**Thermal Monitoring System PDS**

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**Overview:**

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| **Marketing Requirement** | **Engineering Requirements** | **Justification** |
| 1,2,3 | 1. System shall have two input sensors. | The output temperature should correspond with a current. |
| 3 | 1. PCB used board shall be no greater than 16 inches squared | This is a limitation given by the project requirements |
| 2,3,4 | 1. Voltage shall not exceed 5V for input. | To keep the system safe and cost effective the voltage should remain low. |
| 3,4 | 1. System should be able to function at temperatures greater than 10°C and less than 120°C | Busbars can be operated between these temperatures. Unit will be in close a closed structure. |
| 1,2,3 | 1. Unit should monitor temperature within the 10°C to 120°C range | This limitation will keep the cost of the temperature monitor low. |
| 2,3 | 1. The accuracy of the measured current should be within 2% | There are a wide variety of current monitoring devices that can accomplish this. |
| 1,2,3 | 1. The accuracy of the thermal sensor should be within 1°C | There are a wide variety of thermal sensors that can accomplish this. |
| 1,3 | 1. System should be able to take samples between 1 to 10 minutes. | Range of time is feasible since unit will analog monitoring capabilities. |
| 2,4 | 1. Current monitor shall be located a safe distance from the actuator used to start the system. | This is to reduce the time that users have to spend in close proximity to the busbar. |
| 2,3 | 1. System will be powered by a 9V battery. | For easy transportation and mobility. |
| **Marketing Requirements**   1. The system should monitor temperature and current simultaneously 2. The system should be easy to operate and install 3. The system should have low cost 4. The system should be as safe as possible | | |

This system will monitor current and voltage of a busbar. There will be a display of the current and corresponding temperature. A microcontroller will be mounted on a PCB board. The sensors will be mounted as close as safely possible to the microcontroller. The system will be contained in an enclosure. An actuator will be used to start the system. There will be a warning light to display if a temperature and current value are out of normal operation.