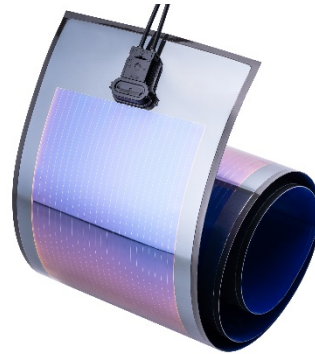


## **Heliatek – Leader in organic photovoltaics**

As the technology leader in organic photovoltaics, Heliatek develops, produces and distributes industrial-grade organic PV solar solutions for virtually any building surface (horizontal, vertical, curved, rigid, and flexible). Heliatek stands for energy solutions designed for various traditional and never been possible before applications based on its unique features – it is ultra-light, flexible, ultra-thin and truly green. HeliaSol® is a ready-to-use solution, ideal for retrofitting on existing building structures. HeliaFilm® is tailor-made solar film for companies in the building and construction material industry, to integrate into their façade or roof system products. Heliatek employs more than 200 people at the Dresden and Ulm locations in Germany.



*Figure 1: HeliaSol - the innovative solar film*

### **Products: HeliaSol® & HeliaFilm®**

With HeliaSol, we offer a ready-to-use innovative organic solar film, which is ultra-light, flexible, ultra-thin and truly green. Equipped with an integrated backside adhesive, HeliaSol can be glued on a variety of substrate materials such as glass, metal, concrete without the requirement of elaborated substructures. HeliaSol is available since 2021.

HeliaFilm is our OPV integration solution for building materials, such as glass. The only 1 mm thin solar film can be integrated almost seamless into customer products to add a solar function. Therefore, we co-develop tailored solutions with integration partners to meet their specific integration requirements. HeliaFilm is planned for 2024.

HeliaSol® and HeliaFilm® are registered Trademarks of Heliatek.

### **Organic Photovoltaic (OPV)**

Organic photovoltaics is a new PV technology with high potential that will enable



*Figure 2: R&D production line*

solar technology to be used in traditional (rooftops) and new applications

(facades, integration solutions) to generate green energy. Three different technologies are currently being pursued:

- 1) OPV based on oligomers - so-called small molecules (technology leader: Heliatek)
- 2) OPV based on polymers - so-called large molecules
- 3) OPV DSSC (dye cells) - a hybrid form

In the future, organic PV is expected to have higher efficiency, with lower electricity production costs and improved lifetime. Transparency and different colors are also technologically possible.

### **Truly Green Energy**

Heliatek's goal is to become a global leader in implementing a sustainable and carbon-free future. With a carbon footprint of less than 10 g CO<sub>2e</sub>/ kWh, OPV is the greenest of all solar technologies and amongst the greenest of all power generating technologies. This is achieved by the use of low material input, the abundance of heavy metal use such as Cadmium or Lead, by not using rare earths or other scarce raw materials. The carbon footprint was certified by TÜV, with less than 16 kg CO<sub>2e</sub>/m<sup>2</sup>.

### **Patented Stack Architecture and Production Process**



*Figure 3: Production with big coils*

Heliatek's OPV technology is based on basic patents for the manufacturing of organic solar cells. Through a patented tandem cell technology, it is possible to absorb a very broad solar spectrum with extremely thin layers. All layers together are only a few hundred nanometers thin. For the series production, the stack structure was further developed and is now designed as a triple cell. The production of solar films takes place in an efficient "roll-to-roll" process under vacuum or inert atmosphere. Only 1g of organic raw material is required for 1m<sup>2</sup> of solar film.

Heliatek's cell technology and production processes and tools are protected with more than 300 patents.