University : Universitas Pendidikan Indonesia
Country : Indonesia
Web Address : http://upi.edu

[4] Water (WR)

[4.2] Water recycling program implementation

There are three water recycling programs implemented at the University of Indonesia: Based on the Source of Water Treated, Based on the Purpose of Reuse, and Based on the Level of Treatment.

1. **Water recycling Based on the Source of Treated Water**
   There are two sources of recycled water at the Indonesian University of Education. The first comes from river water, and the second comes from domestic wastewater (washing water and toilets).



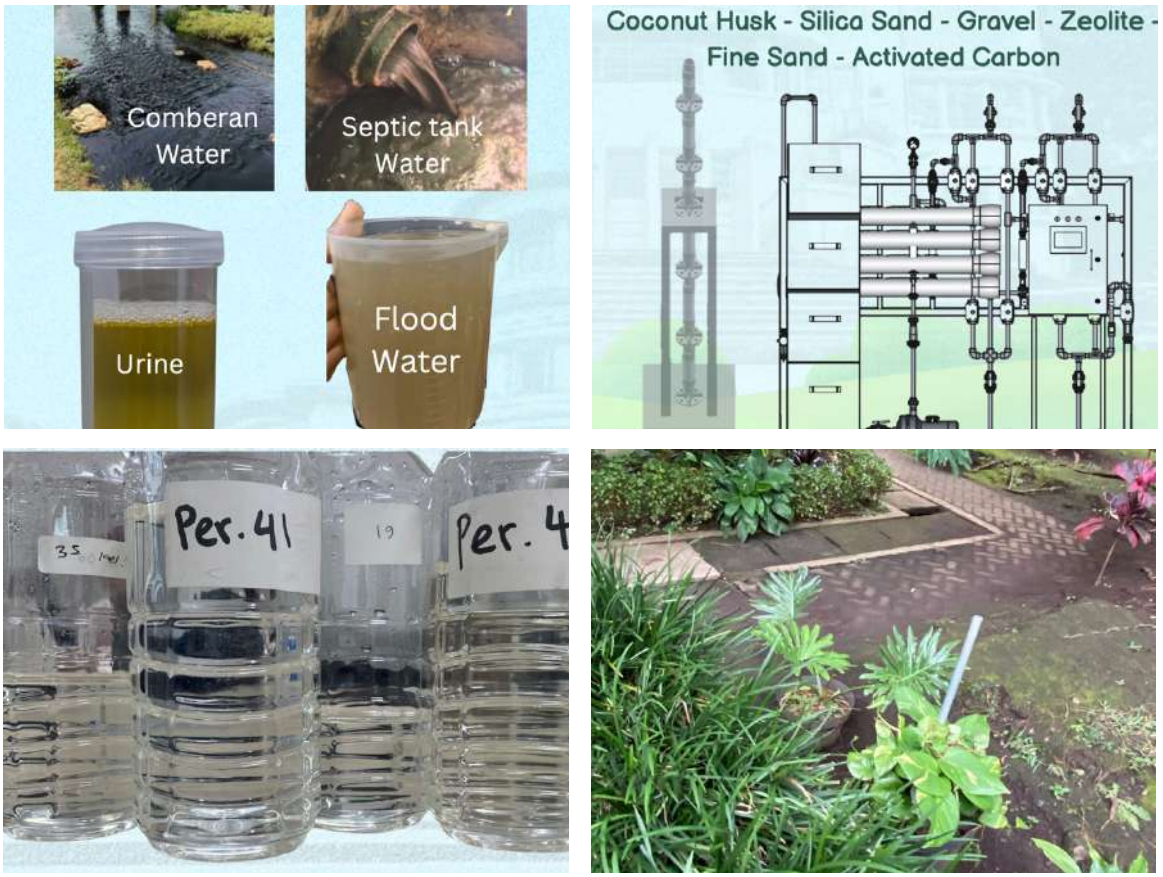
Water Treatment Plant, Universitas Pendidikan Indonesia

Description:
The Water Treatment Plant (WTP) of Universitas Pendidikan Indonesia is a system that processes water from the Cibeureum River to meet quality standards and is suitable for use by the entire academic community, both for consumption, sanitation, and campus operations. Water is pumped from a machine tank near the dam with a flow rate of 10 liters per second, then processed every two days through five main stages, namely coagulation, flocculation, sedimentation, filtration, and disinfection. Overall, the UPI WTP has a processing capacity of up to 15,000 m^3 of river water per half day and can accommodate up to 450,000 m^3 of water, making it one of the important facilities in supporting the availability of clean water and sustainable environmental management in the campus area.



Water Treatment Plant, Universitas Pendidikan Indonesia

Description:
The University of Education's Water Treatment Plant (WTP) also processes Cibereum River water into swimming pool water. Its primary processes include filtration, aeration, coagulation, flocculation, sedimentation, filtration, and disinfection using chemicals such as chlorine.



