



Developing Highly Efficient Concentrated Solar Power Architecture



IN-POWER aims at developing and integrating **new innovative material solutions** into concentrated solar technology to increase the efficiency while simultaneously decreasing the energy production cost. These advanced material solutions consist of (1) High reflectance, tailored shapes, self-healing and anti-soiling coated, **light glass-free smart mirrors**, (2) Optimized and lighter **mirror support** structure, (3) **High-operational-temperature absorber coating** in new **vacuum-free-designed receiver**. (4) **Novel modular solar field architecture and design** achievable by these new components. Having the identical **low associated environmental impact**, this promising technology is expected to decrease **the land use by four-time**. (5) high-operating-temperature thermal storage materials (TES) that will guarantee up to **three-time increase in thermal capacity** respect to standard TES, depending on Heat Transfer Fluid, also leading to the reduction of thermal storage system size. IN-POWER will validate these novel functional materials and new manufacturing processes will guarantee decrease in **Levelised Cost of Electricity below 0.10 €/KWh** beyond 2020 by validating these technologies in Lineal Fresnel Collector and Parabolic through Collector pilot plants under 2100-2700 kWh/(m²a)

