

John Todd Ecological Design
Natural Water Treatment Systems

John Todd Ecological Design

John Todd Ecological Design (JTED) specializes in natural water treatment systems. JTED is a solution-based company that uses a multi-disciplinary approach to treat pollutants and contaminants in water and wastewater. Founded in 1989 and based on 40 years of Dr. Todd's research and application of the Eco-Machine™, JTED designs, builds, and operates natural water treatment systems with this depth of knowledge and experience. The Eco-Machine™ has primarily been used to treat municipal wastewater but it also has been used for treating toxic contaminants, restoration of aquatic environments, nutrient farming, and stormwater management.

International Experience

JTED has overseen both small-scale and large-scale projects in 5 continents and 11 countries around the world. From a world wide network of projects, JTED has experience delivering global technical support to natural water treatment projects in both rural and urban environments and in both warm and cold climates.

Local U.S. Experience

A strong understanding of applied ecological design is fundamental to producing successful natural water treatment systems that meet current regulatory standards and requirements. While we strive to design for the 21st Century and beyond, we recognize the importance of working within local regulatory requirements to ensure a project's success. JTED has a history of meeting and surpassing regulatory compliance with their projects. Through our success, JTED has developed strategic alliances with a network of local firms around the country. With each project, we provide a team that works with key stakeholders to uncover and understand the most economical approach for natural water treatment systems. We find efficient ways to build elegant and appropriate systems. JTED has deep commitment to restore coastal waters along the U.S. east and west coasts.

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“Mechanically simple yet biologically complex.”

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Our Approach

Critical to our success, and significant in our differentiation from other ecological engineering practices, is our commitment to the technical integration of our systems with existing systems. From this commitment, JTED has been able to help our clients to far exceed their initial goals while maintaining schedule and budget. JTED has considerable experience in designing natural water systems that go beyond regulatory requirements. We are recognized as one of the world leading consultants in the field of innovative water treatment. It was through this commitment that John Todd was awarded the Buckminster Fuller Challenge Award in 2008.

Our Awards

- Global Visionary Award, City of Chicago (2006)
- Bioneers Lifetime Achievement Award (1998)
- John Todd named “Hero of the Earth” by Time magazine in (1999)
- The Charles Lindbergh Award for Environmental Innovation (1998)
- Environmental Merit Award from the US EPA (1996)
- Daimler/Chrysler award for design (1994)
- The Discovery Award for technological innovation (1991)
- The Teddy Roosevelt Award for Conservation (1990)
- The United Nations (FUNEP) Award for the Global Environment (1990)
- The U.S. EPA Chico Mendes Award for Environmental Restoration (1989)
- The Swiss Threshold Award for his Contributions to Human Knowledge (1980)

A list of projects JTED has designed, built and operated:

- Omega Institute, Rhinebeck, NY
- Sir Richard Branson’s Mosquito Island, BVI
- Schooner Bay, Abaco, Bahamas
- Canaan Valley Institute, Davis, WV
- Eugene Water & Electric Board, Eugene, OR
- The Four Seasons Resort, Kona, HI
- City of Fuzhou, Fujian Province, China
- Peace and Plenty Resort, Great Exuma, Bahamas
- Darrow School, New Lebanon, NY
- City of South Burlington, VT
- Tyson Processing Plant, Berlin, MD
- Adam Joseph Louis Center for Environmental Studies Oberlin College, OH



"As we move into the 21st century we need to be developing ways to manage waste using ecological systems. Supporting projects like the Eco-Machine is consistent with a progressive and forward-thinking economic development strategy."

Chuck Hefter
South Burlington City Manager

The Eco-Machine

An Eco-Machine™ is a living system that treats wastewater, solids and contaminated water to a high water quality standard that can be reused. Eco-Machines™ represent a partnership with natural ecosystems by creating distinct treatment zones that use plants, microbial species, fungi, beneficial bacteria and aquatic species to convert "waste" into a resource. The Eco-Machine™ is a cost-competitive solution and uses minimal energy, resulting in lower operating costs and reducing the carbon footprint of the system. JTED designs Eco-Machine™ systems with the following criteria:

Simple to Construct

A major advantage with the Eco-Machine™ is that it avoids the need for costly infrastructure and can be built by local contractors.

