Claims

1. An overvoltage protection device with one or more overvoltage protection elements ~~(TCS, GDT)~~ and a measuring arrangement ~~(1)~~ for monitoring the overvoltage protection elements ~~(TVS, GDT)~~, wherein the overvoltage protection device has a gas-filled overvoltage arrester as an overvoltage protection element and the measuring arrangement is also suitable for the indirect monitoring of a short-circuit spring of a gas-filled overvoltage arrester, comprising

- a temperature-measuring arrangement, which is in thermal contact with the gas-filled overvoltage arrester, which can be short-circuited,
- an evaluating arrangement, which, based on temperature values which have been measured at different times, identifies whether the short-circuit spring has been triggered,
- an alarm arrangement, which indicates the identification of a triggered short-circuit spring, wherein the alarm is implemented by the evaluating arrangement.
- ~~an evaluating arrangement (CD), which is designed to count pulse-like overvoltage events which are arrested by the overvoltage protection element (TVS, GDT), wherein the evaluating arrangement (CD) is connected via a light-measuring arrangement (OS1, OS2) to the overvoltage protection element (TVS, GDT), and/or~~
- ~~an arrangement for identifying a current which is flowing for a long period time and which is flowing through the overvoltage protection element (TVS, GDT),~~

~~wherein the overvoltage protection device additionally comprises~~

- ~~an evaluating arrangement (CD), which, based on the counted pulses and/or an identified current which is flowing for a long period of time, determines whether the overvoltage protection element (TVS, GDT) is still operational, has sustained previous damage or is unusable, and~~
- ~~an alarm arrangement (OUT1, OUT2), which indicates whether the overvoltage protection element (TVS, GDT) is still operational, has sustained previous damage or is unusable.~~

2. The overvoltage protection device according to Claim 1, characterised in that

- the evaluating arrangement, which is designed to count pulse-like overvoltage events which are arrested by the overvoltage protection element, wherein the evaluating arrangement is connected via a light-measuring arrangement to the overvoltage protection element, and/or
- the arrangement for identifying a current which is flowing for a long period time and which is flowing through the overvoltage protection element,

wherein the overvoltage protection device additionally comprises

- the evaluating arrangement, which, based on the counted pulses and/or an identified current which is flowing for a long period of time, determines whether the overvoltage protection element is still operational, has sustained previous damage or is unusable, and
- the alarm arrangement, which indicates whether the overvoltage protection element is still operational, has sustained previous damage or is unusable.

~~the overvoltage protection device has a gas-filled overvoltage arrester (GDT) as an overvoltage protection element.~~

3. The overvoltage protection device according to Claim 1 or 2, characterised in that

the overvoltage protection device has a semiconductor component, in particular a protective diode, in particular a TVS diode, as an overvoltage protection element ~~(TVS)~~.

4. The overvoltage protection device according to one of Claims 1 to 3, characterised in that

the alarm arrangement ~~(OUT1)~~ has a first status display, which indicates a previously damaged state, and a second status display, which indicates an unusable state.

~~5. The overvoltage protection device according to one of Claims 1 to 4 in conjunction with Claim 2, characterised in that~~

~~the measuring arrangement (1) is also suitable for the indirect monitoring of a short-circuit spring (F) of a gas-filled overvoltage arrester (GDT), and~~

~~the overvoltage protection device further comprises~~

- ~~a temperature-measuring arrangement (TS), which is in thermal contact with the gas-filled overvoltage arrester (GDT), which can be short-circuited,~~
- ~~an evaluating arrangement (CD), which, based on temperature values (T1, T2) which have been measured at different times (t1, t2), identifies whether the short-circuit spring (F) has been triggered,~~
- ~~an alarm arrangement (OUT), which indicates the identification of a triggered short-circuit spring~~

~~(F), wherein the alarm is implemented by the evaluating arrangement (CD).~~

~~6~~5. The overvoltage protection device according to any one of the preceding claims~~Claim 5~~, wherein

the light-measuring arrangement ~~(OS1)~~ is further designed to optically monitor the gas-filled overvoltage arrester ~~(GDT)~~, which can be short-circuited, on the basis of the state of the short-circuit spring ~~(F)~~, and

the evaluating arrangement ~~(CD)~~ furthermore identifies, also based on optical measured values ~~(I1, I2)~~ which have been measured as different times ~~(t3, t4)~~, whether the short-circuit spring has been triggered.

