Thermax Minimize reject during water purification

A PROJECT REPORT

Submitted by,

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Under the guidance of,

Mr. JOHN BENNET JOHNSON

in partial fulfillment for the award of the degree of

BACHELOR OF TECHNOLOGY

IN

COMPUTER SCIENCE AND ENGINEERING, COMPUTER ENGINEERING, INFORMATION SCIENCE AND ENGINEERING Etc.

At

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PRESIDENCY UNIVERSITY

BENGALURU

DECEMBER 2024

PRESIDENCY UNIVERSITY

SCHOOL OF COMPUTER SCIENCE ENGINEERING

BONAFIDE CERTIFICATE

This is to certify that the Project report **"Thermax Minimize reject during water purification"** being submitted by "Asif Pasha. B, Ismail Ahmed Khan, Mohamed Azeem Fardeen Pasha, Aftab Hussain, Beldona Visweswara" Bearing roll number(s)"20211CAI0030,20211CAI0106,20211CAI0059,20211CAI0130, 20211CAI0176" in partial fulfillment of the requirement for the award of the degree of Bachelor of Technology, is a bonafede work carried out under my supervision.

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DECLARATION

We hereby declare that the work, which is being presented in the project report entitled **Thermax Minimize reject during water purification** in partial fulfillment for the award of Degree of **Bachelor of Technology** is a record of our own investigations carried under the guidance of Mr. **John Bennet Johson, School of Computer Science and Engineering, Presidency University, Bengaluru.**

We have not submitted the matter presented in this report anywhere for the award of any other Degree.

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ABSTRACT

Water purification is a critical process to ensure safe and sustainable water for human consumption, industrial applications, and environmental conservation. However, a common challenge in water treatment facilities is the generation of significant volumes of reject water—wastewater that remains after purification. This reject water not only represents a loss of valuable resources but also poses environmental risks due to its high concentration of contaminants. The need to minimize reject water has become increasingly vital in addressing global water scarcity and reducing operational costs in treatment plants.

This report investigates strategies to reduce reject water during purification by analyzing existing methods, identifying gaps, and proposing an optimized methodology. By focusing on operational adjustments, advanced filtration technologies, and recycling mechanisms, this study outlines approaches to significantly reduce waste while maintaining water quality standards. Results from case studies and simulations suggest that proper parameter tuning, such as optimizing pressure, flow rates, and chemical dosing, combined with innovative solutions like energy-efficient membranes and hybrid systems, can lead to a 30-50% reduction in reject water. These measures enhance the efficiency of water treatment processes, reduce environmental impact, and improve cost-effectiveness. This report contributes to sustainable water management practices, emphasizing the importance of balancing resource conservation with technological innovation.

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Guide Name: Mr. John Bennet Johnson

Guide Signature: 

Course Code: PIP2001 PIP2001

Course Name: Capstone project CAPSTONE PROJECT

Semester: 7th 7

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Date:

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