

SOLAR POWERED UNMANNED AIRCRAFT

With global attention focussed on UAVs as the future controllers of warfare in a variety of dimensions we would be well advised to commence R&D on Solar Powered UAVs which were exhibited at Abu Dhabi in March at the IDEX 2003 Show. We are capable of building small aircraft and BHEL has expertise in solar cells which can keep aircraft up at heights of 40,000ft for surveillance purposes almost indefinitely. This feature deals with miniature solar powered UAVs being developed by Tecknisolar Seni.

Although Tecknisolar Seni of France has been developing solar power based items for the road safety, lights and beacons, vehicle and military departments, our concern here is with solar powered UAVs which will be of considerable interest to all civil and defence security agencies to provide surveillance at minimal cost with freedom from interception by those who are being surveyed.

Visitors to the Tecknisolar SENI display were left in no doubt that the company is a specialist in solar energy technology covering a wide range of applications. Although it is unusual to see solar power associated with UAVs, the company has not only produced a hand-launched electric powered UAV small enough to be carried on a soldier's backpack, but it has also developed a remarkable helmet mounted video receiver which enables the wearer to see what is transmitted from the solar powered UAV. Both the UAV and the bizarre-looking helmet system are solar powered. The development takes autonomous UAV-mounted surveillance into a new field.

High Altitude Surveillance Drone Libellule

Libellule, a high altitude drone, is able to reach altitudes of 25 to 30km. Propelled by solar energy, this stealth drone is able to manoeuvre around a pre-defined area for several weeks without the need for any human intervention. The drone may be equipped with a high definition camera, used for infra red missile detection or to act as a radio relay. Users will obviously be able to think of numerous other vital tasks which it will be able to perform.

Buteo

Called Buteo, this electric apparatus is neither an aeroplane nor a helicopter but both. It is conceived as a prototype of a hybrid of an aeroplane and a helicopter. It is capable of hovering like a helicopter but also has the added dynamic flight manoeuvres of an aeroplane. It has been designed for mine detection, charge placement, identification of radioactive sources around nuclear power stations and for aerial photography through the windows of high rise buildings.

DER or Bourdon

The creation of a 3.5kg electric drone fitted with a colour camera which sends real time video images to a ground based screen. The screen is integrated into either a back pack, case or image receiving helmet, all of which are solar powered and totally autonomous. It is intended for use by Military Commando Units, Task Forces and Military Scouts etc.

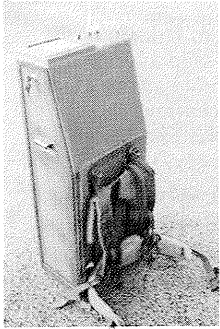
Mobile Radar Camera

This system aims to monitor sensitive sites, airports, factories, military sites, and temporary arms stores. Once positioned at a height of 6 meters this solar powered radar camera will monitor the protected zone and automatically alert any intrusion to the surveillance controller. Using cordless transmission and reception this detection system allows the visualisation of the intruder under both light and dark conditions.

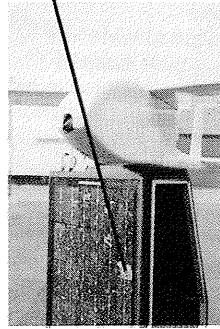
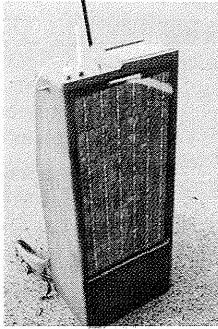
UAV Bourdon



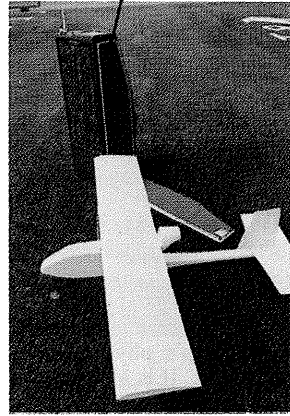
Reception antenna for video camera on board UAV



