The Electric Barrel of Takis, Conservation of Outdoor Sculpture for Popular Use

Technological Educational Institute of Ionian Islands, Department of Conservation of Cultural Heritage

K.E.T.E foundation

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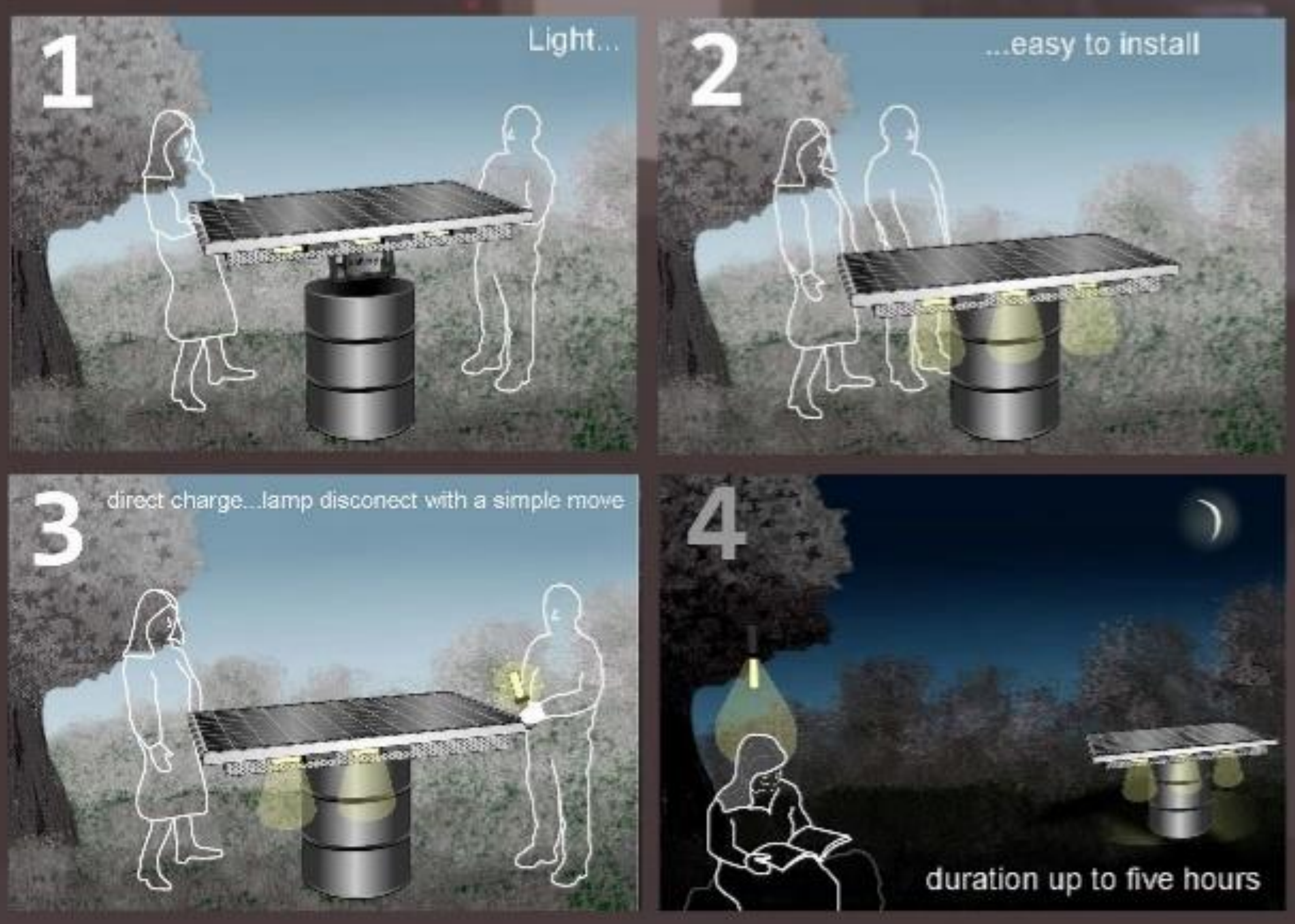
introduction

The *Electric Barrel* is an innovative sculpture and a substantial and economically feasible solution for people living without electricity. The purpose of the device is to collect and distribute the Solar energy energy through the photovoltaic effect, producing electricity at low cost from a device that is weather resistant, durable, and easy to install and use.

