Sharing, monitoring e management system of rechargeable batteries

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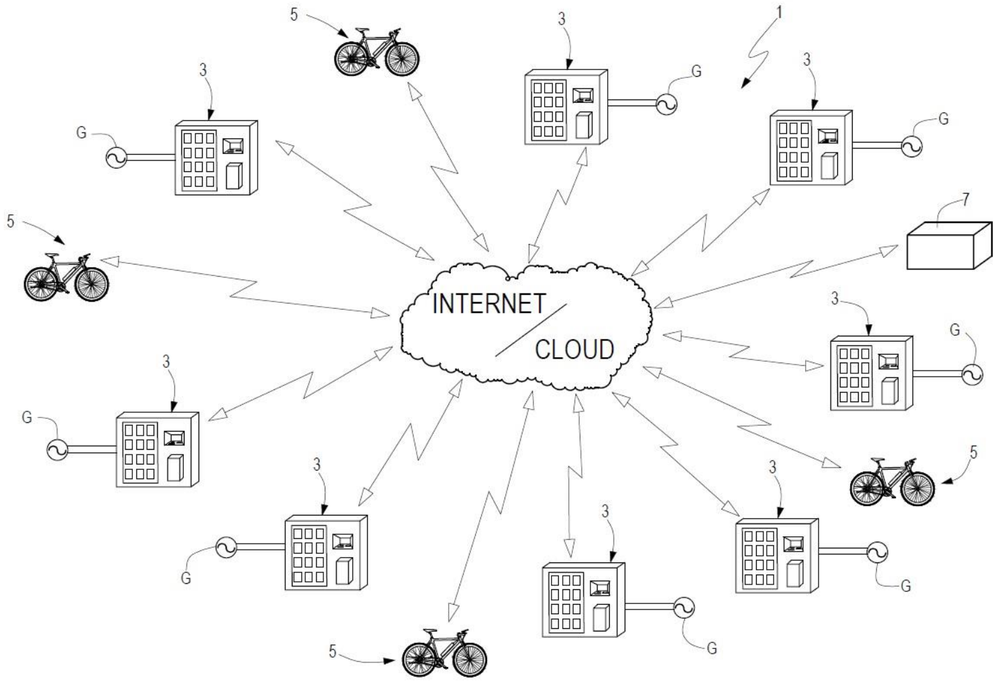
Invention

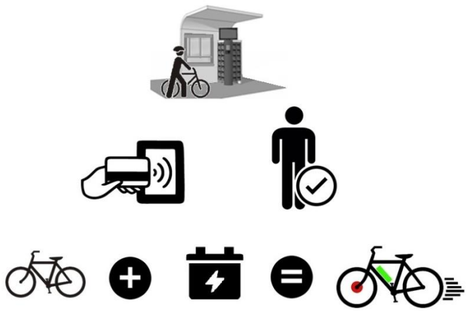
Soft and green mobility is largely implemented through sharing services, whose fleets are mainly composed of pedal assisted bicycles and electric scooters. A feature of these services is the extreme capillarity of the service offered but they hide a significant environmental cost, represented by the disposal of batteries which, after a few recharging cycles, are often no longer suitable for transport. Since the distribution of these vehicles is influenced by the movements of users, the quality and residual life of the batteries of these vehicles is affected in a non-homogeneous way by the behavior of users, with a further increase in the fixed costs of managing the sharing system. . The patented invention implements an interconnected and intelligent sharing mechanism of batteries and no more than means, guaranteeing the same benefits of current sharing systems but also ensuring the use and optimal recharging of the batteries exchanged between users.

This system overcomes many limitations of traditional sharing. The concept, in fact, is to separate the vehicle from the batteries: the user only has to transform his traditional bike or scooter into an electric vehicle, with special conversion kits made available but widely available on the market. It is a low-cost kit compared to buying an already electrified vehicle. In this way, the user can have a network of recharging points in which to stock up on charged batteries, without worrying about the management of recharging and maintenance and deterioration of the same. On the other hand, the service manager will not have the burden of the vehicles, which remain the property of the user. This also avoids the problem of vandalism and vehicles left parked everywhere. The heart of the system consists of: a) recharging stations located throughout the territory, which allow the withdrawal of charged batteries and the storage of discharged batteries; b) A management App, which constitutes the user interface and allows you to carry out all the operations of identification, payment, withdrawal and storage of the batteries, provides information on the state of the battery charge, on the sites where the stations are located. recharge, the statistics of the routes, times, speed, etc. ; c) batteries with electronic cards designed to interface with the charging stations, with the management app and with the sensors on board the vehicle; d) conversion kit for traditional bicycles and scooters into low-cost electric vehicles. The system, organized in this way, combines the advantages of the user with those of the manager, minimizing the risks and costs due to the maintenance of the vehicle fleet, often the cause of the failure of bike sharing systems.

The system is currently the subject of a pilot project, with 8 charging stations that will be located in as many locations within the Florentine university.

Drawings & pictures





Industrial applications

The patented technology can be implemented in public transport systems consisting of soft and green sharing mobility, through a business case created in collaboration with public and / or local entities, as well as companies already active in offering this type of services. The system would become scalable in a short time, both because it does not require the construction of batteries or ad hoc vehicles, and because it only requires the participation of people who, to date, already use muscular means of transport and therefore inclined to access an innovative service, based on better battery management.

Finally, this battery distribution network extends the range of the single-user electric vehicle to infinity.

Possible developments

The patent is available under an exclusive and non-exclusive license or sale. The license are available for the entire remaining term of the patent titles.

The research group is available for new research activities in collaboration and on behalf of third parties, technical insights, scientific advice, also aimed at raising the TRL of technology.

The TRL of the invention is 6/7.

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