Objects of the invention

[0012] The object of the present invention is to produce a device capable of measuring effective and cyclic rates of fire of a weapon by means of a passive electrical network requiring no supply of power other than that supplied by firing.

[0013] By virtue of the device of the invention, it will be possible to calculate the cyclic and effective rates of fire without the need for an external power supply such as for example a cell or a battery.

[0014] Such a device according to the invention allows the weapon to be monitored continuously and ensures the efficiency, longevity and safety thereof through improved maintenance. Specifically, this device makes it possible to assess the heating of the barrel and of other parts of the weapon and hence to check the state of wear thereof by calculating the effective rate of fire of the weapon.

Summary of the invention

[0015] The present invention relates to a device for measuring the effective and/or cycle rate of fire for any type of weapon, in particular a firearm, comprising:
a self-powered system capable of recovering energy from firing; at least one RC accumulator network comprising a capacitor and a resistor in parallel; an element measuring the voltage across the terminals of the capacitor; an electronic device that is capable of calculating the cyclic rate of fire and/or the effective rate of fire on the basis of the value measured by the element for measuring the voltage across the terminals of the capacitor; the self-powered system charging the capacitor on each firing, characterized in that the self-powered system (2) is configured so as either to inject a predetermined constant charge on each firing or to impose a constant difference in potential across the terminals of the capacitor on each firing. In one embodiment, the cyclic or the effective rate of fire can be determined by the residual charge across the terminals of the capacitor when firing.

[0016] According to preferred embodiments of the invention, the device includes at least one or an appropriate combination of the following features: the self-powered device is configured so as either to inject a predetermined constant charge on each firing or to impose a constant difference in potential across the terminals of the capacitor on each firing; the time constant of the RC accumulator network is chosen to represent dynamics of the effective rate of fire or dynamics of the cyclic rate of fire;

CLAIMS

1. A device for measuring an effective and/or cyclic rate of fire for any type of weapon, comprising:

- a self-powered system (2) capable of recovering an energy from firing;
- at least one RC accumulator network (3) comprising a capacitor (5) and a resistor (6) in parallel;
- an element measuring a voltage across terminals of the capacitor;
- an electronic device that is capable of calculating the cyclic rate of fire and/or the effective rate of fire on the basis of a value measured by the element for measuring the voltage across the terminals of the capacitor;

the self-powered system (2) being arranged so as to charge said capacitor (5) on each firing characterized in that the self-powered system (2) is configured so as either to inject a predetermined constant charge on each firing or to impose a constant difference in potential across the terminals of the capacitor on each firing.

2. The device of claim 1, characterized in that a time constant of the RC accumulator network (3) is chosen to represent dynamics of the effective rate of fire.

3. The device as claimed in claim 2, characterized in that the time constant of the RC accumulator network is between 1 s and 3600 s.

4. The device as claimed claim 1, characterized in that a time constant of the RC accumulator network (3) is chosen to represent dynamics of the cyclic rate of fire.

5. The device as claimed in claim 4, characterized in that the time constant of the RC accumulator network is between 10 ms and 300 ms.

6. The device as claimed in any one of the preceding claims, characterized in that the element measuring the voltage across terminals of the capacitor comprises an electronic device (4) comprising optocouplers that are intended to measure the value of the difference in potential of the capacitor (5).

7. The device as claimed in any one of the preceding claims, characterized in that said device comprises a storage memory making it possible, in use, to store the value of the difference in potential across the terminals of the capacitor (5) during firing.

8. A weapon including at least one measurement device as claimed in any one of the preceding claims.

9. A method for measuring an effective and/or cyclic rate of fire for any type of weapon, comprising the following steps:

- recovering an energy from firing;
- injecting a predetermined constant charge into a capacitor using said energy or applying a difference in potential to said capacitor using said energy;
- gradually discharging the capacitor through a resistor;
- measuring the difference in potential across terminals of the capacitor during firing.

10. The measurement method as claimed in claim 9, comprising an additional step of calculating the cyclic rate of fire using a discharge curve of the RC network.

11. The measurement method as claimed in claim 9, comprising an additional step of calculating the effective rate of fire using a discharge curve of the RC network.