

Requirements Gathering Exercise

For each accelerator and global area:

1. General information we need to focus on collecting from each area
 - a. Number of and types of devices to be controlled.
 - b. Geographical layout of devices to be controlled.
 - c. Data rates
 - d. Any unique controls requirements
2. First things we need from each Controls POCs
 - a. Spreadsheet showing types and numbers of devices to be controlled, and data rates. (Use Claude's spreadsheet as a starting point.)
 - b. Block diagram where applicable (eg RF/LLRF systems)
 - c. Layout of accelerator area showing relay rack locations.
 - d. WBS where applicable (note that controls should be included into the accelerator area WBS)
3. What progress has been made so far?
4. What are the open issues?
 - a. (Location of equipment/service areas is an issue for many areas).
 - b.
5. Who is doing what?
6. Information are other groups looking for us to provide quickly
 - a. Number of relay racks and their locations.
 - b.

Positron Source

- Jim Clarke (Daresbury) was listed as Controls POC for Positron Source. He is also a member of the Positron Sources group, and is responsible for the undulator design.
- Jim will be gathering controls requirements for the undulator system. I learnt that Vinod Bharadwaj (SLAC) will be gathering controls requirements for the remaining systems of the Positron Source.

Positron Source RDR webpage:

<http://www-project.slac.stanford.edu/ilc/acceldev/eplus/pos-rdr.html>

Notes from April 5th meeting between John Sheppard, Marc Ross, Ray Larsen, John Carwardine

Geographic layout for services and equipment has not been thought through. Assumption is all services are in the linac support tunnel.

- Positron Source webpage has information on magnets, etc
- No information about magnet stringing yet.
- Probably no magnet movers
- There are pulsed magnets for MPS beam dumps (see list on webpage)
- Lot's of thermocouples in normal conducting RF system for instrumenting the cavities, waveguides, etc.
- Capture cavities: beam power losses are about same power as rf losses.
- Need cavity temperature feed-forward control. DIW cavity temperature control. Could we use LLRF to compensate for changes in beam power?

Positron Source special systems:

- Target
 - Rotating tungsten targets (two)
 - High power motor. Target has to be synchronized with beam.
 - High radiation and high activation area.
 - Will have remote handling in target area.
 - Need rad-hard cable plant
 - MPS interlocking in several locations
- Undulator system
 - Need to steer the electron beam within the undulator to order of 1 beam sigma
 - Superconducting helical undulator (200m: made up of sections of: 6x 2m sections + quad + bpm + corrector pair etc)

Although there is information available on numbers and types of devices, the information has to be extracted and compiled into the appropriate form.

Main Linac

- There was a push from the linac area managers to reduce the number of cables and controls for the LLRF, namely the 3-stub tuner motors and forward/reflected power monitoring from each cavity. As of yesterday (4/5/06) this was resolved, with the agreement with Chris Adolphsen that we would keep the additional controls and cables in the baseline design.

Beam Delivery System

- Issue: Long cable runs and maintaining low power loss for high temperature stability.
- We do not have full list of all requirements (eg still missing magnet movers)