MIE and Desalination Technologies

A desalination process essentially separates saline water into two parts - one that has a low concentration of salt (treated water or product water), and the other with a much higher concentration than the original feed water, usually referred to as brine concentrate or simply as "concentrate". The two major types of technologies that are used around the world for desalination can be broadly classified as either thermal or membrane. Both technologies need energy to operate and produce fresh water.

Remote local power generation is a prime application of the MIE technologies. Such venues are very common is marine coastal locations, especially in third world and developing countries, which coincidentally often share a similar demand for sources of fresh potable drinking water. Today the superheated steam used to drive power generators derived through the isobaric heating of water in a thermodynamic process known as the Rankine or modified Carnot cycle. For centuries steam has been produced this way and the energetics of this process are well understood.

Molecular Impact Energy uses conventional automotive fuel injectors to accelerate water saturated with cavitation nano-bubbles into the unique geometry of a sealed metallic vortex impact chamber. During the collision enormous hydraulic pressures collapse the bubbles within the injection volume. Cavitation bubbles have the remarkable ability to focus intense energy and forces during their collapse. The resulting heat energy contributes to the continuous creation of superheat steam inside

the impact and expansion chambers. We are fully satisfied that our measurements demonstrate that the resulting heat and steam released on impact, are an energetically more efficient way of producing steam, compared to conventional Rankine isobaric cycle heating.

The MIE system is capable of producing continuous dry or saturated steam at a wide range of pressures and temperatures. While power generation is the primary focus of MIE the resulting steam, following the exit from a generator, can be condensed into usable water. The electric generator driven by a multi-impact chamber MIE engine will produce power from a variety of gaseous sources including both dry and saturated steam. The system is relatively compact and can be packaged in a single steel shipping container along with the MIE system.

When salt water is injected into the impact chamber apparatus at high pressures and high temperatures molecular separation of the oxygen and hydrogen into a plasma with molecular recombination followed by an explosion and shockwave energy being produced.

View the following video link to observe this effect: https://www.youtube.com/watch?v=qTeKs_eAi6g View the following video link to observe this effect: https://www.youtube.com/watch?t=21&v=9Qb_M-h7UAw

Heat produced either by the combustion of fossil fuels or nuclear reactors changes the liquid water into a gas.

The temperatures and energies during the collapse of cavitation bubbles produce this type of molecular disassociation. Cavitation occurs within the orifice of the fuel injector nozzle when the local flow pressure drops below the vapor pressure of the liquid. These billions of cavitation bubbles are ejected from the nozzle at supersonic velocity into the vorticial impact chamber. When they collide with the impact surface they are crushed from the pressure and generate significant heat.

With the properly designed apparatus this combustion power can be harnessed in the production of electricity. The design of the injectors is such that all surfaces coming in contact with dissolved solutes are especially plated with con-corrosive coatings and further enable the injectors to operate with a fluid of very low viscosity.

In summary, MIE steam technology has the capacity to generate low cost electrical power when combined with generators and at the same time, produce potable water as a by-product.