

PROJECT INTRODUCTION



Project Name: GNE114 4200 Static UPS

Objective- Export Sales team required Static UPS 3300W with 48V battery bank and Some new different looks like New Bezel and Graphical LCD with Multi color.

Scope- Increase Load capacity of 3.5KVA System, Change LCD and Chassis.

Measurement Goals - Schedule Variance: $\pm 20\%$, Product Defect Density: 0.10 ± 0.02 , Project's Process Defect Density: 0.20 ± 0.02 , BOM COST: $14000 \pm 10\%$ INR

Link to Project Data : http://10.141.1.9:8080/svn/HKVA_inv/GNE114

Team Size: 11 Nos.

Effort Size: 185 hrs.

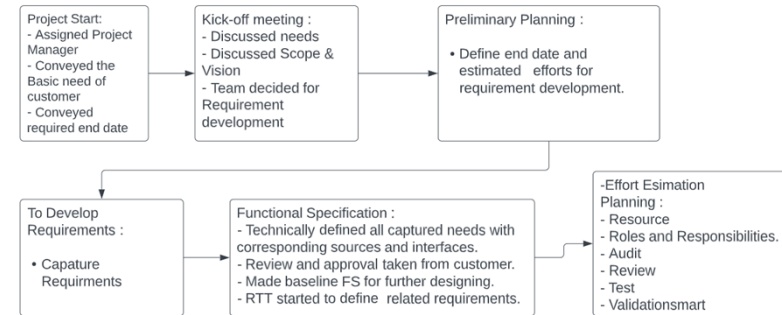
Time Line : 13-9-2022 to 05-11-2022

Actual Scheduled Start to Finish Date: 13-9-2022 to

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PROJECT FLOW



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Configuration Management



- CI List in Project plan contains items list which placed under configuration management, where we mentioned location, owner, baseline or control and release or no release against each items. [List of Configurable Items, Access Details and Release Plan](#)

Configuration Item	Type	Location	When Baseline?	CI Owner	Can be released?	Mode of release (Method)
GNE114_POWER	Controlled	http://10.141.1.9:8080/svn/HKVA_10	NA	Project Manager	Yes	NA
GNE114_MECHANISM	Controlled	http://10.141.1.9:8080/svn/HKVA_10	NA	Project	Yes	NA

1.2. Project Repository

http://10.141.1.9:8080/svn/HKVA_inv/GNE114/
<https://gil.einframe.com/rpt/projecttasks.aspx>
http://10.141.1.9:8080/svn/HW_10443/
http://10.141.1.9:8080/svn/MCH_14404/
http://10.141.1.9:8080/svn/FW_17801/
http://10.141.1.9:8080/svn/FW_17865/Tuning_Tool/

- Project repository at SVN Server used to perform version control of related artefacts.

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Configuration Management



- Change in Firmware design during Integration Testing . Version History at SVN Server.

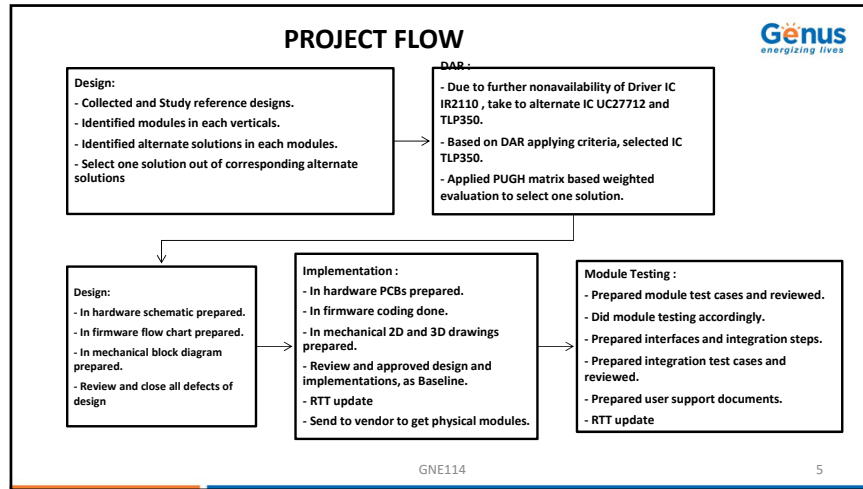
Revision	Author	Date	Message
81	harsh-jager	28 October 2022 10:40:19	Initial setup and close.
80	harsh-jager	21 October 2022 16:08:06	Changing current modification done.
79	harsh-jager	15 October 2022 09:50:23	Checked details
67	harsh-jager	15 October 2022 14:33:46	Inspected report of some changes in firmware test cases.
64	harsh-jager	07 October 2022 14:42:34	Made correction in frequency calculation parts.
60	harsh-jager	03 October 2022 17:44:02	Added Firmware_17801/FW_17801/Investor_Firmware/Document/GNE114

- Audit Checklist contains configuration audit related audit points that audited, section CM of each phase.
- Audit Log showing configuration audit done.