Simple to Operate

The system requires minimal operator involvement. The Eco-Machine™ is a robust system that has a high level of tolerance when compared to conventional wastewater treatment facilities.

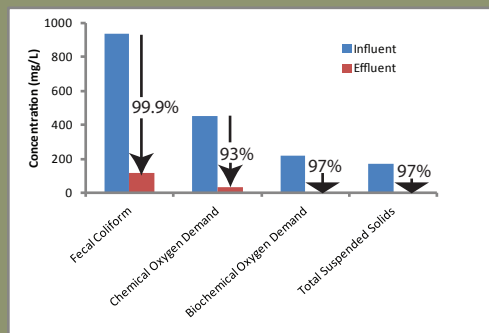
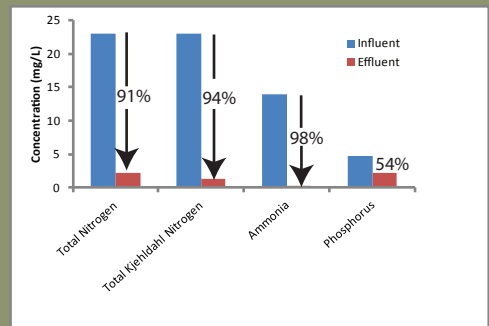
Simple to Maintain

Eco-Machine™ systems require only simple equipment that is readily available from the wholesale plumbing supply for operation and maintenance. Our systems have minimal energy requirements.

Superior Performance

The Eco-Machine™ has proven to surpass regulatory requirements and treat multiple contaminants in wastewater streams. Nature is the ultimate engineer with over 3 billions years of trial-and-error design experience. Eco-Machine™ systems have been developed using complex ecologies that tap into this natural wisdom without using intensive mechanical and chemical treatment.

Effluent reductions in the Eco-Machine™



Data from South Burlington Eco-Machine™ Municipal Wastewater Treatment



"If we set up another area as a fish pond without this system, it would cost close to \$10,000 a month in power - this one runs about \$400."

*David Chai
Director of Natural Resources
Four Seasons Resort*

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Services

JTED is an ecological design company. Our services are based on applied ecological science which is rooted in the precepts, principles and dynamic systems inherent in ecosystems and evolutionary processes. JTED designs, builds and operates Eco-Machines™ to treat wastewater, and to repair and maintain damaged aquatic environments. An Eco-Machine™ is a cost-competitive solution that uses minimal energy, minimal mechanical equipment and puts nature to work using complex ecologies.

Wastewater Treatment Systems

JTED designs each Eco-Machine™ system to specifically meet the requirements for both new wastewater treatment facilities and retrofitting existing facilities.

Treatment of Toxic Materials and Contaminants

The Eco-Machine™ has been proven to degrade a wide range of toxic organic compounds ranging from petroleum byproducts, industrial chemicals, and pharmaceutical and personal care products. JTED has installed Eco-Machines™ that remediated Brownfield sites, mine-scarred areas and high risk environmentally-impacted sites.

Aquatic Environmental Restoration

The Aquatic Restorer Eco-Machine™ manages excess nutrients in saltwater bays and lagoons. The Aquatic Restorer Eco-Machine™ is designed to be integrated with the production of marine foods including, shrimp, oysters, shellfish and fish.

Nutrient Farming

Sewage and wastewater are potential resources. The Eco-Machine™ recovers unwanted nutrients such as phosphorus and nitrogen from wastewater and transforms them into environmentally friendly food sources for organisms in the Eco-Machine™. Our approach is to "farm" nutrients into economic pathways such as supporting an aquaponics system. For over 40 years, JTED has been designing food culture systems for four-season production using the Eco-Machine™.

Stormwater Management

Stormwater and water runoff can be captured, purified and reused with an Eco-Machine™. JTED can also improve water quality in drinking water reservoirs employing our Restorer Eco-Machine™.

