

# AN ALTERNATIVE PROPOSAL TO MEET THE GROWING ENERGY DEMAND

Bekir Can LÜTFÜOĞLU<sup>1</sup>

## Quantum Heat Engines

Everything in the universe works with energy. All living creatures produce the energy that they need for their life by using various chemical processes within their own bodies using external sources. However, non-living objects cannot perform these chemical processes spontaneously. We need to generate and store the energy required for these objects to work. Increasing human population and technological developments increase the need for energy day by day. Mankind, who has spent generous resources, has confronted reality in recent years: Resources are rapidly depleting. Scientists and engineers are therefore making an extraordinary effort to bring renewable, clean energy sources into daily life.

On the other hand, converting the produced energy to the required energy type with minimum loss is a discrete problem. Among various kinds of converters, a heat machine can be considered as an example that converts the thermal energy to mechanical energy. The transformations between the various forms of energy take place in accordance with the fundamental laws of nature. Thermodynamics is the name of the science that relates measurable quantities such as heat, volume, pressure and temperature to the work, energy, and material properties.

At the beginning of the last century, quantum mechanical laws were constructed to describe some physical phenomena which cannot be explained by classical mechanical laws. It was realized that at the atomic scale some of the observable cannot be measured similar to the macroscopic scale. The natural consequence of this progress, the traditional thermodynamic laws could not be

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<sup>1</sup> Assoc. Prof. Dr., Akdeniz University, belutfuoglu@akdeniz.edu.tr  
Assoc. Prof. Dr., University of Hradec Kralove

steps, the parameters  $a$  and  $L$  can be employed to adjust requirement of the thermodynamic processes.

**Keywords:** Thermodynamics, Woods-Saxon Potential Energy, Quantum Heat Engines

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