CLAIMS

1.- A method for managing an electric network of a railway network, the electric network comprising at least one central unit (19) and a plurality of power supply substations (7), the power supply substations being connected to a current supply means (5) of one or several railway vehicles (3), the power supply substations (7) being adapted to convert a first electric current having a transport voltage, into a second electric current adapted to circulate on the current supply means (5) and having a usage voltage, or vice versa, the method comprising the following steps:

receiving (100), by the central unit (19), a plurality of measured data, the measured data comprising the intensity of a current and/or a voltage value supplied to and/or received from the current supply means (5);

storing (102), by the central unit (19), the measured data, the stored measured data being associated with a measurement time;

receiving (104), by the central unit (19), one or several instantaneous measured values of the intensity of the current and/or of the voltage supplied to and/or received from the current supply means (5);

computing (106), by the central unit (19), at least one estimated value of the instantaneous measured value(s), from the stored measured data;

comparing (108), at the central unit (19), the instantaneous measured value(s) with the estimated value(s); and

activating (110), by the central unit (19), an alarm, as a function of the comparison of the instantaneous value(s) with the estimated value(s), and/or

sending (110), by the central unit (19), a command signal to the power supply substation (7), as a function of the comparison of the instantaneous value(s) with the estimated value(s).

2.- The method according to claim 1, characterized in that the alarm indicates a maintenance operation to be performed.

3.- The method according to claim 1 or 2, characterized in that, upon receiving the command signal, the power supply substation (7) controls at least one electric equipment of the power supply substation (7) as a function of the command signal.

4.- The method according to one of the preceding claims, characterized in that the measured data comprise one or several temperature values associated with at least one electrical equipment and/or with one or more rooms of the power supply substation (7) and/or maneuvering counters of an electric connection switch associated with at least one electrical equipment of the power supply substation.

5.- The method according to one of the preceding claims, characterized in that the method further comprises the following step:

measuring, at the power supply substation (7), measured data and/or one or several temperature values associated with at least one piece of electrical equipment or with one or more rooms of the power supply substation (7).

6.- A system for managing an electric network of a railway network, the electric network comprising at least one central unit (19) and a plurality of power supply substations (7), the power supply substations being connected to a current supply means (5) of one or several railway vehicles (3), the power supply substations (7) being adapted to convert a first electric current having a transport voltage, into a second electric current adapted to circulate on the current supply means (5) and having a usage voltage, or vice versa, the central unit (19) being adapted to:

receive a plurality of measured data, the measured data comprising the intensity of a current and/or a voltage value supplied to and/or received from the current supply means (5);

store the measured data, the stored measured data being associated with a measurement time;

receive one or several instantaneous measured values of the intensity of the current and/or of the voltage supplied to and/or received from the current supply means (5);

compute at least one estimated value of the instantaneous measured value(s), from the stored measured data;

compare the instantaneous measured value(s) with the estimated value(s);

activate an alarm, as a function of the comparison of the instantaneous value(s) with the estimated value(s), and/or send a command signal to the power supply substation (7), as a function of the comparison of the instantaneous value(s) with the estimated value(s).

7.- The system according to claim 6, characterized in that the alarm indicates a maintenance operation to be performed.

8.- The system according to claim 6 or 7, characterized in that the power supply substation (7) comprises one or more electrical equipments, the power supply substation (7) being adapted, upon receiving the command signal, to control at least one of the electrical equipments as a function of the command signal.

9.- The system according to one of claims 6 to 8, characterized in that the measured data comprise one or several temperature values associated with at least one electrical equipment and/or with one or more rooms of the power supply substation (7) and/or maneuvering counters of an electric connection switch associated with at least one electrical equipment of the power supply substation.

10.- The system according to one of claims 6 to 9, characterized in that the power supply substation (7) is adapted to measure data and/or one or several temperature values associated with at least one electrical equipment or with a room of the power supply substation (7).

11.- The system according to one of claims 6 to 10, characterized in that the system comprises a computer network for the connection between the substations and the central unit and for communication of the substations with one another.

