

## A SYSTEM FOR RECHARGING ELECTRIC CARS



The market development of electric cars with AC charging has suggested us that we could use our experience in order to install a **network of e-charging columns on city streets** exploiting our technologies.

We believe that e-car owners will find it difficult to recharge their cars once **medium power electric cars 30 to 60Kwatt** are widely employed (2.5 meters length mini cars are now being placed on the market at less than € 8,000). A European survey has recently showed that only **30% European citizens will be able to recharge their cars from domestic power plants** and that, as a consequence, a widespread network of charging stations will be needed both in town centers and nearby suburbs to face the needs of citizens.

### **Our system:**

*To meet this demand, our Start-up system has developed a non-invasive economic system so as to avoid excavations and further installation expenses, using underground cables that provide public lighting to feed charging stations when they do not operate in daylight.*

The widespread network of public street lights includes an extensive system of power points that give light to about **10 millions street lamps**.

*Also electric meters fitted in lights frameworks are kept in a dedicated nearby fiberglass cabinet and are off all day till evening dusk when they are run by electricity.*

*The above mentioned electric meters could be used to measure the energy used by charging columns in daylight.*

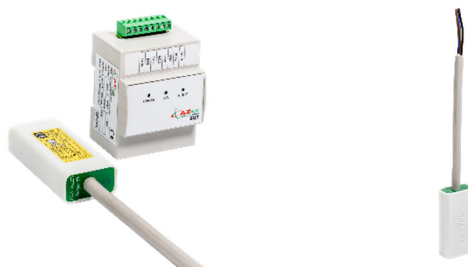
### **How does this work?**

*When dusk sensors sense the daylight our new*

#### **“LS-PRIME”**

*system is instructed to put off the bulbs in the streets lampposts but hold the flow of energy under tension, so that it can be used for recharging.*

*“LS-PRIME” consists of three modules that work sequentially with respect to day and night events and vice versa.*



**Advantages:** *It will be easy for us to choose an empty area where we can allocate stop-and-charge points as, normally, street-light plants cover 600 to 1,200 meters street length and even longer high-traffic roads, all of them powered by one single charging point.*

*It will also be easy to identify one single lamppost and its inspection well from which energy can be charged, both on single and on three-phase mode, with no need for further drastic excavations.*

**Without the proposed system:**

- new charging columns require excavations of considerable road paving;
- electric power must be charged ahead of the existing electric panels which means columns must be installed near an electric panel;
- more expensive excavations are needed to place new charging columns.

**Contemporary use day and night:** *Charging an e-car will be possible both evening and night when street lights are switched on.*

**The following cases may arise:**

- 1) If gas-discharge lamps are changed to LED-powered fixtures, the charging power decreases to 50%, and the remaining power will be available. Therefore we will fix one or more electric current meters to the service of a charging column.
- 2) When discharge lamps require a comparatively lower voltage than the power delivered by the switchboard ahead, an increased amount of charging power will be available.
- 3) The existing cables connected to lamps are low-section cables which cannot deliver the increased amount of voltage available, therefore underground larger-section cables will be necessary the cost of which will not be prohibitive.
- 4) Whenever the street cabinet is a 3/4 electric-lines control of street lamps, it will be possible to divert the 3/4 electric-lines into one single electric-line, increasing the section of the underground cable so to be able to install a 2x22Kw public charging point.
- 5) On designing new street plans, in new residential areas, one street cabinet can be installed and adequate section underground cables for night lighting and simultaneously charge electric cars.

*Various options are accessible: as usual, inspection on the site will be necessary with due tests and electrical measurements in order to consider which procedure to carry out.*

**Conclusions:** *The proposed system is meant to help designers of distribution societies, engineers at the Municipal technical office and whoever is interested in power circuits relating the concept of Smart Cities, aiming at sustainable forms of mobility and at the quickest possible popularization.*

*To meet the increasing need for electric-car charging, today's designers approaching a new positioning system for power stations must necessarily redraft the models adopted so far, partially reversing the existing power plants.*