~~7~~6. The overvoltage protection device according to any one of the preceding claims~~Claim 5 or 6~~, characterised in that

the temperature sensor ~~(TS)~~ is in thermal contact by means of a gap filler ~~(GF)~~ with the gas-filled overvoltage arrester ~~(GDT)~~, which can be short-circuited.

~~8~~7. The overvoltage protection device according to one of preceding Claims ~~5~~ 1 to ~~7~~6, characterised in that

the temperature-measuring arrangement ~~(TS)~~ has a thermally variable resistor.

~~9~~8. The overvoltage protection device according to Claim ~~8~~7, characterised in that

the thermally variable resistor is a PTC or an NTC.

~~10~~9. The overvoltage protection device according to one of preceding Claims ~~5~~ 1 to ~~7~~8, characterised in that

the temperature-measuring arrangement ~~(TS)~~ has a pyrosensor.

~~11~~10. The overvoltage protection device according to one of preceding Claims ~~5~~ 1 to ~~10~~9, characterised in that

the measuring arrangement is intended for use in an MSR application or in telecommunications applications.

1~~1~~2. The overvoltage protection device according to one of preceding Claims ~~5~~ 1 to ~~11~~10, characterised in that the alarm arrangement ~~(OUT1)~~ outputs an optical and/or acoustic and/or an electrical signal when the triggering of the short-circuit spring is identified.

~~13~~12. A method for operating a measuring arrangement ~~(1)~~ for the indirect monitoring of a short-circuit spring ~~(F)~~ of a gas-filled overvoltage arrester ~~(GDT)~~, which can be short-circuited, with a temperature-measuring arrangement ~~(TS)~~, which is in thermal contact with the gas-filled overvoltage arrester ~~(GDT)~~, which can be short-circuited, said method comprising the following steps:

- measuring ~~(100)~~ a first temperature value ~~(T1)~~ at a first moment in time ~~(t1)~~,
- measuring ~~(300)~~ a second temperature value ~~(T2)~~ at a second moment in time ~~(t2)~~, which is different from the first moment in time ~~(t1)~~,
- identifying ~~(500)~~, on the basis of the measured first temperature value ~~(T1)~~ and on the basis of the measured second temperature value ~~(T2)~~, whether the short-circuit spring ~~(F)~~ has been triggered,
- upon identifying that the short-circuit spring ~~(F)~~ has been triggered, indicating ~~(600)~~ the identification.

~~14~~13. The method according to Claim ~~13~~12, wherein the measuring arrangement ~~(1)~~ further has a light-measuring arrangement ~~(OS)~~, which optically monitors the state of the gas-filled overvoltage arrester ~~(GDT)~~, which can be

short-circuited, and in particular the triggering of the short-circuit spring ~~(F)~~, said method further comprising the following steps:

- measuring ~~(200)~~ a first optical measured value ~~(L1)~~ at a third moment in time ~~(t3)~~,
- measuring ~~(400)~~ a second optical measured value ~~(L2)~~ at a fourth moment in time ~~(t4)~~, which is different from the third moment in time ~~(t3)~~,
- identifying ~~(500)~~, on the basis of the measured first optical measured value ~~(L1)~~ and on the basis of the measured second optical measured value ~~(L2)~~, whether the short-circuit spring ~~(F)~~ has been triggered.

~~15~~14. The method according to Claim ~~13~~ 12 or ~~14~~13, wherein the measuring arrangement ~~(1)~~ further has an alarm arrangement ~~(OUT)~~, said method further comprising the following step:

- outputting ~~(600)~~ an optical and/or acoustic and/or electrical signal when the triggering of the short-circuit spring ~~(F)~~ has been identified.