

## AIR INTERMITTENT RECIRCULATING REACTOR (AIRR)

### A Built-in, De-centralized Wastewater Treatment System

The Air Intermittent Recirculating Reactor (AIRR) is a built-in, de-centralized wastewater treatment process. The design of the system eliminates the need of chemicals while minimizing odor from the treatment process. Designed to fit in covered areas, the AIRR can be constructed in covered sheds or in the basements of homes and buildings.

The AIRR takes in septic overflow from homes and residential communities and treats the water on-site, reducing piping and transportation needs. The system can be designed to suit the demands of single homes to small residential communities.

Key applications include:

- Single homes
- Residential communities
- Schools
- Hotels

The recycled water can be reused for various purposes like toilet flushing, irrigation, and water features.

### System Features and Benefits

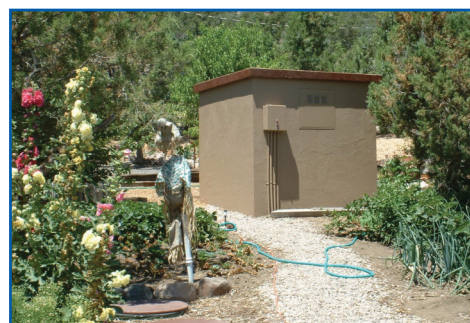
- Designed to the needs of homes and communities (2 to 40, 000 users)
- Low energy consumption
- Low operation and maintenance cost
- Small footprint and can be installed in the basement of a house or below a car park
- No odor generated and no chemical use
- Can be stopped when not in use and restarted with ease
- Little sludge generated, generated sludge can be used as organic fertilizer
- Remote monitoring of the system



**The AIRR can be fitted into covered area**



**AIRR underground water tanks**



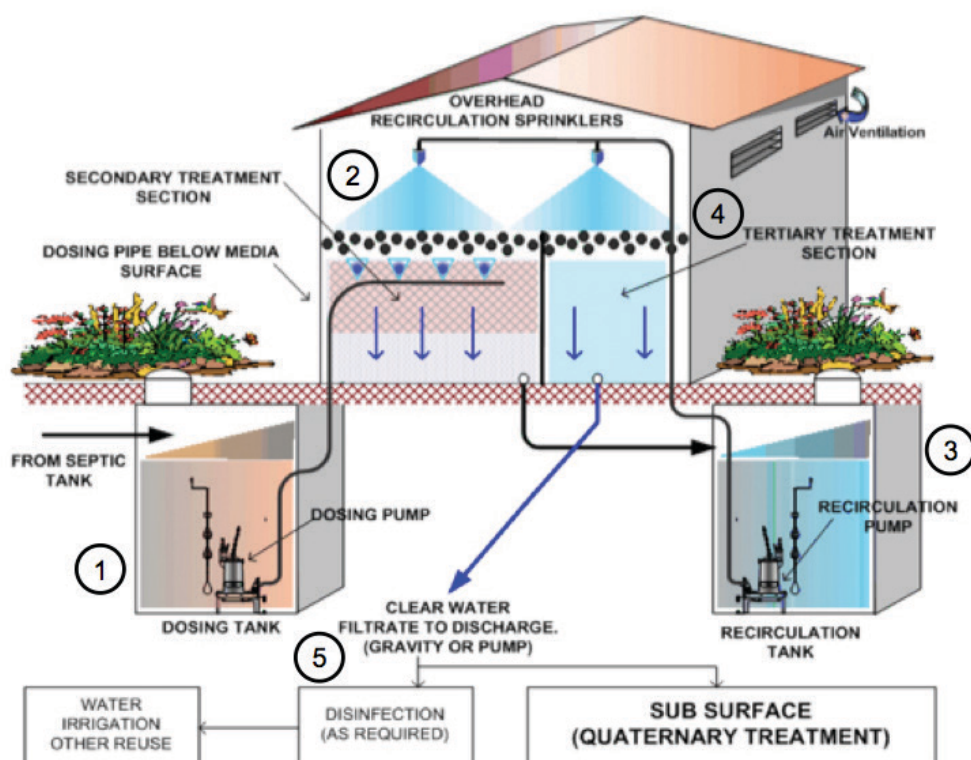
**An AIRR wastewater treatment system for a single family**



**Locally sourced filter media can be used to support attached growth population**

## Overall System Flow

1. Dosing tank: Collection from septic tank overflow. Removes most of the fixed solids and discharges mostly dissolved solids
2. Secondary treatment bed: Uses a mixed population of attached growth microorganisms to remove organics and nutrients
3. Recirculation tank: Effluent from the secondary treatment bed is recirculated back to the secondary and tertiary treatment beds
4. Tertiary treatment bed: Uses a mixed population of attached growth microorganisms to further remove organics and nutrients. Effluent will be clear water
5. Disinfection: UV disinfection or chlorination as required



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## AIRR Effluent Quality

Parameters	Effluent Quality*
BOD <sub>5</sub>	< 3 mg/L
TSS	< 3 mg/L
Ammonia	< 1 mg/L
Nitrate	< 1 mg/L
Fecal Coliform	< 20 CFU/100 mL

\*Values are based on wastewater from residential areas.

