

6th International Conference on

GREEN ENERGY AND EXPO

August 29-31, 2018 | Toronto, Canada

Maisotsenko cycle as a source of renewable energy

Demis Pandelidis¹, Sergey Anisimov¹, Anna Pacak¹ and Valeriy Maisotsenko²

¹Wroclaw University of Science and Technology, Poland

²Baryon Inc., USA

The Maisotsenko cycle (M-cycle) is a proven thermodynamic process, which captures energy from the air, utilizing the psychrometric renewable energy available from the latent heat of water evaporating into the air. In air conditioning, the M-cycle uniquely combines the thermodynamic processes of heat transfer and evaporative cooling to enable product temperature to approach the ambient dew point temperature. The application of capturing energy from air utilizing the latent heat of evaporation to transfer energy, electric energy generation, engine technology water distillation, all with absolutely no carbon emissions. Maisotsenko cycle fully utilizes the thermodynamic unbalance of the atmospheric air through the process of evaporation, condensation, and sensible heat (energy) transfer. The natural unbalance of atmospheric air is based on the enthalpy (i.e. temperature and moisture content) difference between the masses of air, which eventually results in a pressure difference, which creates all the most powerful natural phenomena that can be observed. Maisotsenko cycle creates the same enthalpy difference by cooling one air stream without adding moisture while heating and humidifying the second air stream. The principles of M-cycle can be used in any application which requires energy. Most popular application of the Maisotsenko cycle air the air conditioning systems: it is proven that M-Cycle can reduce the energy consumption by up to 90% in comparison to the traditional solutions. Besides the air conditioning systems, M-Cycle can also be used for effective water desalination, increasing the effectiveness of gas turbines and photovoltaic panels. The following paper discusses different applications of the Maisotsenko cycle and describes the energy savings which can be obtained.

Biography

Demis Pandelidis has over 12 years of experience in designing heating, ventilation and air-conditioning systems (HVAC) for buildings in European Union (over 400 realized designs) and over 8 years of experience in developing energy efficient technologies as a scientist. He was the leader of 4 scientific and 3 industrial research projects, and participated in 6 other projects as a consultant and researcher. He holds five patents on renewable energy technologies and published almost 200 papers on this subject. He developed the world's first heat exchanger with the Maisotsenko cycle adapted to operate in a humid climate. On the basis of his mathematical models, Dr. Pandelidis has worked for an ARPA-E grant for novel absorption systems as an expert in mathematical modeling. His other experience includes projects involving the Economic Development Board of Singapore (EDB), Malaysian Public Works Department (JKR), Polish Ministry of Science and Education and other.

demis@baryon.us

Notes: