

**MYRRHA, A MULTIPURPOSE ACCELERATOR DRIVEN SYSTEM
FOR RESEARCH & DEVELOPMENT.
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ABSTRACT

SCK•CEN in partnership with IBA s.a. is designing a 40 MWth multipurpose ADS (Accelerator Driven System) for R&D applications –MYRRHA- driven by a proton accelerator delivering a 1.75 MW beam (350 MeV x 5 mA). The spallation target is made of liquid Pb-Bi with a windowless concept in an isolated circuit from the sub-critical core coolant circuit. The sub-critical core is made out of typical fast reactor MOX fuel with a total Pu content limited to 30% in weight. The primary coolant chosen for the core is also liquid Pb-Bi. SCK•CEN is conducting an associated R&D support programme for alleviating the most demanding topics as regards to the proposed design. In the first stage, the project focuses mainly on demonstration of the ADS concept and safety research on sub-critical hybrid systems. In a later stage, the device will also be used as an irradiation facility for research on structural materials, nuclear fuel, liquid metals and associated aspects and on sub-critical reactor physics. Subsequently, it will be used for research on applications such as nuclear waste transmutation and radioisotope production. The MYRRHA system is expected to become a major research infrastructure for the European partners involved in the ADS Demo development.

The preliminary conceptual design of MYRRHA will be completed at the fall of 2003 and an intensive R&D programme is established. In this paper we will be presenting the MYRRHA concept and will report on the status of the MYRRHA project at the end of 2002 and on the methods and results of the R&D support programme presently conducted at SCK•CEN with a series of partners.