

# Problems of the Front-end Electronics Low Voltage Power Supply in CMS

I.D. Vankov

*INRNE, Bulgaria*

## Abstract

There are in CMS a few working conditions, which are very unfavorable for the operation of a classical low voltage (LV) power supply system:

- high magnetic field;
- high radiation dose;
- high power consumption.

For this reason different configurations of the LV power system for the CMS sub-detectors are foreseen. For example for the endcap muon chamber (ME) front-end electronics a multi layer structure is anticipated: on the first step DC power supply unit (common for all ME stations of each endcap) with a relatively high output voltage of about 300 V will be used. Its output will feed DC-DC converters providing the necessary low voltages for the ME front-end electronics. In order to avoid the high magnetic field around the chambers, these converters will be installed on the outer side of the yoke iron disks. Because the magnetic field in this region is still significant (till 1000 Gauss) special soft iron screens have to be used. The converter output voltages will be fed to a low voltage distributor boards, individual for each chamber. There all different voltages for the front-end boards will be produced and stabilized. A similar solution is chosen for the HCAL subdetector. Another conception is foreseen for the ECAL subdetector - to use removed LV power supply (installed at distance of about 100 m) and to carry very high current across these long cables.

In last time some new ideas for the realization of these system are under discussion.

The purpose of this talk is to analyze and to compare the different possible structure of the LV power supply system and to obtain some conclusion and recommendation.