

MÜHLBAUER GROUP

STATE-OF-THE-ART TECHNOLOGIES & SOLUTIONS

Founded in 1981 in the heart of Bavaria, the Mühlbauer Group has ever since grown to a leading global player in the fields of Parts & Systems, Semiconductor Related Products, Document Solution Related Products and TECURITY® Solutions. With around 3,500 employees, technology centers in Germany, Malaysia, Slovakia, the U.S.A. and Serbia and 35 sales and service locations worldwide, Mühlbauer created a strong competence network around the globe. We continuously invest in the latest technologies and innovative processes to enhance our competences and provide you with optimized solutions.



MÜHLBAUER – YOUR COMPETENT PARTNER FOR FLEXIBLE SOLAR TECHNOLOGIES

Already four flexible solar reel-to-reel manufacturing solutions have been developed and manufactured by Mühlbauer. We can look back on more than 20 years of competence in the automation of reel-to-reel assembly systems, for example in the RFID Smart Label market, which we pioneered by innovating most of the production technologies which makes us market leader to this day. At Mühlbauer, we see the relation to our customers as a long-term partnership in which we cooperate accordingly to achieve the best results. A worldwide service and support organization helps you to realize the full potential of your Mühlbauer system – at any time and any place.

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FLEXIBLE SOLAR

INNOVATIVE MANUFACTURING SOLUTIONS

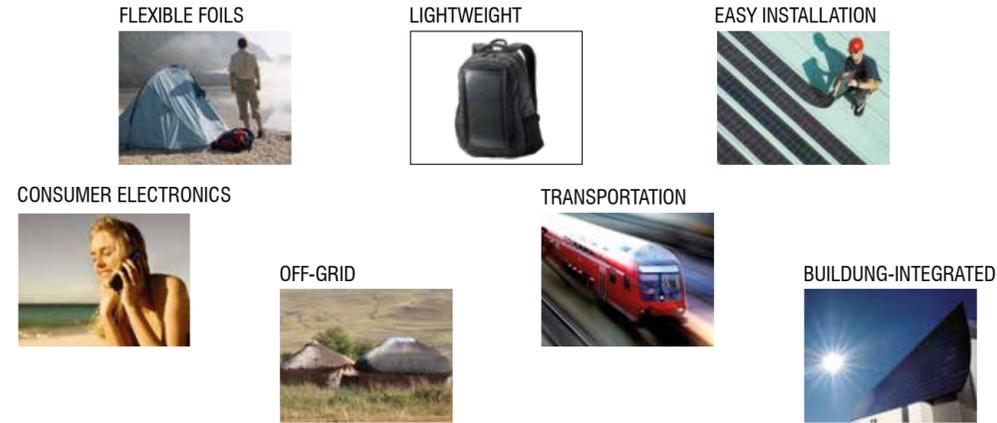


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ENERGY BECOMES FLEXIBLE

As part of a sustainable energy mix for future demands, flexible solar-technology is gaining more and more importance. Especially for new application areas, where photovoltaic panels with their traditional rigid glass layer structure can only be used in a limited way, the flexible solar product industry has a huge market potential.

New applications are being developed for power harvesting with lightweight solar products and application-specific shapes, e.g. for building integrated photovoltaics (BIPV), a wide range of specific mobile electronics public transport systems. Flexible solar products can either feed the solar energy they produced to a public energy grid as "on-grid" or application or serve as an "off-grid" application where the solar energy is stored and supplied to various energy consumers such as mobile devices or private energy houses. The easy installation capability of lightweight flexible solar panels and the various "off-grid" product possibilities are useful examples to illustrate the potential of the flexible solar market which is still in its early phase of commercialization.



OVERVIEW: PHOTOVOLTAIC TECHNOLOGY

The manufacturing of flexible solar technologies is divided into front-end and back-end processes. Mühlbauer provides a reel-to-reel production equipment solution for the full range of all back-end processes. Our innovative and unique automation technology enables a conversion of thin film materials or organic solar materials, like CIGS, a-Si, organic photovoltaic, etc. to flexible solar panels or any other flexible solar product.

- The input material is usually manufactured in front-end processes (e.g. vacuum deposition, sputtering processes, print) and loaded as a roll.
- Flexible solar cells, modules and products are manufactured with backend processes to receive final products.
- Backend processes like cell structuring, cell stringing, module assembly & lamination, encapsulation etc. can be covered.

FEATURES OF FLEXIBLE PV

- Light-weight panels
- Low-cost installation
- Cost-effective manufacturing in reel-to-reel processes (for high volumes)
- Integration of PV in solar products

MANUFACTURING SOLUTIONS

FOR FLEXIBLE SOLAR PRODUCTS

