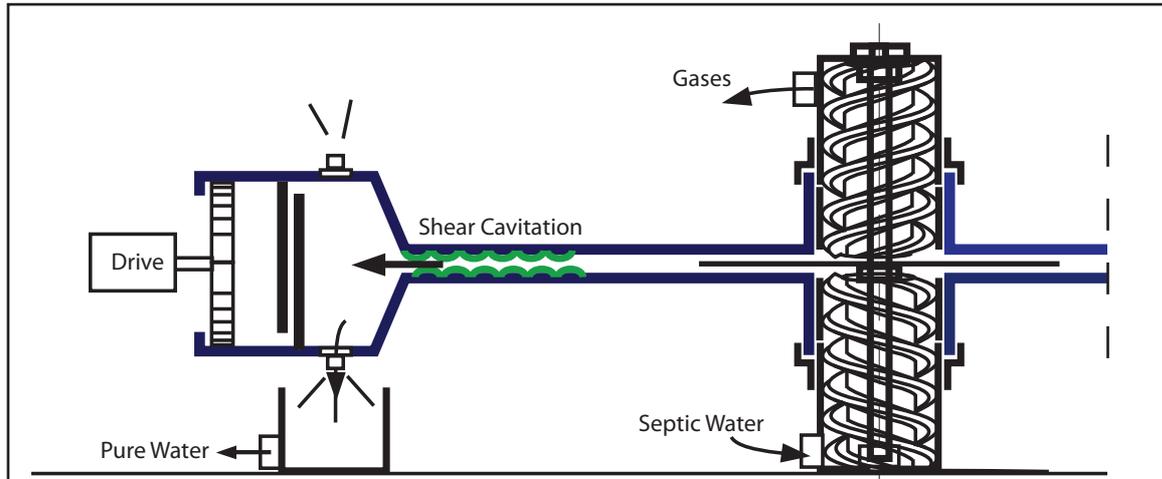


# Vorsana Water Purifier



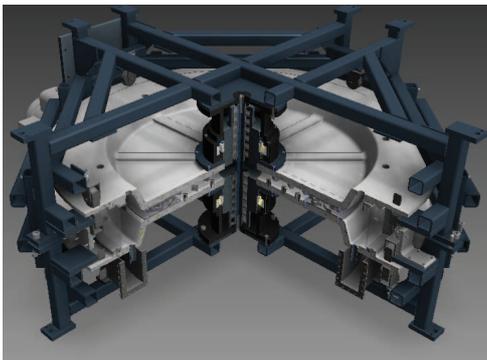
## Shear Cavitation for Water Disinfection

The new Vorsana Water Purifier disinfects a continuous flow of water by physical processing, without membranes, filters or chemicals. It also helps with suspended metals extraction, crystallizing scale and salt, and removal of volatile compounds. Because it is a relatively low-tech and low-power device, it is suitable for field water purification.

Disinfection involves the killing of pathogens. The water supply may contain many such as Giardia, cryptosporidium, amoebas, bacteria, worms, snails, and viruses. Some pathogens are in cysts, which are highly resistant to chemical treatment, even chlorine. A better approach than chemical is physical treatment, particularly cavitation, ultraviolet light, and pulsed electric fields. The Vorsana Water Purifier can combine all three, as needed.

Cavitation is a well-known force in water which can chip boat propellers and damage spillways. When water is put under sufficient physical stress, it tears apart at weak points in its structure, forming bubbles which collapse when the tearing force is gone. Because pathogens constitute interruption in the water, the bubbles are likely to form next to them. The collapse creates strong shock waves as well as powerful microjets, which destroy the pathogens like depth charges destroying a submarine, as well as ultraviolet light and OH radicals, both of which are also deadly to microbes.

In the Purifier, two counter-rotating disk impellers are rotated by a drive wheel driven by an engine or even a person on a bicycle. The septic water is first degassed by a low pressure sink in the upper axial portion, then the degassed water flows outward where it is sheared between opposed ridges to produce cavitation. Optionally the ridges can be electrically charged, to produce pulsed electric fields that also cause cavitation. With this, the pathogens will be simultaneously blasted, irradiated, and electrocuted. US Patent 8268136, patented in Mexico, other International patents pending.



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