

RO3 EC & FMG Energy Saving Related Research Activities

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Roma Tre University Energy Conversion and Fluid Machinery Group (RO3 EC&FMG), depicted in Figure 1, is continuously working in the field of Renewable Energy and Energy Saving collaborating in many European and National Projects as partner and coordinator. In the last decade, an hardware Solar Simulator has been developed to investigate innovative sun energy receivers, absorbers and storage concepts. Figure n.2 shows one of the ellipsoidal reflector under light concentration test and details of three high temperature receivers. In this field, the RO3 EC&FMG has been working with CEA - Commissariat à l'Energie Atomique (F), DLR (D) and ENEA (I) for the development of Hydrogen production by means of thermochemical plants fed



Figure 1

by Nuclear and Solar Energy under HYTHEC EU Project and TEPSI Italian Project. The Solar Simulator is going to be used to develop innovative devices to be adopted for the Mini-Gas Turbine Solar Thermodynamic EU funded OMSOP Project that has been launched in February.

Presently, the RO3 EC&FMG is also working on the assessment of innovative small concentrated solar energy plants for electricity production. Unconventional cycles and innovative storage systems are going to be investigated. Such Thermodynamic Plants have to meet the Italian rules with the main goals of receiving incentives and being economically convenient.

Moreover, the RO3 EC&FMG is focusing their attention on the energy saving concepts applied to industrial cryogenic plants. In particular, in collaboration with Angelantoni Industrie S.p.A and SETEL S.r.l., under the national Cold-Energy project, the RO3 EC&FMG is developing a system (shown in Figure 3) that allows plant internal recovery expecting a power consumption decrease of some 15-20%.

The RO3 EC&FMG is also involved in the preparation of water and ethanol in liquid fuel (like vegetable oils) emulsions to improve atomization and

Figure 2

