ECO-DISTRICT: ELECTRIC VEHICLE CHARGING STATION WITH SOLAR LIGHTING

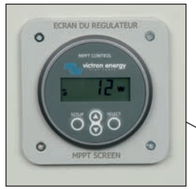
This didactic solution makes it possible to understand, in a context of sustainable development, electric vehicle charging stations located in an eco-district.
This application is a charging station controlled by code keypad or badges, illuminated by a solar and autonomous porthole.

The power part of the charging station is 230Vac protected by a circuit breaker with key authorization for switching on.
The lighting part is in low voltage 12Vdc and works with solar energy.

Indoor (halogen fixed to the frame) or outdoor use.

ref. SOL-EQ6
FREE TELEPHONE ASSISTANCE ON 05 56 89 91 07

DELIVERED WIRED AND CONFIGURED | TEACHING RESSOURCES STUDENTS / TEACHER | AUTONOMOUS WIFI NETWORK



Controller screen attached to the side of the cabinet

Monocrystalline panel 30Wp swivel for indoor use with the 2 projectors supplied, outdoor with a source natural solar.

Dimensions : 710 x 800 x 1800mm. Weight 70kg.

Bluetooth®

Requires download from Play store or Apple store of the free Victron Energy app.
Allows reading on tablet or smartphone:
- Voltage - Panel current / Power (W)
- Voltage - Battery current / Load current
- State On-Off charge

EDUCATIONAL OBJECTIVES

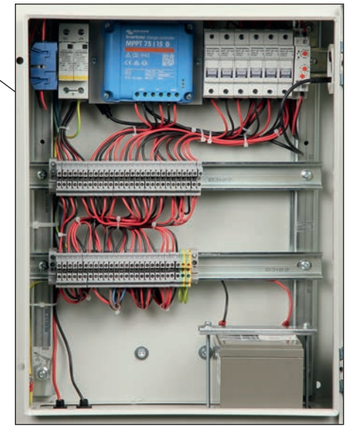
- **Study a charging station and solar energy lighting**
- **Demonstrate the ecological functioning of a hybrid terminal**
- **Study the different types of charging sockets for electric vehicles**
- **Test an electric vehicle charging station.**
- **Study an access command by code keypad and RFID badge**
- **Commission a solar system.**
- **Discover the different solar panel technologies.**
- **Wiring photovoltaic components**
- **Perform electrical and mechanical maintenance on the mast.**
- **Identify the different electrical quantities of a solar energy production chain.**
- **Calculate the efficiency of the installation.**
- **Configure communication on a Bluetooth (MPPT) and wifi network (charging station).**
- **Configure a photovoltaic installation using a tablet or smartphone.**
- **Configure an Ethernet IP network between the camera and the Wifi Switch.**
- **Study the energy savings generated by the different sensors**

PROPOSED PRACTICAL WORK

- Wiring of a charging station control circuit
- Configuration of the charging station in wifi thanks to the Webserver integrated in the station (visualization of operating status, configuration of the communication kit, choice of charging mode, time programming, history, intensity adjustment, locking, charging stop...)
- Configuration of the RFID keyboard (daily use, user management, choice of operation by code, badge, keyboard, keyboard + RFID badges)
- Calculation of the battery discharge time as a function of the load.
- Reading of currents and voltages at different points of the wiring.
- Interpretation of measurements and calculation of yield.
- Study on the positioning of solar panels for maximum efficiency.
- Course on different solar panel technologies (Monocrystalline, Polycrystalline, Amorphous)
- Study of solar irradiation.
- Reminder on Direct, Diffused and Reflected solar radiation.
- Configuration of the application from a touchscreen tablet.
- Mechanical fixing of the bollard, panel and lamppost on the frame.
- Mechanical and electrical maintenance.

Solar energy www.langlois-france.com

230 VAC power supply box



Battery box + charge regulator.

Delivered with a tester charging station

COMPOSITION

- 1 wheeled frame with brakes, very stable. Sized for doorways.
- 1 single-phase 3.7 kW to 4.5 kW electric charging station (one mode 3 type 2 socket). Integrated web server allowing the terminal to be configured via the Wifi switch or operation by the user via Bluetooth. Application to download for free from Play Store® or Apple Store®
- 1 230Vac power supply box with protections and operating authorization by key.
- 1 charging station tester
- 1 code keypad with USB port for programming via the software supplied with the model (3 operating modes by RFID badge and / or code)
- 1 12Vdc lighting
- 1 presence detector
- 1 monocrystalline photovoltaic panel of 30Wp fixed on an aluminum mast. The panel is adjustable for outdoor use.
- 2 halogens to be connected to a 2P + T mains socket make it possible to simulate solar radiation for use of the model indoors.
- 1 MPPT (Maximum Power Point Tracking) load regulation system and electronic control of the device with twilight detection and programming by voltage level directly modifiable from a smartphone or touchscreen tablet. A recording of the voltages, currents and powers of the solar panel, battery and LEDS, in the form of data, can be retrieved by an application via a Bluetooth link (display in the form of a bar graph).
- 1 screen connected to the regulator to retrieve information from the MPPT locally.
- 1 solar battery 12V / 14Ah
- 1 set of photovoltaic fuse holders and 1 surge arrester.
- 1 wifi switch
- 1 RJ45 Ethernet cable of 3m

Component connection made on industrial terminals to prevent component wear.

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