Sl. No.	Checkpoints	Functional Non-Conformance/ Non-Functional	Log ID	Column 1
1	Have the Integration steps been verified? Have the defects been logged in the Incident Management?	Non-Conformance/ Observation		
2	Have all defects been closed?	Conformance		
3	Has product support documentation and user manual been prepared?	Conformance		
4	Have integration test cases been developed?	Non-Non-Conformance		
5	Have the Integration test cases been reviewed and the defects logged in Incident	Conformance		

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Decision Analysis and Resolution (DAR)

- Add task in Project Plan defined when we follow DAR and defined team .
- Defined evaluation method i.e. PUGH Matrix. [GNE114 DARGEN](#)
- DAR Sheet where criteria defined. [GNE114 DARGEN](#)
- DAR Sheet where defined alternate solutions, evaluation method. [GNE114 DARGEN](#)
- DAR Sheet where alternate solutions evaluate and select using criteria and methods. [GNE114 DARGEN](#)

Analysis for selection of Driver IC.

1657 Deepsh Jain [19%] Sobhag Rajput [19%] Hardware 1631 Oct 07, 2022

Chandrasekhar Sharma [4%]

<<Driver IC Selection>>

Project Code: GNE114

Problem Statement: Already used Driver IC IR2110 will be obsolete, so need to any other Driver IC.

Sl. no	Criteria	weightage	IC UC27712	IC TLP350
1	Component Availability	5	3	4
2	Technical (Component specifications)	4	5	5
3	Cost	3	2	4
4	Reliability	4	1	4
5	Design Complexity		3	3
	TOTAL		54	77
	Base of component availability			
	Base of cost scoring		N/A 04	N/A 45
	Base of technical comparison scoring			
	Base of Reliability			
	Base of Design complexity			

Result: Select IC TLP350 for this project because component availability and reliability score of TLP350 is high as our requirements.

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Decision Analysis and Resolution (DAR)

- Hardware Design Document section Design Alternative Solution defined where we apply DAR. [GNE114 HDWDSN](#)
- Approval comments by decision maker authority. [MOM](#)

3.2.6. Design Alternative Consideration

We have explore new **mosfet** driver IC because IC IR2110 will not available in future . We already use IC TLP350 in solar PCU and Higher KVA inverters. For any other Mosfet driver IC we contact to TI team and suggested IC UC27712. For selection of driver IC is critical decision due to **mosfet** is main component in any inverter and driver IC selection as per drive capability is most important.

Compare Both IC data sheet and any other selection area then decided that we will use in this product IC TLP350.

Date and Time	Project's Phase	Participants	Abstract
11/10/2022 and 17:30PM to 17:45PM	Design Phase	Tarun gupta, Chandrasekhar Sharma	

No.	Agenda Item	Discussion	Decision/Action Item/Issue
1	Pending Action Items	No Pending action item	
2	Project Status	Chandrasekhar said that no delay comes till planning phase, only delayed Audit task of planning phase but we had been started design as per schedule so this delay not impact to further project . (During design review we came to know that Driver IC IR2110 will be obsolete in near recent future and recommended in new designs by manufacturers, so need to replace this IC. We have two option of driver IC UC27712 and TLP350 for selection of IC. We used technique PUGH matrix then decided that IC TLP350 was better for this project. Tarun Sir asked the what is the most critical criteria which you considered for selection of IC. Chandrasekhar said that We decided this IC because of its availability score was High. Tarun Sir said that decision is better but confirm the stock availability in our store for first order.	We'll use IC TLP350 for mosfet driver. (Decision) Check availability of IC TLP350 in our Production stock. (Action Item)

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Root Cause Analysis : Integration Testing Defect

- The Problem identified during Integration testing. [Incident Managment](#)
- Make team and add task in plan for root cause analysis. [Project Plan](#)
- Discussion with team for findout the root cause . [MOM\(RootCause Analysis\)](#)

253 Project Related GNE114 Pre Validation Functional When 15A Charging Current mode selecting by switch charging current comes 15A, and again becomes 0A... Oct 18, 2022 Mayur Sharma Harish Nagar

