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The effect of encapsulation layer on thermo-electrical parameters of photovoltaic panels

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Various materials are used as photovoltaic panel's encapsulants in the age of dynamic growing demand for green energy; each gained watt from photovoltaic panels is significant. The efficiency of most popular photovoltaics technologies is low and there are no cutting-edge technologies that are going to be widely in use in the close future. Due to increasing popularity of photovoltaic panels with high-level requirements, it is desirable to obtain the maximum power from the minimum surface. Especially when considering installation of photovoltaic panels on a vehicle or a different mobile platform, where there is a very limited area for photovoltaic modules.

Thus each of photovoltaic panel components should be optimized. There were made researches in field of improving performance of elastic and glass panels using various types and configurations of encapsulants. Following types of encapsulants were examined: various types of glass and silicones. The aim is to determine the best encapsulant material for each of three groups of products: high-end, low-cost and ultra-durable solutions. Finding the appropriate solution required a complex and precise approach, involving many simulations and conducting series of tests to verify and judge those solutions before they are implemented in real life in a greater scale.

Biography

Wojciech Kapuściak - received M.Sc. degree in Mechanical Engineering from Academy of Science and Technology in Kraków, Poland. Except mechanical skills, he has a broad knowledge related to photovoltaic panels in terms of manufacturing and their operation. He also has a huge experience regarding 3D printing technologies. Member of AGH Solar Boat Team, where he is responsible for photovoltaic and design of boat components such as deck or steering system. Apart from AGH Solar Boat Team he is working as a lead product engineer in company providing smart city solutions.

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