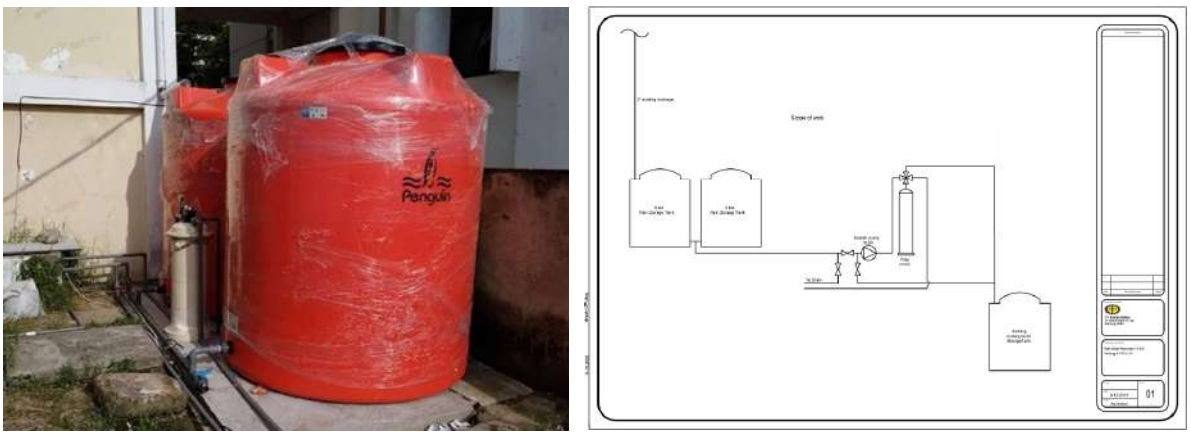
Water Recycling, Universitas Pendidikan Indonesia

Description:

This water treatment system transforms dirty water from sewage, septic tanks, urine, and floodwater into clean, clear, and odorless water. It uses natural materials such as coconut fiber, silica sand, gravel, zeolite, fine sand, and activated carbon. The treated water is not suitable for drinking but can be used for watering plants and other purposes. The modular design allows for efficient maintenance and component replacement.

2. Water recycling based on reuse purposes

There is a non-portable water recycling program implemented at the University of Indonesia (Recycled water is used for purposes other than human consumption)



Rain Water Harvesting, Universitas Pendidikan Indonesia

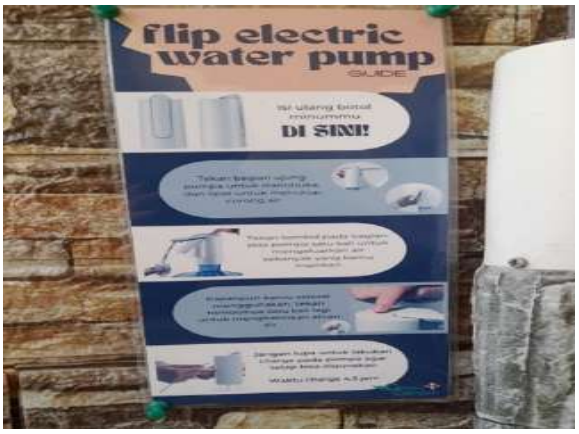
Description:

Because UPI is located in a tropical climate that can experience rain every year, we take advantage of these climatic conditions by creating a Rainwater Harvesting System to reprocess water, namely rainwater stored in a tower with a volume of 5,000 liters x 2 rainwater harvesting at FPTI UPI is able to store 10,000 water for the dry season in July - August collected from the roof or surface of the building, then filtered and stored. The collected water can be used for non-consumption needs such as watering the garden.

3. Water Recycling Based on Treatment Level

Based on the level of water treatment, there are three types of treatment: primary treatment (removing large solids through filtration and initial sedimentation), secondary treatment (decomposing organic matter through biological processes using microorganisms), and tertiary treatment (removing residual chemicals, bacteria, and heavy metals using advanced technologies such as membrane filtration, ozonation, or UV disinfection).





Reverse Osmosis, Universitas Pendidikan Indonesia

Description:

Reverse osmosis is ready-to-drink water intended for students and all FPMIPA residents. This project was created with the hope that the community can fill their own drinking bottles and reduce the use of bottled water in single-use plastic bottles. The system applied to ready-to-drink air installations is reverse osmosis which is capable of filtering up to 0.0001, so that viruses and bacteria can be filtered. In this system there are nine filtering stages and the final one uses UV light. Apart from that, the machines and components used are food grade and equipped with equipment that is commonly used to provide direct drinking air on a household scale but of higher quality. The next plan is to carry out equal distribution and provision of osmosis across all faculties.





Water Purifier, Universitas Pendidikan Indonesia

Description:
The Cibeureum River water, located next to the campus, is processed into pure water through three main stages: filtration, sedimentation, and treatment. The purification process is carried out using a multi-stage adsorber system, developed with technological innovations based on ion exchange and electrostatic field filtration. This technology is capable of producing water with a very high level of purity, characterized by a Total Dissolved Solids (TDS) value of 0. This water purifier product can meet the need for pure water in campus laboratories. In addition, the development of this technology also encourages partnerships between study programs in the fields of health, pharmacy, and chemistry laboratories.




Water Purifier, Universitas Pendidikan Indonesia

Description:
Cibereum River water is processed into water for hand sanitizer and disinfectant, going through three stages: filtration, sedimentation, and treatment. These hand sanitizer and disinfectant products can meet the needs of campus laboratories. This technological development also encourages partnerships between study programs in health, pharmacy, and chemistry laboratories.

Link:

- **Water management monitoring form in the Indonesian education university environment**
  https://drive.google.com/drive/folders/11lEWxA_Vgnj-eYZyJ3hSL7MwW_-wee-Pi8FPvllmbVNGW1QyhjLUnJx0bFbbKDKqdgc_6vGE?usp=share_link

- **Biopore Area**
  https://drive.google.com/file/d/1J7RjjgvUs4ry9L6TUmOfVii8fZpldF_T/view?usp=share_link

- **Conservation of water catchment areas (Open Areas, Green Areas and Vegetation Points)**
  https://drive.google.com/file/d/1vpfCVCxJc5Y_P8NV7Nv7hr0-mSrYQAM5/view?usp=share_link