CLAIMS

1. A method for managing an electric network of a railway network, the electric network comprising at least one central unit (19) and a plurality of power supply substations (7), the power supply substations being connected to a current supply means (5) of one or several railway vehicles (3), the power supply substations (7) being adapted to convert a first electric current having a transport voltage, into a second electric current adapted to circulate on the current supply means (5) and having a usage voltage, or vice versa, the power supply substations (7) each comprise one or several sensors (11, 12) the sensor(s) being connected to one or several local computing units (13), the local computing units (13) do not include any local man-machine interface to analyze or display the values of the sensors (11, 12), the local computing units (13) being adapted to be connected to a computer network (15), the central unit (19) comprising a communication module (30) adapted to be connected to the local computing units (13) via the computer network (15), the method comprising the following steps:

receiving (100), by the central unit (19) of the local computing unit(s) (13) of the power supply substations (7), a plurality of measured data, the measured data comprising the intensity of a current and/or a voltage value supplied to and/or received from the current supply means (5);

storing (102), by the central unit (19), the measured data, the stored measured data being associated with a measurement time;

receiving (104), by the central unit (19), one or several instantaneous measured values of the intensity of the current and/or of the voltage supplied to and/or received from the current supply means (5);

computing (106), by the central unit (19), at least one estimated value of the instantaneous measured value(s), from the stored measured data;

comparing (108), at the central unit (19), the instantaneous measured value(s) with the estimated value(s); and

sending (110), by the central unit (19), a command signal to the power supply substation (7), as a function of the comparison of the instantaneous value(s) with the estimated value(s); and

upon receiving the command signal, the power supply substation (7) controls at least one electric equipment of the power supply substation (7) as a function of the command signal, wherein if the central unit (19) detects, during a comparison of an instantaneous current and/or voltage value, that an error has occurred, it can execute a sequence to place the current supply means (5) in a downgraded mode.

2. The method according to one of the preceding claims, characterized in that the measured data comprise one or several temperature values associated with at least one electrical equipment and/or with one or more rooms of the power supply substation (7) and/or maneuvering counters of an electric connection switch associated with at least one electrical equipment of the power supply substation.

3. The method according to one of the preceding claims, characterized in that the method further comprises the following step:
measuring, at the power supply substation (7), measured data and/or one or several temperature values associated with at least one piece of electrical equipment or with one or more rooms of the power supply substation (7).

4. A system for managing an electric network of a railway network, the electric network comprising at least one central unit (19) and a plurality of power supply substations (7), the power supply substations being connected to a current supply means (5) of one or several railway vehicles (3), the power supply substations (7) being adapted to convert a first electric current having a transport voltage, into a second electric current adapted to circulate on the current supply means (5) and having a usage voltage, or vice versa, the power supply substations (7) each comprise one or several sensors (11, 12) the sensor(s) being connected to one or several local computing units (13), the local computing units (13) do not include any local man-machine interface to analyze or display the values of the sensors (11, 12), the local computing units (13) being adapted to be connected to a computer network (15), the central unit (19) comprising a communication module (30) adapted to be connected to the local computing units (13) via the computer network (15), the central unit (19) being adapted to:

receive a plurality of measured data from the local computing unit(s) (13) of the power supply substations (7), the measured data comprising the intensity of a current and/or a voltage value supplied to and/or received from the current supply means (5);

store the measured data, the stored measured data being associated with a measurement time;

receive one or several instantaneous measured values of the intensity of the current and/or of the voltage supplied to and/or received from the current supply means (5);

compute at least one estimated value of the instantaneous measured value(s), from the stored measured data;

compare the instantaneous measured value(s) with the estimated value(s);

send a command signal to the power supply substation (7), as a function of the comparison of the instantaneous value(s) with the estimated value(s), wherein
the power supply substation (7) comprises one or more electrical equipments, the power supply substation (7) being adapted, upon receiving the command signal, to control at least one of the electrical equipments as a function of the command signal, wherein if the central unit (19) detects, during a comparison of an instantaneous current and/or voltage value, that an error has occurred, it can execute a sequence to place the current supply means (5) in a downgraded mode.

5. The system according to claim 4, characterized in that the measured data comprise one or several temperature values associated with at least one electrical equipment and/or with one or more rooms of the power supply substation (7) and/or maneuvering counters of an electric connection switch associated with at least one electrical equipment of the power supply substation.

6. The system according to one of claims 4 to 5, characterized in that the power supply substation (7) is adapted to measure data and/or one or several temperature values associated with at least one electrical equipment or with a room of the power supply substation (7).

7. The system according to one of claims 4 to 6, characterized in that the computer network being for a communication of the substations with one another.