

<http://www.eomega.org/omega-in-action/key-initiatives/omega-center-for-sustainable-living/eco-machine%E2%84%A2>

OMEGA

Omega Center for
OCSL Sustainable Living



Eco Machine™

The Eco Machine™ at the heart of the Omega Center for Sustainable Living is the latest in nature-influenced technology designed by [John Todd](#), a pioneer in the field of ecological design. An Eco Machine™ is a water reclamation system that cleans water by mimicking the processes of the natural world. Together, [John Todd Ecological Design, Inc.](#), [Biohabitats](#), [BNIM Architects](#), and [The Chazen Companies](#) designed an Eco Machine™ to address Omega's unique needs as a seasonal educational retreat center.

All the water from Omega's campus, including water used in toilets, showers, and sinks, flows to the Eco Machine™, where it is purified by microscopic algae, fungi, bacteria, plants, and snails. This natural water reclamation process cleans the water using zero chemicals. In large dispersal fields under the parking lot, the purified water is returned to the aquifer deep beneath campus.

The OCSL's Eco Machine™ treats wastewater in seven steps: 1) [Solid Settlement Tanks](#) 2) [Equalization Tanks](#) 3) [Anoxic Tanks](#) 4) [Constructed Wetlands](#) 5) [Aerated Lagoons](#) 6) [Recirculating Sand Filter](#), and 7) [Dispersal Fields](#). It processes up to 52,000 gallons of water per day when Omega's campus is open (April to October), and about 5,000 gallons of water per day in the off season (November to March). Each component of the Eco Machine™ at the OCSL is designed in a number of cells that allow Omega to manage the flow of wastewater. When our water usage is low, we divide the wastewater among the various cells to efficiently "feed" all the living organisms and plants that purify the water. This keeps the Eco Machine™ running well year round.

Solar energy supplies 100% of the electricity necessary to power the natural water reclamation achieved by the Eco Machine™. In addition, Omega's campus is located on the side of a hill, so gravity aids the water's flow to the Eco Machine™, reducing energy demand.