

CONTRIBUTION TO THE MEGAPIE PROJECT BY THE SECTION "CO-ORDINATION"

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Megapie (MEGAwatt Pilot Experiment) is an international collaboration of several institutions with the goal to demonstrate the safe operation of a liquid lead bismuth (PbBi) target for neutron production in SINQ. The main part of the project co-ordination is accomplished at PSI.

The Megapie liquid-metal target is to be installed in the SINQ spallation neutron source in 2005 and tested over an eight month beam period. Beside the target, the Megapie project includes providing all systems which are necessary for safe operation before, during and after exposure to the proton beam. The big international scientific interest and large financial engagement is based on the fact that the experience concerning the development, construction, operation and post-irradiation examination gained in this project will be used for future ADS (Accelerator Driven Systems), which can be used to drastically reduce the decay time of nuclear waste. The main interest for PSI is to get a higher neutron flux for the SINQ facility.

The project is multidisciplinary, international and technically complex; this leads to an extensive project matrix structure which makes large demands on co-ordination and management. The section "Co-ordination" (Koordination Betrieb Anlagen West) has about 30 man-months per year assigned to the Megapie project which are used in the following areas:

- Control and reporting on progress, cost, manpower assignment and time scales.
- Periodically reporting on the status, the engagement and the effort from all partners in respect to scientific and technical matters.
- Budgeting and scheduling with all resulting updates.
- Conducting and co-ordinating the project's quality-management and assurance system.
- Conducting and co-ordinating the project-engineering and design.
- Management and design of the system interfaces.

These tasks require a high degree of scientific, technical and social competence in order to be efficient and to enforce good, consolidated results.

The manufacturing phase for the target and auxiliary systems commenced at the end of 2002. This phase should be finished by the end of 2003. The year 2004 is assigned to intensive tests of the target and associated systems outside SINQ on a test stand, with the beam simulated by an electric heater.

After satisfactory completion of the tests, the Megapie target will go into operation in SINQ for neutron production in 2005. The target will be dismantled in the shutdown 2005/2006 and, following a period in the storage area to let the activity decay to some extent, it will be dismantled in a hot cell to obtain samples for scientific material analysis.

As it looks now, the resources of the section "Co-ordination" currently assigned to Megapie will be needed until 2005, when the target goes into operation.

As an example of the various work fields, Fig. 1 shows the layout of the SINQ target head region (TKE) where a lot of new devices have to be fitted in and connected to the Megapie target. A considerable part of the free space will be occupied later by the cabling for the large number of instruments, which are used to gain detailed information of the target performance.

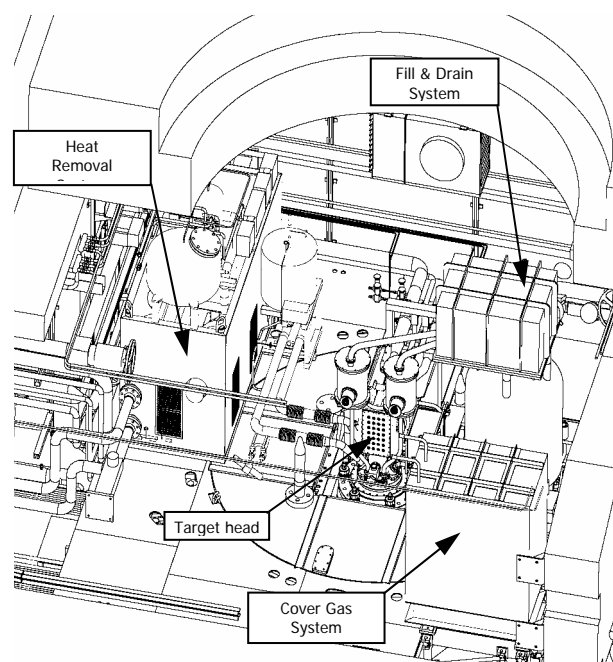


Fig. 1: Megapie target head region with the necessary auxiliary systems for cooling, handling of radiolytically produced gasses and filling/drainage of liquid PbBi.