SUBSTATION MONITORING AND CONTROLLING SYSTEM USING GSM TECHNOLOGY

The wireless technology of electronics is growing day by day. Using this technology, sensor-network arrangement such as distributed and self-organization can be constructed. A substation temperature monitoring system can be build based on the network types available, which can monitor the temperature of bus bar junction of the high voltage switchgear in substation in real time to prevent fire and other accidents. This system applies Zigbee communication protocol, and uses the RF transceiver. It has the characteristics of low power consumption, low cost, flexible structure and accurate measurement, and it can achieve the long-distance temperature monitoring of the bus bar junction in real time.

Existing System:

The existing system is based on the wired technology and they actually depend over manual operation where the entire substations are to be monitored. This proves to be a major drawback in the existing system.
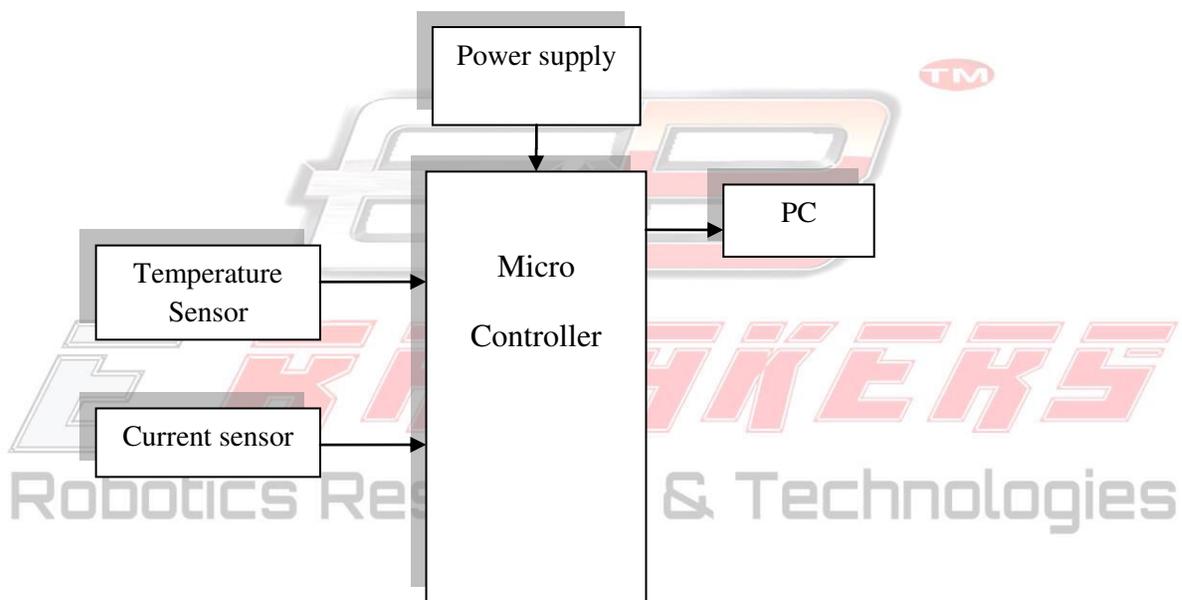
Proposed System:

The high voltage switchgear in substation is the important equipment in transmission system, however, due to the oxidation resistance of the bus bar junction in switchgear is too high and the temperature increases, leading to fire and other accidents, so it is very essential to monitor the temperature of the junction. But the structure of the switchgear is small, and these junctions are in the environment of high voltage, high current, and strong electric field, so the temperature measurement cannot be manually inspected.

The temperature measurement on the bus bar junction is divided into two kinds, direct and indirect. This system uses the direct temperature measurement, and the sensor nodes that

are put on the bus bar junction can directly measure the temperature. The substation temperature monitoring system building with this wireless sensor networks can achieve real time data collection, analysis and monitoring of the operating temperature of each bus bar junction within the region of network , while determining fault point in time to perform early warning and alarm.

Block diagram:

```
                    ┌─────────────────┐
                    │  Power supply   │
                    └────────┬────────┘
                             │
                             ▼
┌──────────────┐    ┌─────────────────┐    ┌──────────┐
│ Temperature  │───▶│      Micro       │───▶│    PC    │
│   Sensor     │    │                  │    └──────────┘
└──────────────┘    │   Controller     │
                    │                  │
┌──────────────┐    │                  │
│Current sensor│───▶│                  │
└──────────────┘    └─────────────────┘
```

Hardware requirements:

➢ Microcontroller

➢ Temperature Sensor.

➢ Current sensor.

➢ Max 232 circuit

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> PC

Software requirements:

> Embedded C

Advantages:

> Real time updated information.
> Free of complex wire.

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