Components Required

Core Processing Unit

1. STM32F407VGT6 Development Board (or any compatible STM32 board)

Sensors

1. These simulate the motor's operational parameters:
2. Accelerometer (e.g., ADXL345, MPU6050) – for vibration monitoring
3. Temperature Sensor (e.g., LM35, NTC Thermistor) – for detecting overheating
4. Current Sensor (e.g., ACS712, INA219) – for measuring electrical load or power

Actuators (Alert System)

1. To notify when anomalies are detected:
2. LEDs (Red/Yellow/Green) – for visual alert indication
3. Buzzer – for auditory warning signal

Data Storage (Optional)

1. For logging sensor readings:
2. MicroSD Card Module (SPI interface)
3. MicroSD Card (Minimum 4 GB recommended)

Power Supply

1. 5V DC Adapter or USB Power Supply
2. Voltage Regulator Module (e.g., AMS1117 if needed)

Interface & Wiring

1. Male-to-Female Jumper Wires
2. Breadboard (for prototyping)
3. Screw Terminals / Connectors (for stable connections)
4. PCB (if you're planning a permanent version)

Miscellaneous

1. Electric Motor (for simulation/testing; small DC motor is sufficient)
2. Heat Sink (for sensors that may warm up)
3. Capacitors (for voltage stabilization)
4. Resistors (for current limiting on LEDs/sensors)