**Components for Temperature Monitoring System**

1. **Temperature Sensor (Thermocouple or RTD)**

**Specifications**: Measures temperature in extreme conditions (high temperatures in steam boilers). Types include K-type thermocouples or PT100 RTDs.

**Usage**: Placed inside the boiler to directly measure temperature.

**Price**: ₹500 - ₹3000 depending on type and accuracy.

**Functionality**: Thermocouples generate a voltage proportional to the temperature difference between two junctions. RTDs change resistance with temperature.

1. **Temperature Transmitter**

**Specifications**: Converts sensor output (analog signal) to a standardized output (e.g., 4-20 mA).

**Usage**: Sends temperature readings over long distances (up to several hundred meters).

**Price**: ₹2000 - ₹8000 depending on features and accuracy.

**Functionality**: Transmits temperature readings reliably and accurately to control systems or data acquisition units.

1. **Data Logger**

**Specifications**: Records temperature data at set intervals.

**Usage**: Stores historical temperature data for analysis and compliance with regulations.

**Price**: ₹10,000 - ₹50,000 depending on storage capacity and features.

**Functionality**: Captures temperature trends over time, essential for troubleshooting and maintenance.

1. **Human-Machine Interface (HMI)**

**Specifications**: Touchscreen interface for displaying real-time temperature readings.

**Usage**: Allows operators to monitor boiler temperatures and alarms.

**Price**: ₹20,000 - ₹1,00,000 depending on screen size and functionality.

**Functionality**: Provides a user-friendly display of critical temperature data.

1. **Controller/PLC (Programmable Logic Controller)**

**Specifications**: Controls boiler operations based on temperature inputs.

**Usage**: Automatically adjusts boiler parameters to maintain safe and efficient operation.

**Price**: ₹30,000 - ₹2,00,000 depending on inputs/outputs and complexity.

**Functionality**: Executes control algorithms based on real-time temperature feedback.

1. **Ethernet Switch**

**Specifications**: Network switch for connecting devices in an industrial Ethernet network.

**Usage**: Integrates temperature monitoring system with the plant’s control network.

**Price**: ₹5,000 - ₹30,000 depending on number of ports and industrial grade.

**Functionality**: Enables communication between the temperature monitoring system components and other plant systems.

1. **Power Supply**

**Specifications**: Provides stable power to all components.

**Usage**: Ensures continuous operation of temperature monitoring system.

**Price**: ₹3,000 - ₹15,000 depending on power requirements and reliability.

**Functionality**: Powers all components reliably in the harsh industrial environment.