The creator of the sculpture, Panagiotis Vassilakis, also known as Takis, was born in 1925 in Athens and is a key figure in comtemporary Greek art. He is trying to contribute through his artistic work to important issues relating to the environment and humanity. His work and ideas encompass all forms of energy.

Composition

The first section of the sculpture consists of the photovoltaic cell (PV), a regulator and charger, cables and supports. The photovoltaic cells convert solar energy into electricity. The charge controller is responsible for the correct charging of the battery which supplies an electric output, controls the charging process and stops when the battery is charged. It must be compatible with the voltage of the panels and the voltage needed by the battery. In this specific work there are four rechargeable lamps, two night lamps, and everything is connected to four plugs.
The second section includes an empty oil drum as a base on top of which the PV is placed in a horizontal position. Inside the barrel several heavy materials are placed, so that the weight is sufficient to make it stable. Below the PV, there is an iron armature, wherein the battery is placed. When the panel is attached, the battery enters the interior of the barrel. Below the panel, and above the barrel, are the power sockets, from whitch electricity is distributed and to witch more items for charging can be attached. The barrel can be placed anywhere, without the need for permanent and costly installation.



Replication

Conservation of the intangible elements of the original work is crucial, to secure its authenticity, integrity and outstanding universal value through time. In contemporary art the recreation of works through replication is common. The main idea is that the new materials should be more permanent and stable. Should this perspective be altered to provide environmental benefits and should conservation standards for such works be adapted? Huge numbers of empty oil barrels which are both abundant and disused could replace the oxidized ones. This conservation approach leads to conserving the concept of the *Electric Barrel,* to ensure it remains alive for future generations.

