Wire Scanner design meeting

Meeting held on 26-02-2008

Present: Délio, Bernd, Jan, Mohamed, Mariusz

Bearings in ultra-high vacuum
Délio presented the outcome of a literature search on bearing technology for UHV applications (see note on the webpage). Although the information available is not enough to clearly identify the best technology for the wire scanner mechanisms, one can already state that a solution exists. The next step on the selection process can start once the motor dimensions have been identified. A series of lifetime and outgassing tests should be done to support the decision on the best solution, and provide more specific data, which could also be useful for other CERN projects.

Motors
Mohamed presented a list of four motor manufacturers with capability do special developments and six encoder manufacturers. Mohamed will continue his search and, in a first stage, ask if these companies have experience in motors for vacuum applications. Further contacts should be done on the basis of a summary specification, having the angular motor design as reference (action Délio and Pep).

Mohamed will continue is search on encoder technologies and specifications. As for the motors, he will ask for experience in vacuum applications.

Radiation
Radiation must be taken into account in the choice of the encoder and electronics. Bernd and Jan provided two reports on the radiation doses in LHC IP4, where the wire scanners are installed (see references section on the web page). The radiation dose to the wire scanner is estimated around 1 kGy/year depending on the shielding configurations. If the required encoder repeatability is not compatible with a 20 year lifetime at such dose rates, a minimum lifetime of one year must be guaranteed.

Other
Means to check the wire continuity must be included in the design.

At CERN there are about 30–35 wire scanners in service. If we count spares and needs of other labs, the estimated total quantity of wire scanners to be manufactured is around 50 units. This will be the reference figure for selection of manufacturing processes and discussions with vendors.