

An overview of the key technological trends in the Solar photovoltaic field, its position in the energy mix and the role of a R&D center.

Angelo RODRIGUEZ GARCIA
Project Manager, Renewables and Urban Department, ENGIE Laborelec
Linkebeek, Belgium

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Abstract

Over the past decades, the solar energy sector has witnessed remarkable growth, positioning itself as a cornerstone of the global renewable energy landscape. This means that developers have had to adapt and innovate while maintaining competitiveness with other actors.

This rapid growth is naturally linked to a variety of emerging technologies and requires a close watch to ensure that the most appropriate technologies are taken into consideration. This is one of the main missions of Laborelec, the R&D center of the Engie group for electricity production.

Within Laborelec, the Solar Lab is leading Engie's Research & Development Roadmap on Solar Technologies. This paper will focus on photovoltaic technology; while the basis of photovoltaics is well known, many different types of technologies exist to harness the sun power, each having their own advantages and disadvantages and with a different level of maturity. Laborelec has reviewed and analyzed each of these technologies, extracting the key trends in order to best advise on the best available technologies of today, and the best available technologies of tomorrow.

Globally, the actual and future position that solar photovoltaic technology has in the energy mix has been impressively changing over time linked among other to the increasing levels of solar generation installed yearly and innovation in technologies contributing to the balance of systems.

Finally, with hands on experience from the above, Laborelec test and de-risk technologies of the future, and stays ahead of PV technology evolutions by not only implementing these new technologies in projects to reduce the LCOE but also creating new tools and optimizing techniques to reduce operation and maintenance costs among others. Some of the major learnings will be shared within the presentation.

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