



HOW it WORKS

Equipment concert hall "UKRAINE" in Kharkiv
the Solar power plant for auxiliary automatically lighting Zoo,
Cascade, Fountains in park Taras Shevchenko and adjacent territory

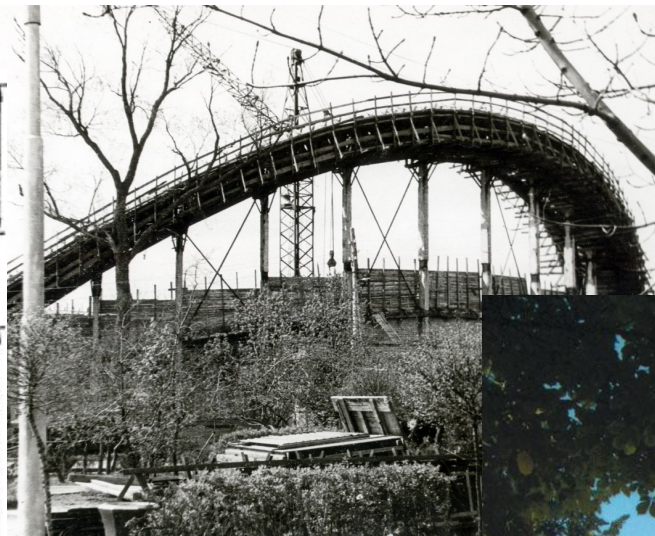
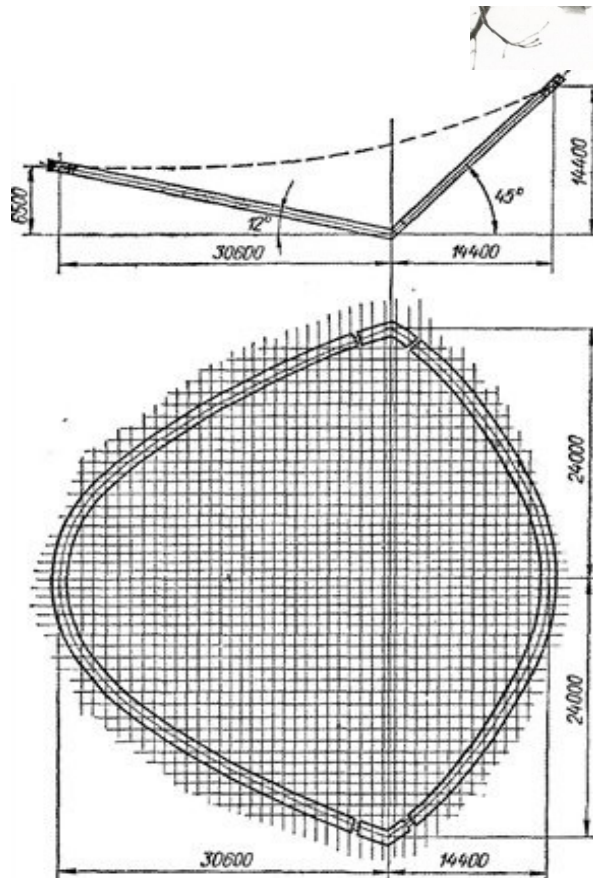


BUILDING HISTORY

Concert Hall "Ukraine" - a monument of urban planning and architecture of local importance, one of the symbols of Kharkiv.

Outdoor musical theater for 1800 seats and 80 seats on the podium was built in 1946-1947 by architects N.F. Aref'ev, E.A. Lyubomilova, F.S. Mayak. In 1958 it was decided to cover the roof of the theater and a competition for the best project in which young architect won V.S. Vasilev. The hall was built and commissioned August 8, 1963 at the direction of architects and engineers V.S. Vasilev, Y.A. Plaksiev, V.A. Reusov and others.

