

KEYNOTE LECTURE

ADVANCED ORGANIC FLUID BASED EXPANDER DEVELOPMENT FOR LOW GRADE HEAT TO POWER GENERATION; USE OF SUCH DEVICES FOR DISTRIBUTED POWER GENERATION SYSTEMS



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Dr. Ramakrishna R Sonde is currently working with Thermax Limited as Chief Technology Officer and Executive Vice President – Research, Technology & Innovation. His involvement in Energy and Environment has led to development of different technologies which include newer clean coal technologies, heat pumping technologies, advance combustion systems, water and waste water technologies. The new areas of his research interests include solar energy systems, particularly solar thermal energy systems including optics, structural design, coatings, absorber design and controls system design. Research interests also include the development of high efficiency power conversion devices for low grade energy. Dr. Sonde is a Fellow of Indian National Academy of Engineering. He is on the board of National Board of Accreditation and is a Visiting Professor at the Indian Institute of Chemical Technology. He was awarded Dr. Homi Bhabha Gold Medal by the Prime Minister in 2006, for his outstanding contributions in the field of nuclear energy.

ABSTRACT

Low grade energy (< 200°C) conversion to electricity and integrating the same with renewable energy systems like solar and biomass at distributed scale is a very challenging problem. Organic fluids alone or in mixtures in Organic Rankine cycles would require integration of knowledge in organic synthesis, thermodynamics to design of rotating systems and integration of multiple sub-systems to make such cycles techno-commercially viable. Further, these advanced power cycles offer an opportunity of combining heating / cooling solutions thereby boosting the overall efficiency at lower temperatures in a micro CHPC (Combined Heat Power & Cooling) mode.

The talk highlights the work carried out by Thermax collaborating with various Institutes in developing such micro power systems from 30 kW to 250 kW scales.