Unit 3 Project Deliverable Part 3: Idea Description

I work for a company that builds Uninterruptible Power Supplies (UPS); I have been assigned a project to design the logic program for a new model of UPS named the 1KS.

The logic will check the input voltage to make sure it is not <than 456VAC or >than 504VAC. If the input voltage is not within the 5% tolerance + or – the UPS will now start the rectifier. The input voltage will be checked between A to B phases, B to C phases and A to C phases. The input frequency will be checked to be 60 hertz + or - .5 hertz if not the UPS will stay on utility power.

The logic will check the rectifier voltage to make sure it is not <than 456VAC or >than 504VAC. If the rectifier voltage is not within the 5% tolerance + or – the UPS will now start the inverter. The rectifier voltage will be checked between A to B phases, B to C phases and A to C phases. The rectifier frequency will be checked to be 60 hertz + or - .5 hertz if not the UPS will stay on utility power.

The battery voltage will be checked to be 540VDC + or – 10%, if not within the 10% tolerance a red light will be displayed and an audio alarm. If the battery is <than 535VDC the rectifier will charge the batteries till the battery voltage =540VDC.

The logic will check the output voltage to make sure it =480VAC or >than 504VAC. If the output voltage is not within the 5% tolerance + the UPS will transfer the UPS from utility power to UPS power. The output voltage will be checked between A to B phases, B to C phases and A to C phases. The input frequency will be checked to be 60 hertz + or - .5 hertz if not the UPS will stay on utility power.

If the unit is online a signal will be send to the display to show the UPS is online, if not online the UPS will show it is on bypass.

Solenoid Key Release Unit (SKRU), a solenoid and a quick-make, quick-break auxiliary switch that will response to a signal from the UPS. The SKRU is designed to permit removal of a key in response to an electric signal; it will also have a pushbutton and an indicating light. When the UPS is online the indicating light will be off and the key will be trapped so it can’t be removed. When the UPS is on bypass the indicating light is on and the key is no longer trapped.

If someone pushes Emergency Power Off (EPO) button on the UPS display the UPS will be shut down. The UPS will send a signal to open the output breaker, input breaker, and the battery breaker all at the same time.

In the next pages of this report I will show the Pseudocode and the flowchart for this project.