FIRST time in the world was made asymmetrical saddle shaped cover scheme, FIRST established Armo blocked - cement slabs shell size 45 x 48 meters. In a constructive foundation laid cable-stayed scheme covering as orthogonal grid on the basic circuit of two parabolic arches, inclined at angles to the horizontal.



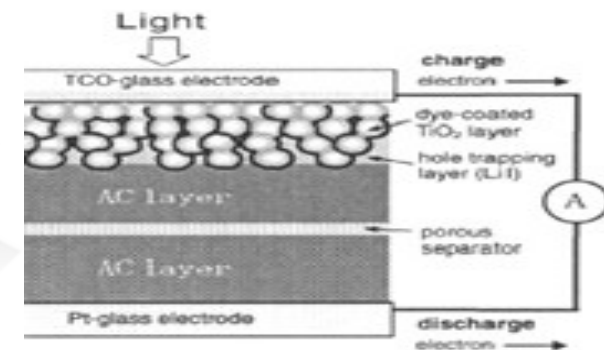
Located in the city center - Garden Taras Shevchenko, concert hall "Ukraine" is one of the main cultural centers of Kharkiv. During this period, Hall attended by more than 10 million. Spectators who witnessed the film shows, festivals, concerts of pop stars, tournaments, anniversaries and many cultural events. Through concerts and performances of Ukrainian and foreign artists of many genres and directions almost covered a wide audience of all ages and tastes.



WHY SOLAR STATION?

The mission of this project - a demonstration of the natural beauty of Solar Energy through modern architecture and design.

On the surface of the Earth from the sun always comes a certain amount of energy. At 1 m² of the earth's surface perpendicular to the direction of the sun, have a fairly constant energy. Power light flux at the surface of the Earth in our latitudes - about 0.6 kWh / m². Approximately 40% of this energy can be converted into electricity via solar cells.

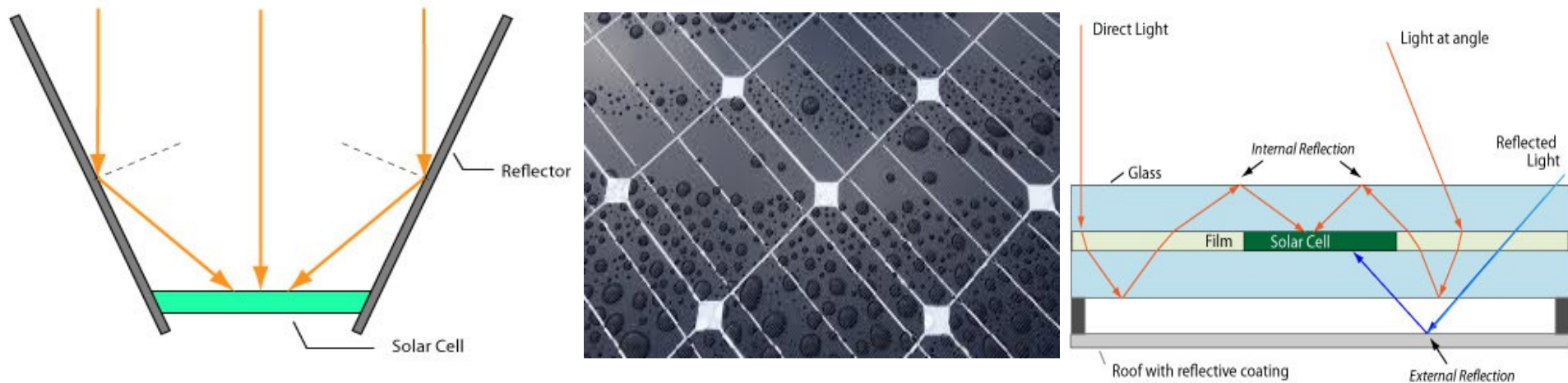


The absence of mechanical moving parts, long operating stability and reliability - are indisputable advantages of solar panels. Their modularity allows installations to collect virtually any shape and power. The service life of solar panels - more than 30 years, and in case of failure they can be replaced.