Team meeting for root cause analysis

1659 Chandrasekhar Sharma [4%] Deepsh Jain [19%] Project Management 1636 Oct 19, 2022 7 day(s) 1 day(s) Oct 20, 2022

Harish Nagar [3%] Mayur Sharma [3%] Rohit Kumar Sharma [3%]

Name of Meeting	Root Cause finding meeting
Date and Time	18/10/2022 and 2:00PM to 2:45PM
Project's Phase	Design Phase
Participants	Chandrasekhar Sharma, Bharat, Harish, Mayur, Rohit, Deepsh
Abstract	

No.	Agenda Item	Discussion	Decision/Action Item/Issue
1	Pending Action Items	Complete	
2	Project Status	Mayur said that I found the problem in charging section , when I select charging current 15A, then charging current reach from 0A to 20A and again becomes 0A. Its should be controlled at 15A and continuous comes 15A till battery voltage reach at 57.6V. When other option like 14A, 9A, 6A charging current comes with in limit and continuous charge battery till 57.6V. Chandrasekhar asked about hardware protection limit for charging current . mayur said that as per calculation and measurement data charging current limit set is 28A from hardware side . Mayur also said that this happened when system on at DG supply and DG output voltage vary from	Harish will be increase Charging current protection limit in Firmware (Action Item) Mayur will be verify change in Firmware (Action Item). Chandrasekhar and Harish update Firmware and Hardware library (Action Item).

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Root Cause Analysis : Integration Testing Defect



- 8 D CAPA based template [GNE114 ROCSAN](#) was used for root cause analysis of this selected outcome with team.

Discipline – 4	Root Cause Analyses
	Using why why technique, we found the actual root cause that Charging current protection limit set at 22A in firmware and as per calculation its OK but charging current peak goes to 23A practically. Further found when system on at Grid supply then peak current goes to 20A, but system on at DG supply then peak current goes to 23A. DG Supply continuous vari from 200V to 250V. Find the actual reasons for this problem that fluctuation in mains voltage is very fast and our controller sampling rate for analog signal is not that much fast to taken care high cut and Low cut protection in UPS mode.

- Corrective action for this problem change in Firmware design and code. Verify to impact of change during testing. Containment action identified that update in firmware library and incident proposed to approved learnings. [GNE114 ROCSAN](#).

Discipline - 5	Corrective Action Plan
Root Cause	Action
Find the actual reasons for this problem that fluctuation in mains voltage is very fast and our controller sampling rate for analog signal is not that much fast to taken care high cut and Low cut protection in UPS mode.	During meeting decide that Change in firmware for increase charging current protection limit till 26A and Mayur test and verify that problem is solved.
Who	When
Harish, Mayur	20-Oct-22
Status	

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Root Cause Analysis : Integration Testing Defect



- [Approved Learnings](#)

Oct-20-2022	When 18A Charging Current mode selecting by switch charging current comes 18A and again becomes 0A. Again goes to 20A and becomes 0A. Not continuous comes 18A.	2022-10-20 - 2022-10-20 -	discussed. As DG power fluctuates more when compared to actual grid. We should implement this test in other models also.	Gap in Talent: No Gap in Asset: No Gap in Knowledge: Yes Risk Identified: No
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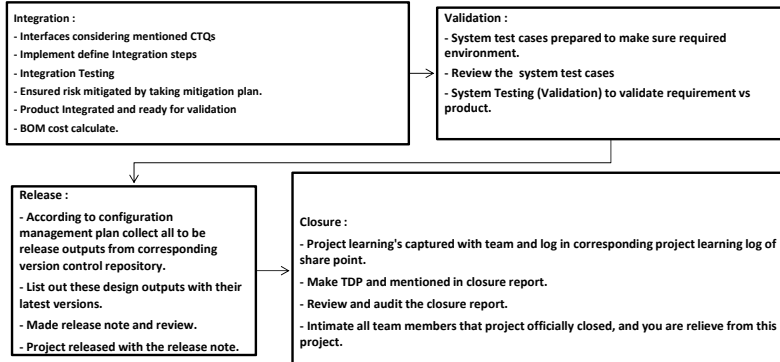
- [Master firmware Library](#)

12	Charging Current Protection	1	This module used for charging current protection also, so in previous in this we take 22A as high charging current but in this modification we can go upto 26A charging current. When ever the charging current exceed the 26A the charging will get stop as a protection.	GNE114_Rev_4.elf.S
		Battery Charging Profile		

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PROJECT FLOW



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PRODUCT PICTURE



- Release Note contains records of all release configuration items.
- Closure Report contains records of all configuration items



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