WHAT IS CLAIMED IS:

1. A system for supplying electrical energy to a traveling vehicle by non-contact power feeding, the system comprising:

a power supply;

a non-contact power feeder cable on a ground;

a traveling vehicle having a power receiving unit configured to receive electrical energy from the non-contact power feeder cable, a load consuming electrical energy, and an energy storage unit configured to store electrical energy from the power receiving unit and regenerative electrical energy from the load, and supply electrical energy to the load; and

control means for monitoring an amount of electrical energy stored in the energy storage unit and an amount of electrical energy required for the load, and stopping supply of electrical energy to the non-contact power feeder cable when the electrical energy required for the load can be supplied by the electrical energy stored in the energy storage unit.

2. The traveling vehicle system according to claim 1, the energy storage unit being a capacitor, the traveling vehicle system further comprising:

a voltage sensor configured to monitor voltage of the energy storage unit;

electrical current sensor configured to monitor electrical current of electrical energy charged in, and discharged from the energy storage unit; and

product life estimation means for determining capacitance of the energy storage unit based on the voltage of the energy storage unit and electrical current of electrical energy charged in, and discharged from the energy storage, for estimating product life of the energy storage unit.

3. The traveling vehicle system according to claim 2, the product life estimation means being configured to determine internal resistance of the energy storage unit based on a change in the voltage of the energy storage unit, for estimating the product life based on the capacitance and the internal resistance of the energy storage unit.

4. The traveling vehicle system according to any one of claims 1 to 3, the power receiving unit and the load being connected in parallel to the traveling vehicle, a first transistor, a diode, and a second transistor being provided between the power receiving unit and the load arranged in parallel, the first transistor being configured to control charging of electrical energy from the power receiving unit to the energy storage unit, the diode being provided in parallel with the first transistor for discharging electrical energy from the energy storage unit, the second transistor connecting a plus terminal and a minus terminal of the energy storage unit, a coil being provided between the first and second transistors and the energy storage unit.

5. A system for supplying electrical energy to a traveling vehicle by non-contact power feeding, the system comprising:

a power supply;

a non-contact power feeder cable on a ground;

a traveling vehicle having a power receiving unit configured to receive electrical energy from the non-contact power feeder cable, a load consuming electrical energy, and an energy storage unit configured to store electrical energy from the power receiving unit and regenerative electrical energy from the load, and supply electrical energy to the load; and

control means for monitoring an amount of electrical energy stored in the energy storage unit, and stopping supply of electrical energy to the non-contact power feeder cable when electrical energy stored in the energy storage unit has a predetermined value

or more.

6. A method of supplying electrical energy to a traveling vehicle by non-contact power feeding, the method comprising the steps of:

providing a power supply and a non-contact power feeder cable on a ground;

providing a traveling vehicle with a power receiving unit configured to receive electrical energy from the non-contact power feeder cable, a load consuming electrical energy, and an energy storage unit configured to store electrical energy from the power receiving unit and regenerative electrical energy from the load, and supply electrical energy to the load; and

monitoring an amount of electrical energy stored in the energy storage unit and an amount of electrical energy required for the load by control means, and stopping supply of electrical energy to the non-contact power feeder cable by the control means when the electrical energy required for the load can be supplied by the electrical energy stored in the energy storage unit.

WHAT IS CLAIMED IS:

1. A system for supplying electrical energy to a traveling vehicle by non-contact power feeding, the system comprising:

a power supply;

a non-contact power feeder cable on a ground;

a traveling vehicle having a power receiving unit configured to receive electrical energy from the non-contact power feeder cable, a load consuming electrical energy, and an energy storage unit configured to store electrical energy from the power receiving unit and regenerative electrical energy from the load, and supply electrical energy to the load; and

control means for monitoring an amount of electrical energy stored in the energy storage unit estimating an amount of necessary electrical energy for the load and an amount of regenerative electrical energy from the load during a next operation of the traveling vehicle, determining whether the amount of the electrical energy stored in the energy storage unit is enough for an amount of necessary electrical energy for the load for acceleration during the next operation, requiring the non-contact power feeding from the power supply when the amount of electrical energy stored in the energy storage is not enough, and not requiring the non-contact power feeding when the amount of electrical energy stored in the energy storage is enough.

2. The traveling vehicle system according to claim 1, the energy storage unit being a capacitor, the traveling vehicle system further comprising:

a voltage sensor configured to monitor voltage of the energy storage unit;

electrical current sensor configured to monitor electrical current of electrical energy charged in, and discharged from the energy storage unit; and

product life estimation means for determining capacitance of the energy storage

unit based on the voltage of the energy storage unit and electrical current of electrical energy charged in, and discharged from the energy storage, for estimating product life of the energy storage unit.

3. The traveling vehicle system according to claim 2, the product life estimation means being configured to determine internal resistance of the energy storage unit based on a change in the voltage of the energy storage unit, for estimating the product life based on the capacitance and the internal resistance of the energy storage unit.

4. The traveling vehicle system according to any one of claims 1 to 3, the power receiving unit and the load being connected in parallel to the traveling vehicle, a first transistor, a diode, and a second transistor being provided between the power receiving unit and the load arranged in parallel, the first transistor being configured to control charging of electrical energy from the power receiving unit to the energy storage unit, the diode being provided in parallel with the first transistor for discharging electrical energy from the energy storage unit, the second transistor connecting a plus terminal and a minus terminal of the energy storage unit, a coil being provided between the first and second transistors and the energy storage unit.

5. A method of supplying electrical energy to a traveling vehicle by non-contact power feeding, the method comprising the steps of:

providing a power supply and a non-contact power feeder cable on a ground;

providing a traveling vehicle with a power receiving unit configured to receive electrical energy from the non-contact power feeder cable, a load consuming electrical energy, and an energy storage unit configured to store electrical energy from the power receiving unit and regenerative electrical energy from the load, and supply electrical energy to the load; and

monitoring an amount of electrical energy stored in the energy storage unit estimating an amount of necessary electrical energy for the load and an amount of regenerative electrical energy from the load during a next operation of the traveling vehicle, determining whether the amount of the electrical energy stored in the energy storage unit is enough for an amount of necessary electrical energy for the load for acceleration during the next operation, requiring the non-contact power feeding from the power supply when the amount of electrical energy stored in the energy storage is not enough, and not requiring the non-contact power feeding when the amount of electrical energy stored in the energy storage is enough.