

Hannu Lauri Suominen was born in Inari, Finland in 1948. The school years were spent in the City of Lahti until his college graduation from the Lahti Lyceum for boys in 1969. He volunteered for The Finnish Air Force in 1969, and after Reserve Officer Training Corps (ROTC) he was promoted to First Lieutenant.

After military service, he studied in the University of Helsinki mainly mathematics, physics, chemistry and several biological sciences. Alongside his studies, he gave lectures in chemistry and biochemistry. His scientific studies on the Baltic Sea were funded by Walter and Andrée de Nottbeck Foundation for seven years. He completed his doctoral thesis in marine microbiology in 1980.

His interest in the origins of life led him to visit several research institutes and universities in Europe, the USA, Russia and the Peoples Republic of China. Experience in building research instruments for marine microbiology research led him to establish his first company, Biodata LTD, in 1979. In 1979, he was asked to work in Princeton, NJ, USA to establish a new venture in industrial microbiology. The results were sold to McDonnell Douglas for combining the them to the instrumentation of the Apollo Space Program, USA, in 1982.

After rectifying the production of High Fructose Corn Syrup for Finnish Sugar LTD, purchased from Nabisco Brands CT, USA, and working for the international bio-industry for 5 years, he founded his first company in 1985.

From then on, his interest in the origins of life, growing of organic food and high energy physics, inspired him to invent the Zero Emission Technology family of products. During his 40 years of extensive industrial experience in international business, he has invented and registered 50 original patent applications, and already 153 international patents have been issued in his name.

Education:

MSc in General Microbiology, Biochemistry and Radio-chemistry, University of Helsinki, 1978.

PhD in Marine Microbiology, University of Helsinki, 1980.

Scholarships:

Scholarships for marine microbiology research in the Baltic Sea, 1973 – 1980, by Walter and Andrée de Nottbeck Foundation.

Awards:

Pro Gradu Award of The Best Thesis of MSc, University of Helsinki, 1978

First Award for the Instructor and Trainer of Navigation from the Navigation Society of Helsinki, 1978

Diploma:

Diploma of Astronomical Navigation for Open Seas, 1978



Sailing Swan 47 "TILL" on the Northern Atlantic, Southport, CT, USA, 1980-1982.

Patents:

Dr. Suominen has 50 original patent applications and already 153 international Letters of Patents for methods and equipment for various industrial applications. The developed technologies are especially in the fields of sustainable food production such as Azoferti farm based production of odorless stable natural fertilizer, pure water and heat- and electric energy, bio-polymers, production of desalinated fresh drinking water, purification of municipal and industrial waste water for re-use, nonpolluting dry mining operations and purification of produced water from oil explorations. The developed technologies have been distributed to 45 countries by more than 300 deliveries, which include:

Biological Oxidation and Water Purification from farm waste for production of Natural Fertilizer to be used even in Organic Farming;

Gravity Pipe Technology for production and transportation of desalinated fresh drinking water, and for zero emission, off grid energy;

Biodegradable Polymers for mulching film to be able to practice chemical-free cultivation;

Singlet Oxygen Generator for air and gas purification;

Jet Milling and Ion Particle Classification for Dry Mining Operations;

Thermal Chemical Cracking (Zero Emission Pyrolysis) for elimination of municipal and industrial waste and production of emission-free energy;

Purification of Process Water from onshore and offshore gas and oil explorations, drilling and refining;

Purification of process water from chemical forest industry.

Publications:

Scientific publications in the fields of Applied Microbiology and Water Purification.

Other publications in the fields of Environmental Technologies, most of them described in the patent publications.

Languages: Native Finnish, fluent English

Military rank: First Lieutenant in the Finnish Air Force, 1981

Hobbies: Sailing, navigation, scuba diving, fishing, hunting, radio amateur, Member (1975 -) and Controller (1976 -1977) of the Finnish Society of Microbiologists.

Family: Two sons

Positions:

Industrial Entrepreneur and Innovator in International Business since **1979**.

2014 – present: Applied Physics Instruments API LTD, FI, a High Energy Company specialized in Sensors of Space Radiation for satellites and in the Gravity Pipe Technology for production of water and off-grid energy. Based on the earlier experiences, the API company developed and patented in 2024 the zero- emission technologies for manufacturing both: “The odorless Azoferti - a farm based natural bio-fertilizer produced from wet manure of dairy farms for pure water and heat- and electric energy”, and “The recovery of pure minerals from the dry mining operations”. ; Majority Owner and CEO since 2019.