SOLAR "TRAP"

The most favorable condition for propagation of electromagnetic waves is the presence of an external display. Solar electromagnetic waves getting into a prism of glass and mirror solar panels installed on the facade of the solar station "Light * UKRAINE", amplified through repeated reflection. Half mirror - the basis POLIKRYSTAL solar panels. They do not affect the quality of light and are capable of producing the same amount of current in the cloudy and cloudy weather. Color polikristal panels - light blue. Opaque glass - the basis MONOKRYSTAL solar cells located between the prisms. Color monokristal panels - light gray (to preserve the architectural and historical image building).

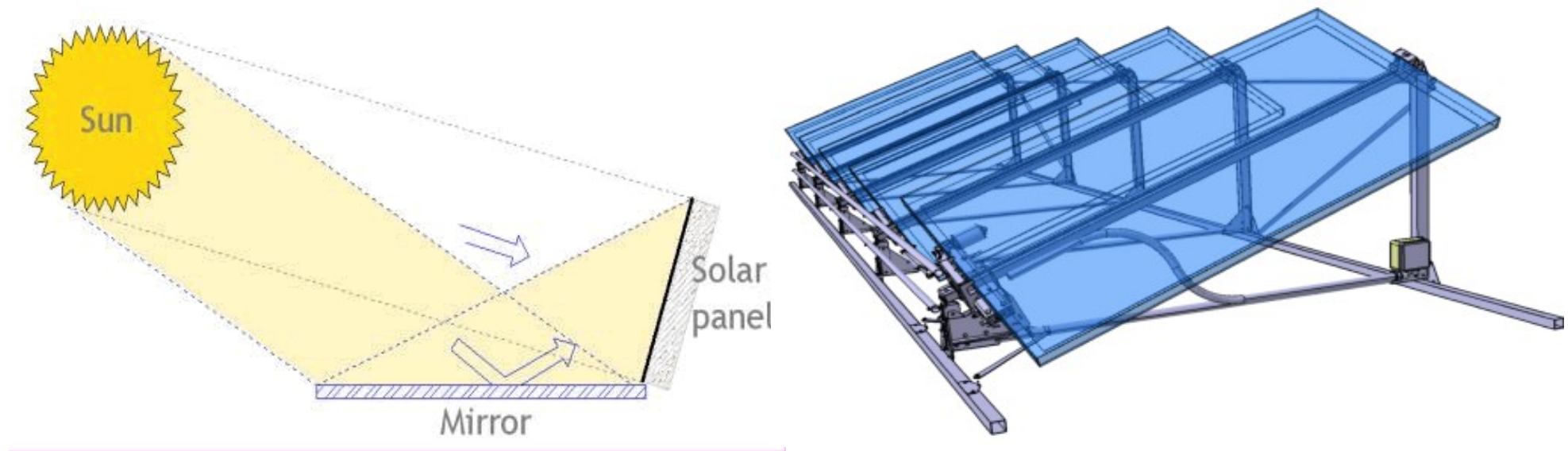


Over time, the working surface of the solar panels collects dust, which is able to significantly reduce the amount of electricity generated by batteries, efficiency panels may fall by 8-12 percent. In this regard, the surface self-cleaning panels processed surface - nanoscale hydrofob transparent film based on TiO₂ (titanium dioxide). Nanocoatings protects the Station from static electricity, prevents icing process at low temperatures.



TRACKERS

On the roof of the incoming film concert hall "Ukraine" should establish a system of controlled mirrors that allow reflect sunlight on the surface of solar panels installed front. With tracker (tracking system by the sun) mirrors automatically returned after the sun, changing the angle depending on the season and time of day, directing the reflected light on the solar station. Due to the effect of the resonator mirror the efficiency of solar cells increased by almost 75%.



