NACE CODE C25, C32, D35

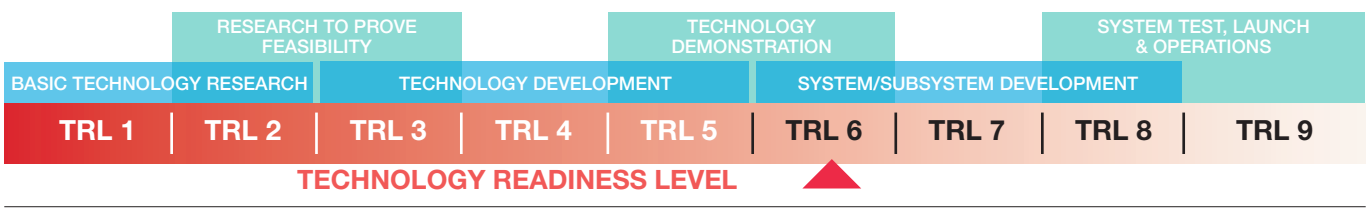
ELECTRICITY PRODUCTION THROUGH AN MGT-INTEGRATED CSP TECHNOLOGY

Innovations and Benefits - The technology is based on the use of a circular parabolic solar concentrator (Dish) coupled to an engine which converts heat into electricity. The main innovation lies in the integration of the Dish with micro gas turbine (MGT) technology, which replaces the Stirling engine, typically used in such small systems, in order to achieve a more compact and reliable, easy-to-maintain unit. Indeed the MGTs, derived from automotive industry, have greater compactness and smaller weight than the Stirling engines.

Uses - Small scale (5-30 kWe) solar power generation through a compact energy system, destined either to isolated utilities or applications connected to the grid, For higher energy needs the system can be stacked by virtue of its modularity. The peculiarity of the system is the potential integrability of the solar energy source with the fossil fuel, through hybrid process solutions. This makes the technology highly competitive, in terms of "dispatchability", and very flexible in terms of adaptability to the territorial context, by integrating the locally available energy resources.

Past and Present Activities - The demonstration plant, funded within the 7th FP through the OMSoP Project, has a size of 5-7 kWe and is being realized at the ENEA Casaccia Research Center. The solar concentrator (diameter 12 m) has been installed and characterized in 2015 while the assembly of the other components (compressor, turbine, recuperator, receiver, electric generator, etc.) is expected to be completed in the first months of 2017. The entire system will be operated in the spring-summer 2017 under real meteorological conditions, with the aim of evaluating its performance and developing optimized solutions in view of its commercialization.

Solar Dish installed at the ENEA Casaccia Research Centre



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