

CLAIMS

1. A gas insulated switchgear (GIS) internal video monitoring system, comprising a video sensor, a video server, an intelligent power source module and a video monitoring
5 background system, wherein

the video sensor is installed on a GIS enclosure and configured to acquire an open/close state of a GIS internal conductor in a real time manner and transmit the open/close state to the video server in the form of a video signal, wherein the video sensor further comprises:

an inspection window housing fixed on the GIS enclosure, wherein an O-type shield ring
10 is arranged between the inspection window housing and the GIS enclosure;

an interface between the inspection window housing and the GIS enclosure being made of light-transmitting glass;

a light source and a photo-sensitive element respectively arranged within two parallel chambers of the inspection window housing; and

15 an insulating sleeve is provided on an outer circumference of the photo-sensitive element;

the video server is configured to

receive the video signal transmitted by the video sensor;

convert the video signal to a digital signal; and

20 transmit the digital signal to the video monitoring background system; and

the video monitoring background system is connected with the video sensor through the video server, and is configured to:

receive the digital signal from the video server;

decode and analyze the digital signal to acquire a serial number of the video sensor;

25 categorize the digital signal as a corresponding node on the video monitoring background system based on the serial number of the video sensor; and

extract and store a video image corresponding to a node selected by a user; and

the intelligent power source module is configured to be turned on by the video

monitoring background system to supply power to the video sensor when the video monitoring background system is to receive the digital signal.

2. The GIS internal video monitoring system according to claim 1, wherein communication between the video server and the video monitoring background system is performed in accordance with the Transmission Control Protocol /Internet Protocol (TCP/IP) protocol.

3. The GIS internal video monitoring system according to claim 1, wherein, in the video sensor, an input terminal of a power source module and an output terminal of a signal output module are connected with a surge protector.

4. The GIS internal video monitoring system according to claim 1, wherein the video monitoring background system comprises a main program module, a data management module, an information exchange module and a signal decoding and processing module, and the main program module is connected with the data management module, the information exchange module and the signal decoding and processing module.

5. A GIS internal video monitoring method based on the GIS internal video monitoring system according to claim 1, comprising:

acquiring, by the video sensor, the open/close state of the GIS internal conductor in a real time manner;

transmitting, by the video sensor, the open/close state to the video server in the form of a video signal via cable to the video server;

converting, by the video server, the video signal to a digital signal after the video server receives the video signal;

transmitting, by the video server, the digital signal to the video monitoring background system in accordance with the TCP/IP communication protocol;

decoding and analyzing, by the video monitoring background system, the digital signal to acquire a serial number of the video sensor after the video monitoring background system receives the digital signal;

categorizing, by the video monitoring background system, the digital signal as a corresponding node on the video monitoring background system based on the serial number

of the video sensor;

extracting and storing, by the video monitoring background system, a video image corresponding to a node selected by a user; and

displaying, by the video monitoring background system, an acquired analysis result to a user in the form of a screen.

6. The GIS internal video monitoring method according to claim 5, wherein the video monitoring background system starts up the intelligent power source module to supply power to the video sensor by opening a monitoring video window on the video monitoring background system when the video monitoring background system is to receive the digital signal.

7. The GIS internal video monitoring method according to claim 6, wherein the steps of decoding and analyzing, categorizing, extracting and storing further comprise:

identifying, by the video monitoring background system, different video information flows based on IP addresses and channel numbers after the video monitoring background system receives the digital signal;

starting up, by the video monitoring background system, the intelligent power source module after the video information flows are identified correctly;

decoding and recoding, by the video monitoring background system, the received digital signal to acquire the serial number of the video sensor;

categorizing, by the video monitoring background system, sensor data, extracting, by the video monitoring background system, the corresponding video image based on the user's selection and storing, by the video monitoring background system, the video image; and

closing, by the video monitoring background system, the monitoring video window and transmitting, by the video monitoring background system, an instruction to turn off the intelligent power source module to the intelligent power source module.