



EMU Meeting 04-05 Oct 02

LV System Status

S. Lusin

University of Wisconsin



Scope of LV System

LVDBs

- **Original: Using Sharp Regulators**
 - Prototyping, magnetic field testing
- **Went to LHC 4913 CERN-project regulator**
 - Testing of LHC 4913 circuit, performance unacceptable
- **Reverted to original design**
 - Modified for LVMB control functions

Cabling

- **On-chamber**
 - Halogen-free harness, drop-in installation
- **Off-chamber**
 - Dual cable assembly, halogen-free, cabled in place



Scope of LV System

LV Supplies

- **Vicor DC-DC converter based supplies**
 - Prototyping, magnetic field testing & modeling
 - Constructed first-level prototype, used for noise studies in Lab 7, currently using for burn-in testing of LVDBs
- **AC-DC converter**
 - Prototyping, magnetic field testing & modeling
 - Constructed first-level prototype
 - Obtained ESSC approval for EMU & HCAL to use transformer-based system



Production Status

LVDB

- **Factory is in production**
 - Required time to train assemblers to perform test procedure
 - Needed additional tooling for proper mounting of regulators
 - Now on track
- **Factory production is at 25 boards / week**
 - Subsequent burn-in is done at Lab 7, with 20 board / week capacity once test station is expanded (est. 11 October)
- **UF & UCLA FAST sites have 16 LVDBs each**
 - Shipped additional boards (2 to UF, 1 to UCLA) to cover immediate needs
 - Will ship 10 LVDBs and cable harnesses to each FAST site on 18 October



Production Status

On-chamber cables

- **Cable fabricator is in production**
 - Expect delivery of cables for 25 ME23/2 harnesses on 09 October 02
 - Harnesses can be formed at rate of 10 / day, interleaved with burn-in testing
- **Cable harness availability is limiting factor at the moment**

Off-chamber cables

- **In process of sending out for bids on 2 x 8 AWG shielded twisted-pair cable**

AC-DC converters

- **Still in prototype stage**



LV System Costs

Costs based on summed production and preproduction parts, include engineering costs

- LVDBs: \$ 440 / board
- LV harness & ALCT power cable: \$ 65 / chamber
- LV input cable: \$ 75 / chamber
- LV supply (to date): \$ 534 / supply (est. 54 supplies total)

Estimated component costs of AC-DC supplies are \$1K / box, need 54 boxes total.

What is missing?



Crates ?

Where will crate power come from?

- Will need power supply, local regulation
- Regulator block could be based on LVDB, powered by AC-DC converter
- Costs would be comparable to those in chamber LV system

Will need to coordinate crate design with LV system development

- Wiener will supply standard crates to CMS
 - We have custom backplane, anything else?
- Need space for regulator unit
- May need segmented power bus
- Who is responsible for designing this system?