

Foster Photovoltaic skills in Europe : **INES embraces the challenge !**

New upskilling specialized training courses for technicians and engineers working in the Photovoltaic industrial sector

In the framework of European project [ECOVEM](#), and in a context of strong demand as well as relocation of photovoltaic (PV) production in Europe¹, the [National Institute for Solar Energy \(INES\)](#) has developed **new specialized training courses to support the development of the PV industry in France and in Europe.**

These unique training courses are intended for a **scientific audience**, in particular for technicians and engineers working in the **PV industry research and development**, aiming to **upskill** their expertise according to **the latest research and industrial progresses and trends.**

More concretely, these training courses aim to broaden their skills and knowledge by exploring the scientific and technological fundamentals of each fabrication step of PV cells and modules, from polysilicon raw material to module accelerated ageing and field results. Therefore, **advanced skills on the whole PV manufacturing chain** are acquired, with particular emphasis on innovations and developments in the short and medium term.



[CEA-INES]

¹ https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal/repowerEU-affordable-secure-and-sustainable-energy-europe_en

The **module-based programme** is tailored according to desired level and availability time for training. Thereby, the **two first intensive training courses were delivered in June 2022** to technicians and engineers from two highly specialized PV companies:

- **CERTISOLIS**, the unique French laboratory accredited for the certification of PV modules. Its 12 technicians and engineers, with PV experience ranging from 1 month to 15 years, were trained with a focus on **new silicon-based cell and module technologies**.
- **AKUO Energy**, a global renewable energy engineering office covering development, financial engineering, construction and operation. 10 engineers from the Solar Technologies Department were upskilled at INES during **3 days on the whole PV manufacturing chain**, including PV market overview, silicon production and purification, standard cell and module fabrication process as well as a review of field module degradation modes and failures along with the corresponding characterization techniques.



The trainees strongly deepened their knowledge and skills through theory and application of the latest research and industrial results exposed by the PV expert, research engineer and trainer [Jean-François Lelièvre](#) and benefited from **INES infrastructures**, including demonstrators, INES-PFE pedagogical platform and CEA-INES research laboratories tour.

The two above-mentioned companies were **highly satisfied by the training outcomes** and highlighted the benefits of the training course for the acquisition of ever more cutting-edge expertise and its consequent application in their professional tasks in a continuously fast-evolving PV sector.

