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Patent Search

Invention Title	Integrated Greywater And Kitchen Wastewater Treatment System For Potable Water Reuse
Publication Number	20/2026
Publication Date	15/05/2026
Publication Type	INA
Application Number	202641057377
Application Filing Date	06/05/2026
Priority Number	
Priority Country	
Priority Date	
Field Of Invention	CHEMICAL
Classification (IPC)	C02F 9/00, C02F 1/00, C02F 1/44, C02F 1/28, C02F 9/02

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Abstract:

The present disclosure relates to water treatment systems and provides an integrated greywater treatment system (100) configured to collect domestic greywater from outlets, pass it through successive filtration and treatment stages, store the treated water, and distribute it via a separate non-potable distribution line (120) for secur. The integrated greywater treatment system (100) includes a primary filtration unit (102), aggregate filtration media (104), and a secondary treatment stage (106). The filtration unit (102) removes large particles and sediments, while the secondary treatment stage (106) neutralizes odors and removes fine contaminants (110). This enables recycling of domestic greywater for secondary use, thereby reducing demand for fresh water supplies and easing the load on municipal sewage systems.

Complete Specification

Description: TECHNICAL FIELD

[001] The present invention relates to the field of environmental engineering and sustainable water management, and more particularly to an integrated greywater treatment system configured to filter, treat, and recycle domestic greywater for non-potable residential applications.

BACKGROUND

[002] The field of environmental engineering and sustainable water management has witnessed significant development in recent years, particularly in response to pressures on freshwater resources. Domestic water consumption constitutes a substantial portion of total municipal water demand, and a considerable fraction of consumption results in wastewater that is discharged without any form of recovery or reuse. Efforts to address water scarcity have historically focused on large-scale infrastructure such as centralized treatment plants, water desalination facilities, and inter-basin transfer schemes, all of which typically require substantial capital investment, energy input, and operational expertise beyond the reach of individual households.

[003] Rapid urbanization has placed increasing strain on municipal water supply and sewage networks. As urban populations expand, the volume of domestic waste generated from sinks, showers, laundry outlets, and kitchen sources rises correspondingly. Much of this wastewater, commonly referred to as greywater, is relatively harmless compared to blackwater and may be amenable to on-site treatment for reuse. However, conventional municipal systems typically channel all domestic wastewater into a single sewage stream, where it is conveyed to centralized treatment facilities. This approach may result in the unnecessary expenditure of energy and infrastructure resources on water that could otherwise be treated and reused at the point of generation.

[004] Conventional approaches to greywater management at the household level have included simple diversion systems that redirect untreated or minimally filtered

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Page last updated on: 26/06/2019