A device (I) for supervising the function of an electric consumer (2), such as a heating unit in a road finisher, is connected in a supply circuit (3) of electrical current of a consumer, and has an induction coil (4) associated with the current supply to which is connected a circuit (6) for detecting and indicating a voltage induced in the coil (4) by the supply current.
FUNCTION-SUPERVISING DEVICE

[0001] The invention relates to a device for supervising the function of an electric consumer connected in a supply circuit, said electric consumer being in particular a heating unit in a road finisher.

[0002] Road finishers are provided with a large number of heating elements and heating units which heat a great a great variety of work components that come into contact with the heated paving material for producing road surfaces, so as to avoid, on the one hand, premature cooling of said paving material and so to prevent, on the other hand, the paving material from solidifying on and adhering to the cold surfaces of the respective work component. These heating units must be supervised so as to guarantee in any case that the predetermined temperature of the work component is reached and maintained. US-B 6 334 735, for example, discloses an automatically controlled heating system for a road finisher in which a control system is used, which automatically adjusts the flow of current through the heating element so as to regulate the temperature. For supervising the heating unit and the temperature produced by said heating unit, at least one temperature sensor is used. A temperature sensor, especially when used in the manner described, is, however, unable to satisfactorily supervise each individual heating unit, especially each individual heating rod in a heating unit, so as to find out whether the heating rod in question is faulty or whether it works correctly. It can only be detected whether the heating unit in its entirety is able to reach and maintain the desired temperature.

[0003] A faulty heating unit could, however, be repaired much more easily, if it were possible to find out immediately that one of the heating rods is faulty and which one it is.

[0004] It is therefore the object of the present invention to provide a device for supervising the function of an electric consumer, which permits each individual consumer to be easily supervised at a reasonable price and in a reliable manner.

[0005] This object is achieved by a device for supervising the function of an electric consumer, in particular a heating unit in a road finisher, connected in a supply circuit, said device comprising an induction coil which is associated with the consumer (2) and which is connected to means for detecting and indicating a voltage induced in the coil by the supply current.

[0006] By means of the embodiment according to the present invention it is possible to detect in each individual supply circuit, without major expense being incurred, whether current flows in the respective circuit. Induction coils can be provided and installed easily and they are robust in operation so that functions can be supervised reliably by them.

[0007] Advantageous further developments of the present invention can be gathered from the subclaims.

[0008] It will be particularly advantageous, when a light emitting diode is used as an indicator means, said light emitting diode defining in connection with the induction coil a passive system which does not have a supply voltage of its own.

[0009] In combination with a rectifier circuit, the device according to the present invention, which includes an induction coil and a light emitting diode, is also suitable for consumers which are operated with alternating current or a three-phase current.

[0010] By means of a measurement device which is connected to the induction coil, it is additionally possible to obtain precise measurement data and to display them directly or in a processed form.

[0011] The device according to the present invention is primarily suitable for supervising the function of heating elements and heating rods in a road finisher, in view of the fact that the device according to the present invention is very robust and reliable; it can, however, also be used for supervising the function in any other electric consumer.

[0012] In the following, one embodiment of the present invention will be explained in detail making reference to the single drawing, which shows a circuit diagram of a device according to the present invention.

[0013] The FIGURE shows an only schematically indicated device 1 for supervising the function of an electric consumer 2 supplied with electric power via a supply circuit 3 (230V). The consumer 2 is preferably a single heating element or a heating rod within a heating circuit 3 for heating work components of a road finisher, i.e. for heating the various parts of a paving srewed or the like. The consumer 2 has associated therewith simple means for current/voltage measurement, which are implemented as an induction coil 4. In the embodiment shown, the induction coil 4 is directly integrated in the supply circuit 3, but it may also be associated with e.g. the heating spiral of the consumer 2. The induction coil 4 supplies an indicator circuit 5 with electric power, said indicator circuit having arranged therein means for detecting and indicating the flow of a current in the form of a light emitting diode 6. It follows that, when a current flows in the supply circuit 3, the light emitting diode 6 will emit light. When an alternating current or a three-phase current flows in the supply circuit 3, as is normally the case in heating units used in road finishers, the indicator circuit 5 comprises a rectifier circuit 7 with a further oppositely connected diode or a resistor for the second half-wave.

[0014] When the device is in operation, a voltage is induced in the coil 4 by the alternating voltage in the supply circuit 3 and/or in the area of the heating wire of the consumer 2; said voltage is converted into a signal in a unit, e.g. in the LED 6 shown, i.e. the LED 6 will emit light. If the current supply is interrupted, the induction effect will cease and the indicator, e.g. the LED, will go out.

[0015] The device 1 according to the present invention may additionally also be provided with a circuit which is capable of evaluating different voltage/current levels.

[0016] It is also possible to provide a measurement device by means of which a flow of current is not only detected but also measured; in this case, the measurement data can either be indicated directly or they can be processed, like the simple YES- or NO-signals, so as to obtain instructions (e.g. “heating X out of order”) or other indicative signals.

[0017] As a modification of the embodiment described and shown hereinbefore, other suitable means for detecting and
indicating a flow of current, preferably means which do not require an additional supply voltage, can be used.

[0018] The lead for connecting a heating rod normally extends from a terminal box on the paving screed of a road finisher. The lead is in this case conducted through a screwed cable gland on the terminal box. In a preferred embodiment, this screwed cable gland can be implemented as an induction coil provided with means for detecting and indicating a flow of current, said means being e.g. a light emitting diode.

1 claim:

1. A device for supervising the function of an electric consumer, in the form of a heating unit in a road finisher, connected in a supply circuit of electrical current, said device comprising:

   an induction coil associated with the current supply circuit for the consumer; and

   means associated with the induction coil for detecting and indicating a voltage induced in the coil by the supply current.

2. A device according to claim 1, wherein said means for indicating comprise a visual indicator.

3. A device according to claim 1, wherein said means for indicating comprise a light emitting diode.

4. A device according to claim 3, wherein if the electric consumer is operated with alternating electrical current or with a three-phase electrical current, the device further comprises a rectifier circuit in which the light emitting diode is connected.

5. A device according to claim 1 wherein said means for detecting and indicating comprises a measuring instrument.

6. A road finisher comprising:

   at least one electric heating unit connected in a supply circuit of electrical current and used for heating work components, and a device according to claim for supervising the function of said heating unit.

7. A road finisher according to claim 6 wherein said means for indicating according to claim 1 comprises a visual indicator.

8. A road finisher according to claim 3 wherein said means for indicating according to claim 1 comprises a light emitting diode.

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