	CPV	**ENEL IIN S.p.A.** **CPV Module performance and Systems Long Term Monitoring**
Location of the infrastructure :	**Catania, Italy**	http://www.enel.it
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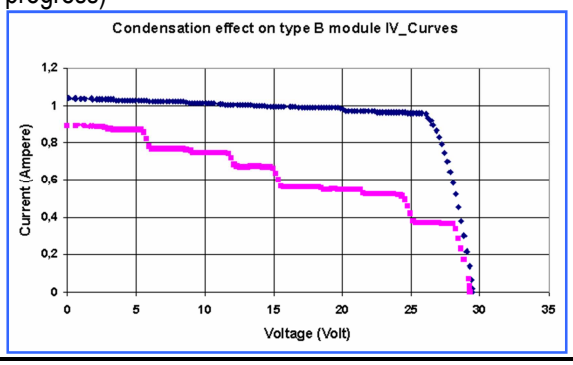
Objectives :	CPV Outdoor Performance Monitoring
Main features :	Long and short term monitoring of CPV grid-connected systems started in October 2007. The test station is located at the ENEL Advanced Solar Laboratory in Catania, Sicily, Italy. In the laboratory, CPV grid connected systems are currently under testing. Two of them are HCPV (380 X and 700 X) with MJ cells, the third one is a low concentrating PV system with high efficiency silicon cells (20 X). Monitoring allows the determination of plants operation reliability and energy performance in real operating conditions. The determination of normalized indexes (i.e. DC system efficiency, Reference Yield, AC final Yield and AC Performance Ratio) has been done in order to analyse actual energy production, DC/AC converter efficiency and to evaluate the incidence of the main faults and malfunctions on energy producibility. The comparison between the efficiency of module and the efficiency of system permits to determine the actual derate factors between module and the whole system. In order to do more deepen analysis on CPV systems it is important to use data from meteo-radiometric station and from the outdoor CPV modules' station. Other instrumentation has to be integrated in order to carry out a Power Quality Characterization (Idc, Vdc, Iac, Vac, THD, cosφ, etc) by purchasing within 2010 several power quality data measurement systems. Moreover, a spectroradiometer equipment has to be acquired in order to quantify the impact of the solar spectrum on CPV systems' performances.
Limitations or constraints :	The access will be allowed with technical and scientific assistance from ENEL.
Typical services or results :	These facilities can be used for: ❖ comparison between different CPV systems technologies and the results achieved by others laboratory, ❖ data acquisition for modelling the energy output of CPV systems, ❖ creation of a complete database of performance of different kind of CPV grid connected systems.
Examples of research projects :	determine long time energy yield according to the standards CEI 82-25 (this latter still in progress)