Challenges

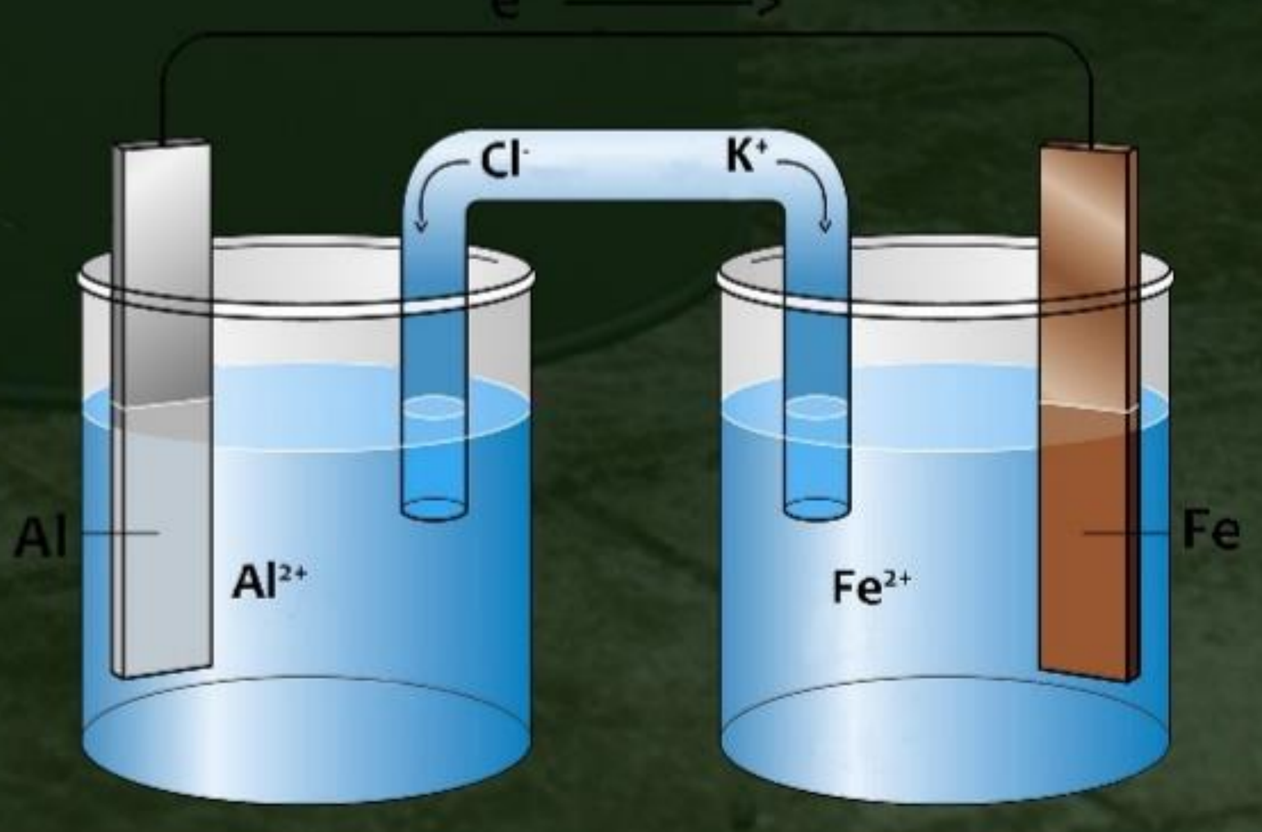
There is a technical difficulty in conserving a highly sophisticated device like a PV, whose design draws on a plethora of sciences, such as applied physics, mathematics and materials science. Made for outdoor use. A recommended approach to this challenge is a collaboration between a conservator and a technician who specializes in such equipment.

Materials

- PV (105W)
- Empty Oil drum
- Battery
- Iron armature
- Regulator charger
- 4 rechargeable
- 4 plug connectors
- 2 night lamps
- Hinges
- Elecrtical fuse
- Switch
- Cables
- LEDs
- Cable clips

Conservation

Pro-active approaches and selective restoration lead to minimizing loss of the original work, so as to secure its integrity and all its authentic values. The conservation of this artefact could benefit greatly from experience and knowledge gained from corrosion control measures employed over many years to maintain the function of engineering systems. The aim of this guideline is to indicate best practice for corrosion control. The advantage of this approach is that it is well established, well understood and an existing infrastructure for corrosion control; the experts, the systems and the process are readily available.
There must be a return current path for electrons to flow from the anode to the material it is protecting (being in physical contact usually creates the path) and an electrolyte (water, humidity) to convey the electrons. Sacrificial anodes are generally made from three metals: magnesium, aluminum, or zinc. Magnesium has the most negative electropotential of the three (see galvanic series, right) and is more suitable for on-shore pipelines where the electrolyte (soil or water) resistivity is higher. One type of cathodic protection system is the sacrificial anode. The anode is made of a metal alloy with a more "active" voltage (more negative electrochemical potential) than the metal of the structure it is protecting (the cathode). The difference in potential between the two metals means the sacrificial anode material corrodes in preference to the structure. This effectively stops the oxidation reactions on the metal of the structure being protected. If the difference in electropotential is too great, the protected surface (cathode) may become brittle, or cause disbonding of the coating.
Zinc and aluminum are generally used in salt water, where the resistivity is generally lower.
The advantage of sacrificial anode systems are that they are easy to install, the low voltage and current between the anode and the surface it is protecting does not generate stray current, overprotection is unlikely, and inspection and monitoring is simple for trained personnel.



IIC 2016 LOS ANGELES CONGRESS
12 - 16 September 2016
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