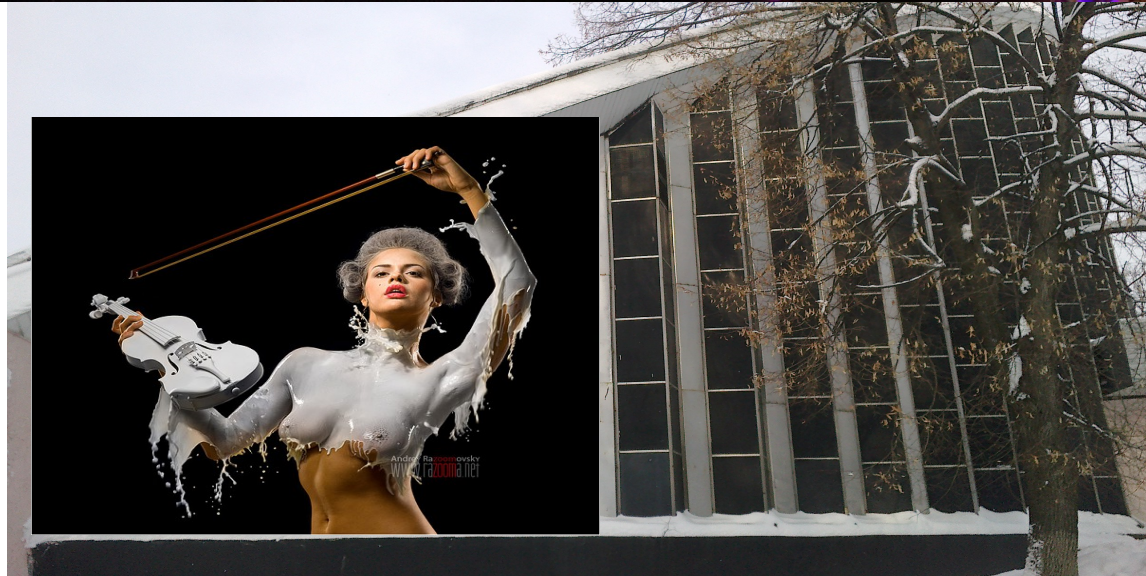
"Heat Mirror", located between the solar panels, scatter over the surface of the facade reflects electromagnetic waves. Mirrors are made of tempered glass shock hydrophobic self-cleaning surface and infrared heating - a system of anti-icing and snow melting in winter.



LIGHT MUSICAL ILLUMINATION OF THE FAÇADE

LED-lights are located between the prisms of the façade, allow programmable automatic light musical evening illumination of the façade. Music and lights repertoire is chosen depending on the program of future touring artists.

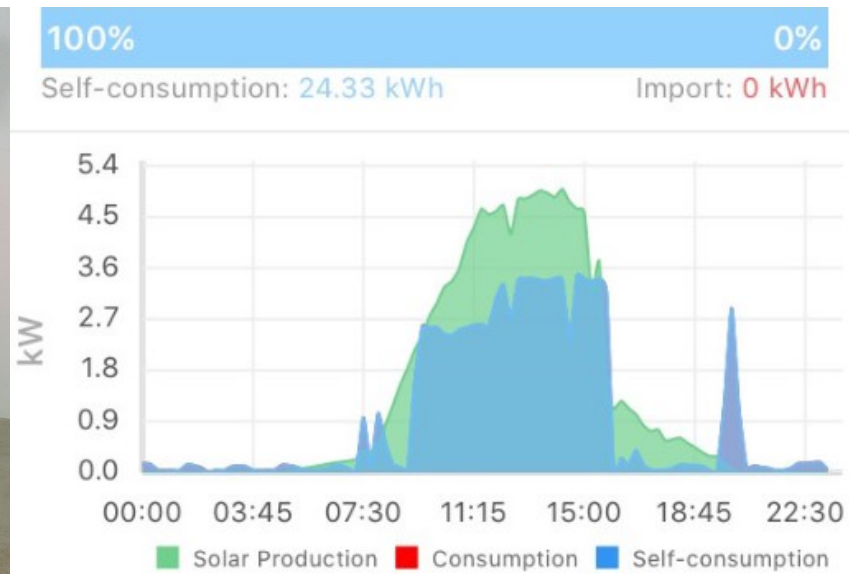
Media-screen set in front of the central entrance hall allows to display commercials upcoming tour.