Research and Development

JTED undertakes pilot scale R&D in order to ascertain if an Eco-Machine™ system can degrade toxic chemicals and recalcitrant compounds. JTED is pursuing research to convert high strength organic wastes into biofuels during the early stages of treatment and then later be used as an energy source.

Education and Training

JTED provides training to the operators of Eco-Machine™ systems as well as developing operations and maintenance manuals. Through its sister organization, the not-for-profit Ocean Arks International, JTED can provide workshops and lead design charrettes for our clients.



Saltwater Restorer, Four Seasons Hawaii



Wastewater Treatment, Oberlin College



Wastewater Treatment, Omega Institute



Industrial Waste Treatment, Tyson Food

People

Dr. John Todd Ph.D. – Principal Designer

Dr. Todd is the author of seven books, the latest entitled “From Eco-cities to Living Machines: Ecology as the Basis for Design.” Additionally, he has authored over two hundred scientific, technical, and popular articles. Most importantly, Dr. Todd is the inventor of Eco-Machines™ for the treatment of wastes, production of foods, generation of fuels, and the restoration of damaged aquatic environments. Dr. Todd holds four patents, and was named one of the 20th Century’s top thirty-five inventors by the Lemelson-MIT Program for Invention and Innovation, in their 2002 book entitled “Inventing Modern America: from the Microwave to the Mouse”. Dr. Todd’s many citations include:

Jonathan Todd – Chief of Operations

After working as a captain in the Merchant Marines, Jonathan Todd joined his father in founding John Todd Ecological Design. Jonathan began right away working to integrate his father’s natural ecological technologies as they evolved into the company’s growing client base. Over the course of five years, working with engineers and other project designers, Jonathan helped to bring Dr. Todd’s discoveries to a commercial scale. As president of JTED, it has been Jonathan’s mandate to bring robust large-scale ecological wastewater solutions to the global community, recognizing that affordability, reliability, and aesthetic presentation were the keys to entering a competitive market against the conventional technologies. Jonathan has been contracted as a consultant for architectural and engineering firms in the design of ecological exhibits, eco-industrial parks, and innovative large-scale water treatment systems. As a personal mission, he has a keen interest in developing sustainable water solutions for refugee populations throughout the world.

Paul Carey – Senior Engineer

Paul is a licensed professional engineer with over 18 years experience in the wastewater field. He is the founder and president of Wastewater Alternatives, L.C. Paul has been involved in the design, construction and operation of numerous wastewater systems, and he is especially experienced in decentralized wastewater treatment systems. Paul has extensive knowledge of systems used by JTED and has designed a number of natural systems wastewater treatment and reuse systems supplying highly treated effluent for use as toilet flush water for sustainable residential projects and environmental education centers. Paul’s wastewater management work for the Garthwaite Center for Science and Art was recognized nationally by award as a 2008 Top Ten Green Project by the American Institute of Architects Committee on the Environment.

Scott Sargert – Senior Biologist

Scott joined JTED in 1989 during the construction of the Providence Rhode Island, Solar Aquatic Research Facility and stayed on to manage the project until 1994. He has had an active role with almost every project Dr. Todd has undertaken in the past 19 years. Scott holds a BS in Aquatic Biology from Roger Williams University in Bristol Rhode Island and brings a wealth of experience and knowledge of the biological processes.

Oraibi Voumard – Managing Partner

Oraibi is the business administrator bringing 15 years of business development experience to JTED. Since joining JTED, Oraibi manages numerous projects and offers design support. With his technology background and operations experience, Oraibi manages staff, while also insuring that the business operates in a smooth and professional manner.

Camron Adibi – Project Manager

Camron has worked on national and international building projects, technical green building analysis, master planning of sustainable communities, brownfield redevelopment, renewable energy systems, alternative wastewater systems and stormwater systems. Mr. Adibi holds a Master of Science in Sustainable Design from Carnegie Mellon University and a Bachelor of Science in Environmental Restoration and Waste Management. He studied with Volker Hartkopf and Vivian Loftness, both pioneers and advocates in environmental design, advanced building systems, system integration and human connectivity.