

SHORT REVIEW OF THE LONG HISTORY OF ORC POWER SYSTEMS AND THEIR MODERN IMPLEMENTATION

L.Y. Bronicki
Ormat Technologies, Inc.

ABSTRACT

Concerns about the effect of CO₂ emissions on climate change and rising energy cost have renewed interest in the use of low-temperature heat sources.

Limitations imposed by the second law of thermodynamics challenge economical utilization of these energy sources. The interest in ORC technology was heightened by its inherent flexibility in reducing the irreversibility in heat exchangers, increasing the prime mover efficiency and minimizing parasitical losses.

After a short review of the long history of the ORC technology, the presentation will discuss thermodynamic cycles and practical considerations which have led diverse manufacturers to develop prototypes and, more importantly, to implement substantial industrial applications in waste heat recovery, geothermal, solar thermal and other moderate-temperature heat sources.

In addition, ways of maximizing the work extracted from a given heat source will be explored, and examples of practical applications and descriptions of a number of typical projects will be included.