEFA web server and a mobile application through which users can observe the data traceability. The dissolved oxygen concentration was maintained within the threshold established and the fish rate death decrease

**Título:** Automatic Dissolved Oxygen Control to Oreochromis Fish's Crop in Geomembrane Tank electronic resource]

**Editorial:** 2020

**Tipo Audiovisual:** Automatic Control Dissolved Oxygen Oreochromis fish Automatización Control Oxígeno Disuelto Pez Oreochromis

**Documento fuente:** Scientia et Technica, ISSN 0122-1701, Vol. 25, N°. 1, 2020, pags. 97-103

**Nota general:** application/pdf

**Restricciones de acceso:** Open access content. Open access content star

**Condiciones de uso y reproducción:** LICENCIA DE USO: Los documentos a texto completo incluidos en Dialnet son de acceso libre y propiedad de sus autores y/o editores. Por tanto, cualquier acto de reproducción, distribución, comunicación pública y/o transformación total o parcial requiere el consentimiento expreso y escrito de aquéllos. Cualquier enlace al texto completo de estos documentos deberá hacerse a través de la URL oficial de éstos en Dialnet. Más información: <https://dialnet.unirioja.es/info/derechosOAI> | INTELLECTUAL PROPERTY RIGHTS STATEMENT: Full text documents hosted by Dialnet are protected by copyright and/or related rights. This digital object is accessible without charge, but its use is subject to the licensing conditions set by its authors or editors. Unless expressly stated otherwise in the licensing conditions, you are free to linking, browsing, printing and making a copy for your own personal purposes. All other acts of reproduction and communication to the public are subject to the licensing conditions expressed by editors and authors and require consent from them. Any link to this document should be made using its official URL in Dialnet. More info: <https://dialnet.unirioja.es/info/derechosOAI>

**Lengua:** English

**Enlace a fuente de información:** Scientia et Technica, ISSN 0122-1701, Vol. 25, N°. 1, 2020, pags. 97-103

---

## Baratz Innovación Documental

- Gran Vía, 59 28013 Madrid
- (+34) 91 456 03 60
- [informa@baratz.es](mailto:informa@baratz.es)