

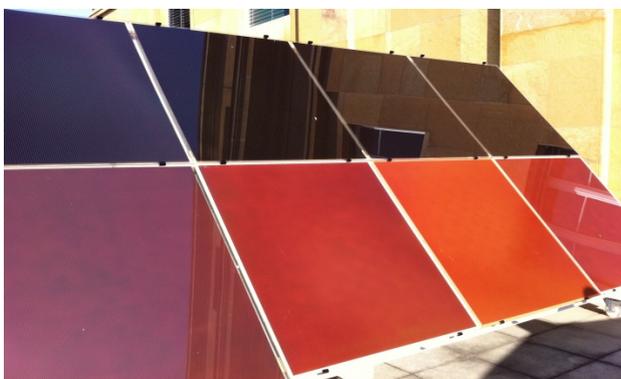
Building integrated photovoltaics (BIPV)

Commercial use of PV panels in buildings is often overlooking architectural considerations and functional integration in the structure. Surface appearance, texture, coloration as well as additional building functionalities have an important role in product differentiation and remain central to the successful development of new, cost-effective and well integrated solar systems.

Modern integrated photovoltaic technologies allow the transformation of buildings in units that consume as well as produce energy. Well integrated photovoltaic systems should not only allow the incorporation of energy generation devices but also take care of the architectural environment and building traditions. Ideally, PV elements would provide other functionalities, which are typical of façade or rooftop elements, such as thermal insulation, weather barrier, or light transmission. Following this approach, PV modules will eventually become fully fledged building construction elements. Clearly, this “material” transformation has to take place with marginal add-on costs, shall not compromise on reliability or specs, and must comply with existing norms and standards. Only then photovoltaic electricity will be able to contribute significantly to the general electricity production in the built environment.

Over the years, the CSEM PV-Centre has developed a specialized set of activities in the building integrated (BIPV) and building applied (BAPV) PV field aiming at

- Developing new generations of photovoltaic elements, characterised by convenience of use and high reliability
- Providing architects with a variety of aesthetically pleasing products, with usable colour palettes and different building functionalities
- Proposing design rules for architectural integration of multifunctional elements
- Bringing down the costs of architectural PV elements and ensuring a high penetration of all solar technologies into the built environment



Coloured PV modules prototypes for traditional roof integration [Source: Archinsolar project]

Building on more than 25 years of experience and leading edge technology developments across the entire value chain of photovoltaics, the CSEM PV-center is uniquely positioned to offer its clients a broad range of services related to development, integration and application of PV elements and PV solutions in buildings.

The services provided by CSEM PV-Center in the BIPV and BAPV fields include:

- Conception of innovative solutions for building integrated PV elements
- Development of multi-functional PV elements
- Coloured PV modules, modules with modified surface texture
- Ultra-reliability and high quality for PV elements
- Fast prototyping of PV demonstrators
- Monitoring and assessment of performance ratio and energy yields of PV systems
- Expertise for complete solutions from module to system, including storage and grid
- Expertise in design and architecture



PV elements for roof or façade with a special anti-reflective coating leading to a better building aesthetics.