

Introduction for Possible Management System from Solar Driveway (Roadway)

Currently, the cost of solar roadway (solar driveway) is still high, and its solar efficiency is low because they are parallel to be paved on the road. However, its utilization rate and cost performance will be very considerable if considering below intelligent management control system, such as wireless charge for electric vehicles, intelligent car navigation, integrating Unmanned driving technology, cleaning and environmental friendly energy, etc.

1. Intelligent Photovoltaic Pavement

Road idle, power shortage: According to statistics, 90% of roads in China are in idle state, if these pavements are covered with solar panels, it will solve the electricity demand for more than 60% of the population, especially for remote mountainous areas and cities in severe power shortage. The photovoltaic power generation is cleaning, environmentally friendly and zero carbon.

Integration of intelligent transportation: Photovoltaic pavement is quite different with the traditional road. The former can rely on their own generated power to solve their own electricity usage, such as street lamps, charging piles, landscape lighting, bus stations and other public facilities. In the future it also can be used for car navigation to achieve 3D coverage of smart transportation. Meanwhile, the surplus electricity also can be sold to enterprises along the line to make profits.



2. Road Heating System

In winter the frozen road should be a common problem in the North while in the morning and night in the South. Road ice and snow is the most troublesome problem for city administrators and also creates the most difficult time for sanitation workers.

The solar roadway's photovoltaic pavement not only solves the problem of municipal electricity usage, but also creates spare power to be sold to State Grid and obtains revenues. In Winter the solar roadway will start its magical function of automatic heating to achieve deicing and snow removal. It will greatly reduce the traffic accidents caused by untimely brakes in poor weather to ensure public safety.



3. Smart Bus System

The bus systems are now being renewed all over the country. The bus station is not only for display, but for intelligent, practical and powerful information browsing, wireless, alarm functions and so on. These will also increase the equipment power consumption. It's not a small expenditure when its annual electricity bill achieves ten thousand RMB. It is cleaning and cost-saving to use the spare electricity generated by solar roadways and solar micro-inverter street lamps for the bus system and bus station. It also solves the bottleneck of new energy vehicle's short driving since the bus can be charged during driving on the solar roadway.

4. Intelligent Navigation System

For the traditional car navigation, the driver needs to rely on the car itself which makes a voice command to the driver. For the solar roadway, navigation hot spots can be set everywhere on the road, so the driver does not need to shift sight the car screen

whether to turn or other instructions. Whenever the car needs to turn, the car navigation will share instructions with the roadway hot spot, and there will be LGD signs shown in front of the driver's road. The car Bluetooth will form a system docking and sharing with the launcher device of street light. The car instructions are sent to the road device and then conveyed to the solar roadway. The solar roadway itself is a power supply system and circuit system, which accepts orders and forms various signs on the road to notify the driver, so that the driver can respond to system instructions without moving the sight from front line.

5. Traffic Information Service System

Traffic jam is not only a big city problem in big cities, but also in many county-level cities. The local governments have tried many ways to make smooth traffic, but the traffic problem is getting worse. At weekends most of the city residents go to the surrounding village and suburbs which lead to a large area congestion on exit roads of city. Instead the entry roads to the city are empty.

Intelligent solar roadway has a strong power supply function and also a temporary road grooming function. When there are congested section, the site traffic police or monitoring center can adjust the road entry and exit setting at any time, so as to temporarily increase exits and reduce entries to solve the traffic jam. Traffic police and the monitoring center administrator can operate directly on handheld terminal APP.

6. Car Charging System.

Road charging area with cable:

Installing unequal charging stations for new energy vehicles within the stipulated kilometers on solar roadway is conducive to the promotion and development of new energy vehicles. All the power will come from the solar roadways and the solar mic-inverter power generation system. There is no relying on the State Grid.

Dynamic Car Wireless Charging:

The system uses a more mature and practical induction-coupled power transmission mode for wireless power supply. The inductive coupling power transmission system includes two parts of the power supply terminal and the receiving end. The power supply terminal and the receiving end are completely electrically isolated, and the energy is transmitted from the power supply terminal to the receiving end through the electromagnetic coupling mechanism (including the transmitting coil and the picking coil).



7. Spare Power Collecting System

Spare power collecting system of solar street light micro-inverter.

Each set of micro-inverter power generation system is like a distributed power station. Each solar street light generate 3.8KW/H electricity while its own electricity consumption is about 0.8KW/H. The surplus 3KW/H will be uploaded to State Grid or stored. In this way, the electricity consumption itself is free, and the spare electricity can be supplied to the public facilities or enterprises along the line.

Spare power collecting system of solar roadway.

Each 1KM solar roadway can solve the daily electricity demand of 500 families. Only a few part of the generated power are used for public facilities, while the most part goes to State Grid or the enterprises and residents along the line, which really realizes the dream of zero carbon road.

8. Intelligent Management Center

In future it will be a highly informative social system, with intelligent and modernization of the city, families and enterprises almost everywhere. The integrated management of a city or a region is already a trend, People can manage all facilities on the city control center platform, and any problems about the facilities or systems can be found and detected here, which significantly saves manpower and financial costs.

An intelligent solar roadway can integrate hundreds equipment and systems. In the past issues like decentralized management and human patrol made very complicated urban management. For example, casualties caused by the loss of the sewer covers have been exposed for many times. But now, with the unified integration of such large system into a platform will make the management more efficient and simple.



When finding a new technology, the most consideration should be use ratio improvement under high cost limitation. Relative to traditional product, the solar driveway (roadway) pavement is high cost, but if to integrate intelligent management control system and cleaning lives environment, its cost would not be high.