

Hydromine has no interest in participating to NFRP-07 with Myrrha.

The NFRP-05 seems devoted to critical SMRs, subcritical SMRs are not excluded. The probability of success seems very low, but Hydromine is available to participate in case of positive decision of the consortium to propose a research program in relation with an SMR assisted by a cyclotron having the double objective: electricity production and transmutation processes for suitable recycling strategies.

Hydromine can provide the following **input**:

- the conceptual design of the primary circuit of the reactor, the interface with the accelerator, the decay heat removal and the schematic diagram of the BOP. Neutronics and thermal hydraulic of core and target should be provided by other member of the consortium.
- the principles of operation with the schema of the principle of the regulations.

The conceptual design will integrate the innovations developed for the LFR-AS-200. The safety objectives that motivated these innovations go beyond compliance with Nuclear Safety Directive - 2014/87/EURATOM by seeking the possibility of eliminating the emergency zone in relation with severe accidents and reducing the impact of a possible major accidents (in level 5 of defence in depth), treated in the article 97 of the COUNCIL DIRECTIVE 2013/59/EURATOM.

The CERN should provide the conceptual design and operation of the cyclotron.

The **scope of the recherche** will be:

- define the safety options of the proposed design,
- to establish a baseline for safety assessments of the design for compliance with the Article 8a of the Nuclear Safety Directive - 2014/87/EURATOM.

The assessment will be developed in the classical form: **Claims** (*statements that indicate why the facility is safe*), explained by **arguments** (*methods used and the assumptions made to support the claims*) supported by **evidence** (*facts presented to support the argument including qualified codes used for simulating the comportment of the plant*).

The research will be oriented to define the **claims** and to develop the **arguments**, some evidence could be hypothesis that must be supported by future tests. Some essential item, in the limit of budget, will be validated by experimental or numerical simulation.

The safety demonstration will provide support tools for future SMR licensing process.