

IoT Photovoltaics

Providing IoT eternal life

MATERIALS AND DESIGN



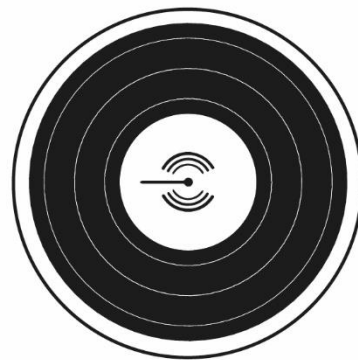
Whole/laser cutted solar cells

PCB

IoT antenna

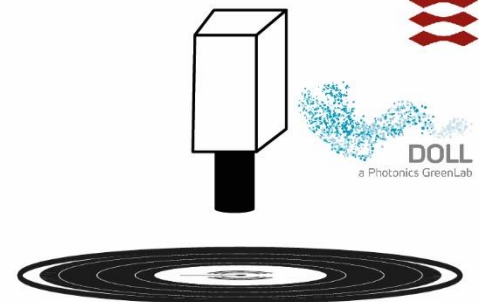
Glass or epoxy
EVA foil
Solder material

PRODUCTION OF PHOTOVOLTAIC PANEL



Pick and place PVs
Soldering
Encapsulation

QUALITY CONTROL



Electroluminescence
Flash test
Antenna test
Thermal cycling

Value Proposition

By 2020, there are 50 billion “things” on the Internet and the Wireless Sensor Market will grow from \$ 29 billion in 2016 - to \$ 94 billion in 2023. In this innovation a solar panel is made tailored in geometry and electrical properties to be integrated as part of the IoT product keeping the battery charged at all times. Furthermore, a tailored antenna for the IoT communication technology used by the product is built seamlessly into the solar panel giving perfect connection to the cloud at no extra cost.

Business Opportunity/Objective/Commercial Perspectives

The technology is tailored to add energy harvesting into IoT products making the antenna integrated solar panel a design element in the casing. Since batteries are also environmentally unfriendly, the integrated solar cell technology enables the opportunity to use capacitors as a green storage alternative. IoT based sensor units will be produced in +millions and IoT Photovoltaics can be produced fully automated.

Technology Description

Silicon solar cells are made in standard sizes of 156x156 mm having a voltage of 0.5V. The highest efficient solar cells on the market have both polarities (+ and -) on the backside of the cell resulting in a foot-print similar to a component used for printed circuit boards (PCB). The solar cells can be laser cut from its initial size to a customized size and pick-and-placed onto a printed circuit board in a fully automated process. The antenna can be integrated on the PCB and the PV-IoT element offers energy harvesting and perfect connection to the cloud.

Development Phase/Current State

Intellectual Property Rights: 1 patent is in the process of being drafted. TRL Level 6 and soft-funding has been applied for to develop the technology to higher level. Investment and man power is needed to realize test production line that can later be upscaled.

The team is experts in photovoltaic systems and researchers in IoT and antenna design. The team is seeking investment and partnering to realize a production of IoT enabling photovoltaic systems - providing IoT solutions with eternal life.

The inventors

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Seeking

- Co-development of technology
- Investment for spin-out