

Alexander M. Gorlov, P.E., Ph.D.
Professor Emeritus
Northeastern University (Boston, MA)
Recipient – 2001

For the invention of the "Gorlov Helical Turbine" which is capable of harnessing energy from ocean currents and other free water flow. This efficient turbine extracts energy from free (without dams or dikes) water flows and waves in oceans, rivers, canals, etc. Bypassing the air-compression stage, it proved to be one of the most efficient hydraulic machines for harnessing energy from non-ducted water currents. Fields of Helical Turbine application are electric power production, production of hydrogen fuel by electrolysis of water in situ at floating power farms, direct water pumping for irrigation, in situ water desalination at ocean power farms and ship propulsion.

Born and educated in Moscow, Russia, Dr. Gorlov worked on the design and construction of hydro power plants for the Institute Orgenergostroy (1959-61); and on computer-aided design systems for the analysis and design of hydro power stations, industrial structures and bridges for the Central State Research Institute on Automation of Design (1961-74). His industrial and design experience includes bridges and tunnels in Moscow, Gorky, Kursk, and Yar; subways in Moscow and Leningrad; hydro power plants and tunnels for the Aswan Dam Hydro Project in River Nile in Egypt; and hydro power on rivers Khram, Langanuary (Georgia) and Sevan Lake (Armenia). He earned a Gold and two Bronze Medals for Achievement of National Economy (USSR).

Gorlov came to the United States as a political refugee and joined Northeastern University (Boston, Mass.) in 1976. He served a professor until 2000, and is currently professor emeritus and director of the Hydro-Pneumatic Power Laboratory. Research grants since 1995 include the Department of Energy (DOE), the National Science Foundation, the Office of Naval Research, Allied Signal Company, New England Power Company and Central Maine Power Company.

Gorlov's major focus is renewable energy and the environment. He invented a device, the Hydro-Pneumatic Converter, for harnessing ultra low-head hydropower. The energy of flowing water was used to compress air, which was then used to drive turbines to generate electricity. This method, which could be used even in small streams to provide power to individual users, extracted energy from nature without collateral damage.

He is world renown for the development of an efficient turbine for extracting energy from free (without dams or dikes) water flow and waves in oceans, rivers, and canals, etc. Bypassing the air-compression stage, the Helical (Gorlov) Turbine proved to be one of the most efficient hydraulic machines for harnessing energy from non-ducted water currents. Because the single turbine is small and can be multiplied indefinitely to form powerful energy farms, it is equally suitable for small-scale and for massive investments.

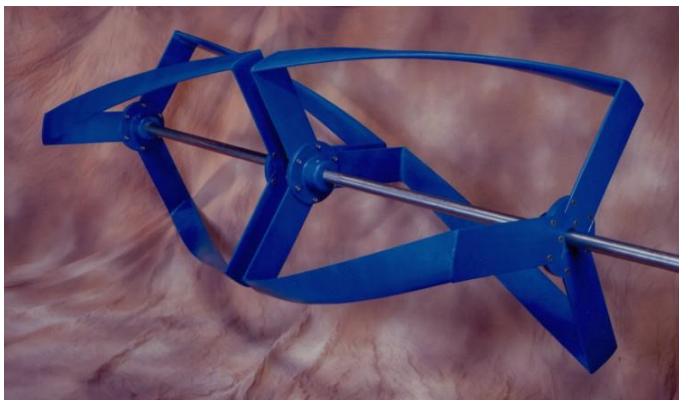
The turbines are modular and be assembled vertically or horizontally with a common shaft and generator for a number of turbines, thus reducing construction and maintenance costs; they rotate in the same direction, independent of water flow direction; they are self-starting under load in current flows as slow as two ft/s. and are vibration free; and they affordably tap an inexhaustible power supply by a non-pollutant harvesting process without noxious by-products.

Fields of Helical Turbine application are electric power production, production of hydrogen fuel by electrolysis of water in situ at floating power farms, direct water pumping for irrigation, in situ desalination at ocean power farms and ship propulsion. Present efforts include ocean current capture; the design and construction of a demonstration tidal power plant in free current at Vinalhaven Island, Maine; and the conceptual design of a tidal power plant with Helical Turbines up to 100 megawatts in Uldolmok Strait, South Korea, under consideration in the Korean Assembly.

Gorlov has written over 90 technical papers; the energy chapter for a 1998 book, "Macro-Engineering and the Earth"; a non-technical memoir (1980), "Incident at a Summer House"; a 1968 book titled "Plates on Elastic Foundations."

An ASME member, he is also a member of the International Association of Macro-Engineering Societies.

Gorlov earned his bachelor's and master's degrees in bridge and tunnel engineering (1956), and his doctorate and post doctorate in theoretical mechanics (1962) at the Moscow Institute for Transport Engineers, Russia. He holds 15 patents, US and International, on renewable energy and mechanical systems, and is a registered professional engineer in Massachusetts.



Gorlov Helical Turbine