



# SOLAR FARM CLEANING ROBOT

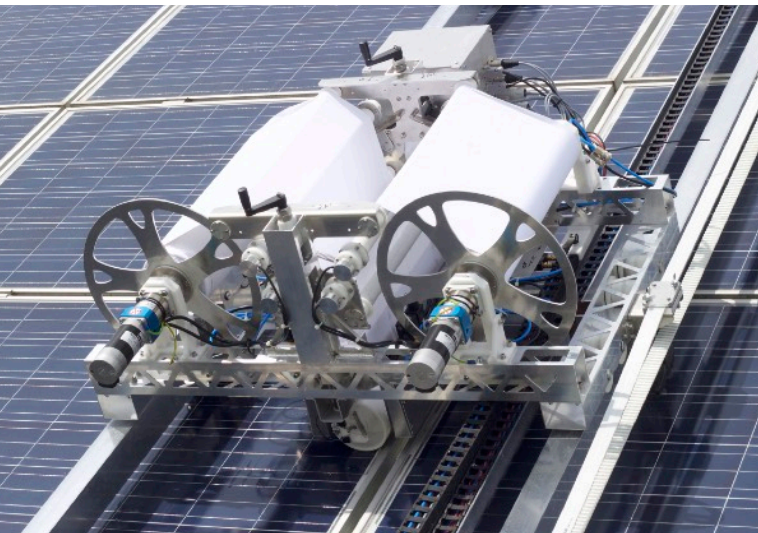
Realized Within the Framework of the “Green Industry Innovation”  
Program of the 2009-2014 EEA Financial Mechanism

Economic performance of solar panels requires regular cleaning, the lack of which may result in a loss of 10-15 % or more in solar panel efficiency, depending on the extent of pollution. We have designed our product as a response to the demand revealed by our wide-scale market research and based on the information that has come to our knowledge from this industry sector. As we proceeded with our preliminary researches, it became obvious that most appliances available on the market for the cleaning of solar panels were wasteful in their usage of water, outdated and unable to meet expectations.



## Project goals

Our aim was to get around the shortcomings of known solar cell cleaning solutions by creating an appliance and elaborating its adequate cleaning methodology that together facilitate the cleaning of solar farms efficiently, with minimal water consumption, by sprinkling watery dilution of an environment-friendly detergent and by wiping the thus wetted surface with microfiber wiping sheets, always using clean wiping material, with energy- and water provision from inner source and moving the appliance without a pre-mounted system, feasible with simple construction and with economical production.



## Project Participants

**Project Promoter: ProDSP Technologies Ltd.** » An engineering office founded in 2006, with a head-count of 20 people, at two locations. Its owners used to work together on the department of measurement technics at Budapest University of Technology (BME, today called Budapest University of Technology and Economics).

**Project Partner: SINTEF** » The Norwegian partner involved in the project is SINTEF Group that was established in 1950, more precisely, one of its research divisions, SINTEF Materials and Chemistry. SINTEF Group is the biggest independent research organization in Scandinavia as of today.

## Advantages and novelties of the appliance created within the project:

1. Energy- and liquid provision is carried out from an inner source, in an autonomous manner.
2. Movement of the instrument is assured by moving elements and by an engine.
3. Cleaning is not realized by a watery washing process but by softening the pollution with an environment-friendly detergent solution and removing it with a wiping cylinder developed in-house, in a water-saving and efficient process.
4. Cleaning is always done with clean, easily replaceable and washable wiping material, water consumption rate is rather favorable, approx. 0,015 l/m<sup>2</sup>.
5. Cleaning is carried out quickly, efficiently and economically (0,5 - 1 MW/8 hours).
6. Thanks to its autonomy, the robot can also be used at locations that are hardly reachable or that have no water resource.
7. The robot requires little space, it is easily transportable and it can be operated with low energy consumption.
8. The robot is of simple construction and it can be fabricated economically.
9. The robot works even on solar panel rows planted closely to each other (it moves along on the surface of the solar cells).