

## HOW THE REFLECTION TEXTILE FILTER (RTF) WORKS

### 1. Primary Treatment (Septic Tank)

All household wastewater is directed to the one house drain which leads to a large capacity primary settling chamber. In this chamber, naturally occurring bacteria start the treatment process by breaking down the settled solids through anaerobic digestion. Fats and other light matter float to the surface and form a scum, while heavy solids sink to the bottom.

The liquid wastewater then passes through a special effluent filter which is designed to retain solid material in the settling chamber. The coarsely screened liquid flows into the recirculation chamber in the bottom of the Textile Filter unit.

### 2. Secondary Treatment

Unlike other secondary treatment systems the REFLECTION RTF (recirculating textile filter) SYSTEM does not rely on costly mechanical aerators, blowers or diffusers to oxygenate the wastewater.

The RTF provides secondary treatment (oxygenation) of the effluent in a completely natural way. Air contained within the textile media provides the oxygen needed by bacteria living on the textile surface to prosper and consume the organic material in the effluent.

The RTF utilises the latest advances in attached growth technology using non-woven textile media engineered to provide maximum surface area and void space with minimal water retention.

Wastewater is fed to the bacteria in the textile bed in a measured dose at controlled intervals by the recirculation chamber pump spraying onto the textile bed in the timed on/off cycle. Effluent trickles down through the bed and bacteria attached to the textile media cleans the effluent until it drops into the pump chambers below the bed as clean, treated effluent.

80% falls into the recirculation chamber where it dilutes the incoming septic tank discharge and is ready for pumping back to the top of the textile bed again. 20% falls in the treated effluent chamber ready for pumping to irrigation and land disposal to your lawn, gardens, paddock, etc.

### 3. Irrigation

By producing renovated water with very low levels of suspended solids, Biological oxygen demand and Faecal Coliforms we are able to move away from the standard trench or bed system of disposal.

Using pressure compensated dripper irrigation line buried in the upper topsoil layer or in mulch, the renovated water can be utilised as a resource to irrigate your property and enhance its value.

A great deal of flexibility in lay-out of the dripper lines is possible and with manual flush valves their reliability is unmatched by any other systems.

Note that in clay soils, soakage is poor and a great deal of reliance is placed on plants drawing water from the ground and evaporating it through their leaves, like washing on a clothesline. It is most important that this evapotranspiration is maximised and for this reason the most effective disposal fields are mulched and heavily planted.



1. Inlet pipe from house drains
2. Air vent (mushroom)
3. Septic tank. This stores waste for about 3 days where the following happens:
  - Sludge sinks to the bottom
  - Fats, lint, light materials float to the surface
  - Bacteria process the organic components of the waste. These types of bacteria live without oxygen
4. Solids filter fitted in discharge pipe to retain solids in septic tank
5. Recirculation chamber
6. Recirculation pump
7. Recirculation pump low level cut off float
8. Recirculation chamber high level alarm float
9. Textile bed – This is specially sized textile media. Biological slimes attach to the textile media surface. Bacteria live in these slimes (which use air to live) and feed on the remaining organic material in the effluent. Each dose thinly coats the surfaces of the textile media. As it trickles down through the textile media it draws air into the filter. Natural, passive aerobic treatment occurs in the textile filter. This is called secondary treatment. The textile filter is built into the ground, where all liquids are contained by a concrete tank.
10. Treated (polished) effluent is collected in the base of the textile filter as clear, odourless liquid in the treated effluent chamber
11. Treated effluent pump
12. Access riser and lids. These are sealed pipes allowing access for inspection and for septic tank trucks to pump out. By having the access just above ground and sealed to the tank, ground water is excluded from the treatment process. These are child and animal proof.
13. Control box and warning light. This controls the pump's operation. If the level in a pump chamber gets too high, the alarm light will come on. This is a signal that either a pump has failed or that a large influx of water into the system has occurred (e.g. multiple loads of washing). If required, this can be placed on the side of your house, garden or deck.
14. Disposal field – Effluent is thinly spread over a large area of soil. Drippers are evenly spaced in the irrigation pipes and they discharge the treated effluent into the topsoil. This water is an asset and can potentially be used to water the garden. The disposal field is the largest component of the wastewater system. It can be incorporated within your lawn, existing or new garden, even native bush area.

**Reflection Treatment Systems Limited**