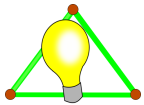


Open DC Grid Project

2020 April



James Gula - jlgula@papugh.com

Martin Jäger - martin@libre.solar

Chris Moller - chris.moller@evonet.com

Agenda

- ❖ Standard Document
- ❖ Architecture Simulation
- ❖ Reference Designs / Firmware
- ❖ Safety Systems
- ❖ System Software
- ❖ Related Standards / Industry Developments
- ❖ Next Meeting / Feedback

Standard Document

- * Outline
 - * Overview: Scope, Purpose and Access
 - * Normative References
 - * Terms and Definitions
 - * System Architecture
 - * Grid Communications
 - * 48V Bus Link
 - * Annex A: Wiring Recommendations
 - * Annex B: Bibliography
- * Status – No changes this month

Architecture Simulation

- * Objective: Validate grid-level messaging
 - * Power allocation between devices
 - * Priority allocation via pricing
- * Status
 - * Prototype implementation working in Scala
 - * Generic device model with production/consumption/storage and n port-port links
 - * Time-step simulation with arbitrary time periods
 - * Phase 1 – message exchange defines power flow
 - * Phase 2 – energy transfer over power flow paths
 - * Basic request / grant with battery storage working
 - * Adding pricing messages and bidirectional ports
- * Future Plans
 - * Add JSON grid definition / logging output
 - * Publish code repositories on ODG
 - * Cross-compile to Javascript as active simulator page on ODG
 - * Link in C/C++ versions suitable for runnable firmware
 - * Incorporate droop curve / linear circuit models

Reference Designs / Firmware



Safety Systems

To WORK SAFELY ON THE SYSTEM:

- The Master switch must be turned OFF – use the following procedure:

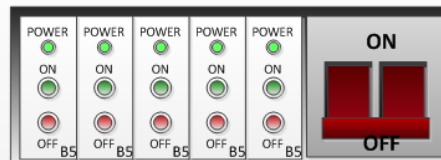
To TURN EVERYTHING OFF:

- Turn off each solid-state circuit breaker individually, THEN
- Turn off the mechanical master switch

To TURN EVERYTHING BACK ON:

- Turn on the mechanical master switch, THEN
- Turn on each solid-state circuit breaker individually

IN AN EMERGENCY – JUST TURN THE MASTER SWITCH OFF!



System Software

- * Functionality
 - * Device – device messaging for power flow management
 - * Device monitoring and management
 - * Low-level PAYG framework
- * Reference implementations derived from Libre.Solar
 - * Zephyr RTOS
- * Status – Preliminary definition – no recent activity

Related Standards / Industry Developments

- * P2030.10
 - * Final editing prior to PE/T&D review
 - * Ballot group forming
- * P2030.10.1
 - * No recent activity

Next Meeting / Feedback

- * Next Meeting
 - * 12 May 2020 – 1400 UTC
 - * FreeConferenceCall.com meeting ID: jlgula
- * Sharing Portals
 - * Web site: <https://open-dc-grid.org/>
 - * GitHub: <https://github.com/open-dc-grid>
- * Feedback?