

15 Mass production

As described in this Technical Design Report a total of 18 supermodules containing altogether 540 individual detectors need to be constructed, tested, and finally installed in the ALICE central barrel not including spares. This task cannot be handled by a single institution. Therefore, it is currently foreseen to involve a number of major construction sites in the assembly of the individual detectors or major parts thereof.

15.1 General concepts

The anticipated design of the readout chambers lead to entities that, once assembled, cannot easily be taken apart again. This fact makes a high level of quality assurance at each individual step during construction an essential requirement. Since it is currently foreseen to have five major construction sites (Bucharest, Dubna, Heidelberg, Darmstadt, and Münster), it is also necessary to standardize and merge all data gathered during construction in a common database. To guarantee equal standards in the production the equipment of the individual construction sites will be standardized. This will include equipment of the clean rooms for assembly, winding machines, test gas systems, and data acquisition systems both for optical alignment equipment as well as electronic testing of the final detectors.

Another important aspect in this distributed production scheme is a centrally coordinated distribution of raw materials. It is anticipated that all individual components will be acquired through the same vendors and will be qualified in the same fashion. Also, final stacking, alignment, and testing of complete supermodules will be done in a central place

15.2 Equipment of production sites

It is anticipated that each production site is equipped with:

- a clean room
- large flat tables
- a winding machine
- a video setup for optical alignment and measurements
- a test gas system
- a pulsed X-ray source
- a data acquisition system
- access to a common database
- appropriate space for storage of raw materials and finished detectors

15.3 Database

A common database following the internal guidelines of ALICE for detector databases will be used for data storage. The database will archive part numbers for the construction of individual detector elements as well as all data gathered during the individual production, quality assurance and calibration

steps. When the TRD comes online, this database will permit retrieval of all data relevant for setup and calibration during running and later during offline analysis. The exact specifications for this database are currently being worked out within the ALICE collaboration.