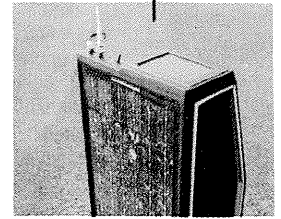
Solar cell for UAV battery video display



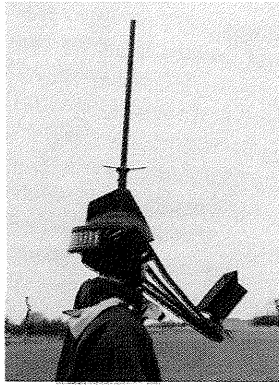
Folded plane



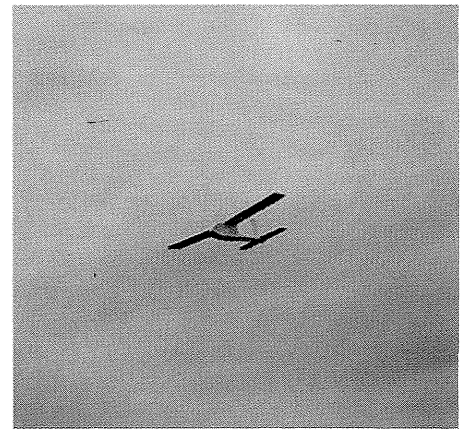
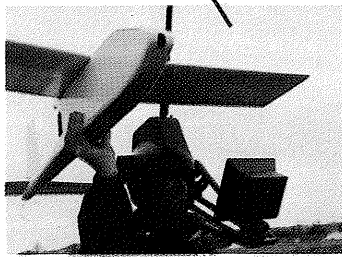
LCD display video from UAV camera



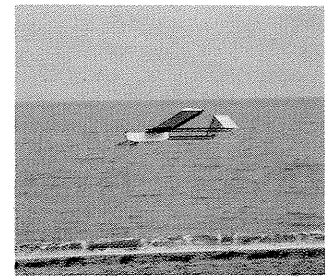
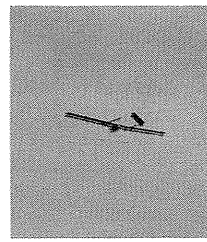
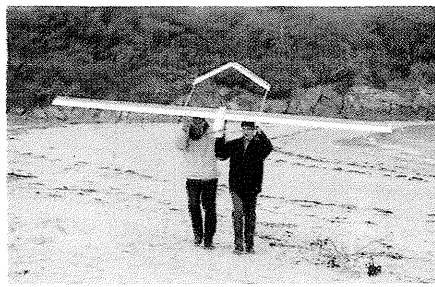
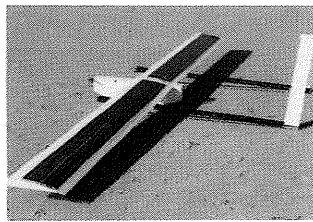
Back pack solar for folding electric plane UAV Drone



Video camera with radio transmitter



Video receiver helmet solar



The capabilities of various types of Solar powered UAVs are provided on previous page

Portable Video Re-transmission Coccinelle

Weighing between 280 and 400grams, named Coccinelle or Ladybird, this drone is intended for forces of law and order, police, fire fighters etc. Particularly quiet, this drone is equipped with a colour camera and transmits real time video images to a ground based back pack or case with integrated screen. Both the back pack and case are solar powered and therefore completely autonomous.

High Altitude solar plane UAV Drone stratospheric UAV Futuristic Drone

A Futuristic Drone powered by solar energy is made from a highly specific resin which absorbs radio frequencies, is insensitive to air friction, it cannot be detected by magnetic waves, or by infrared waves as it does not heat up, often friction in the air at a certain speed creates heat, or by laser beams because it neither reflects nor reverberates. Totally silent and non-polluting the drone is 1.8m long, has a wing span of 4.2m and weighs 2.5kg. This is a development of the Libelulle high altitude drone.