CHARGING ELECTRIC CARS AND GADGETS

Currently, the electric vehicle is still in great demand from the Europeans, sales are growing, only some electric scooters and bicycles in Europe more than 5 million. According to the report of the company Transport & Environment, to the end of 2016 on the roads of Europe will be over 500,000 electric vehicles. The European Union recently adopted a law according to which every new building in Europe, built after 2019 should be charging for electric vehicles. All it proves is that electric cars have finally ceased to be just an interesting futuristic concept now and become part of our everyday reality.

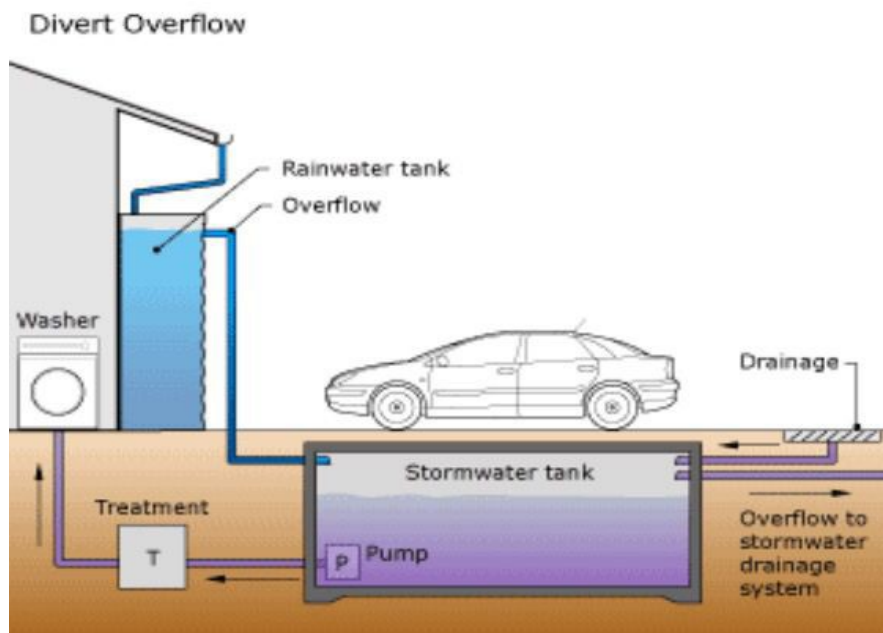


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RAINWATER DIVERSION

Rain water is the most accessible resource, which often disappears. But atmospheric humidity, which drops out in the form of precipitations, can be rationally used for technical purposes, which will allow the costs of tap water, significantly reduce the financial costs for the use of water systems and improve the ecology of the city. Rainwater - alternative to meet various household purposes, such as cleaning, laundry and watering the plants, because it does not contain any chlorine and is more soft. After appropriate filtration rain water can be used as drinking for animals adjacent Zoo.



With storage tanks purified rain water with the solar cells pumps automatically moves in artificial reservoirs, watering park trees and flower beds. Part of the water can be used for cleaning electric carts, electric motorcycles and bicycles, cleaning and park paths and more.



LINK



- <http://www.kkzu.org.ua>
 - <https://ru.wikipedia.org/wiki>
 - <http://www.agrisellex.co.uk/information/boosting-solar-panels.htm>
 - http://www.greenrhinoenergy.com/solar/technologies/pv_concentration.php
 - <http://strategy.kh.ua/rezul-taty-konkursa>
- Concert Hall "Ukraine"
 - Solar energy
 - How to increase the power of solar cells
 - Photovoltaic concentrators
 - Winners of the contest of investment projects "Kharkiv - strategy of success"

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