2006 – present: Geniva LTD, FI, a Licensee Company for marketing of agricultural applications of Dr. Suominen’s technologies; Majority Owner, CEO.

1993 – present: HLS-Elektroautomaatiikka LTD, FI, an Electronic and Automation Company, builder of the first remote controls for the ECO-H₂O Water Purifier and for the Chemostor Bio-Oxidizers; Founder, Owner, Chairman, CEO.

2003 – 2008: BCDE Group LLC, MN, USA, A Biotechnology Company focused in sales of the Water Purification Technologies to the mining-, coal-, oil-, gas- and animal husbandry industries. Dr. Suominen's first US-patent describing the purification of the produced water, was sold to this company. It was financed by Occidental Petroleum (OXY) and valued up to 50 million USD. Due to my health problem, I had to close this and my other US companies and move back to Finland in 2008; Founder, Majority Owner, Chairman.

1999 – 2008: Universal Environmental Technologies Inc., CO, USA, established to convert used car tires to activated carbon and energy with a California company; Founder, Owned by BCDE Group W. M. LTD, Chairman, CEO.

1999 – 2008: BCDE Group Colorado LLC, CO, USA, established to transfer the technologies of BCDE Group Waste Management LTD to the US market; Founder, Owner, Chairman, CEO.

1996 – 1998: Micropulva LTD, FI, a Jet Milling Company, established to produce Nano particles for making biodegradable mulching film "Biofilm" and elementary pure carbon; Founder, Majority Owner, Chairman. Shares were sold to a Finnish, a Belgian and to an Argentinean partner.

1994 – 2015: BCDE Group Waste Management LTD, FI, a Biotechnology Company for water purification and recycling of elements. A representative of the company stole the patents and the Water Purification Plant, which was sold to a Norwegian customer. This was the second case when Dr. Suominen's high valued and meaningful technologies were stolen by criminals ; Founder, Majority Owner, Chairman, CEO.

1984 – 1985: Finnish Sugar PLC, FI; Project Manager of Technology Transfer of Alpha Amylase Enzyme to Finnish Sugar PLC from Nabisco Brands Inc, CT, USA.

1983 – 1984: Finnish Sugar PLC, FI; Production Manager of the first plant to produce enzymes for making High Fructose Corn Syrup and Sodium Gluconate. Project bought from Nabisco and sold later to Eastman Kodak Inc., USA.

1982 – 1983: Orion Diagnostica LTD, FI, a Pharmaceutical Company; Product development manager of Microbial Analyzers. Project sold later to McDonnell Douglas Inc to combine the results to the instrumentation of the Apollo Space Program., Princeton, NJ, USA,

1980 – 1982: Bactomatic Inc. Princeton, NJ, USA, a Microbial Analyzer Company; Manager of technology transfer and product development of Microbial Analyzers after Johnson & Johnson Inc., CA, USA, sold it to Orion PLC, FI.

1979 – 1993: Biodata LTD, FI, a Biotechnology Company transferring scientific research from the University of Helsinki to biotechnology products: The first unique industrial microbiology product developed was the Temperature Gradient Incubator "Gradiplate". The company was also the first manufacturer of the Biodegradable Plastics "Biofilm", which were first sold to the People's Republic of China for chemical free, energy producing agriculture. Other applied research were focused on the water purification, pulp and paper, enzyme production, plastic industries and for the natural farming. Dr. Suominen sold the majority of Biodata in 1993. The new owners sold the solid properties and the patents of the extremely valuable and profitable company and closed it. This was the first time when the criminals screwed up the most green and profitable environmen-

tal business.; Founder, Majority Owner, Chairman, CEO.

1975 – 1979 University of Helsinki, Scientist, Lecturer in Chemistry and Biochemistry.

1971 – 2008 BCDE Invest LTD, FI, an Electronic Automation and Biotechnology Company which designed the first High Temperature Bio-oxidizers in 1993 and the first MUST – Electrochemical Water Purifier in 1995; Owner, Chairman and CEO, 1985 – 2008.