TRITIUM HANDLING AND RECOVERY SYSTEM FOR ACCELERATOR BASED 14-MEV NEUTRON GENERATOR
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The work presented on this international platform elaborates the development of the Tritium Handling And Recovery System (THRS) for the Accelerator based 14 MeV neutron generator. The important benefits to the fusion society from this experimental research and development are as follows:

- The THRS is to compliment the neutron facility, because due to the ICRP-30 it is important to have a tritium clean-up system in the laboratory if you cross the particular limit of tritium you are handling (140Ci).

- The amount of tritium which will be coming out of the target chamber is calculated mathematically as well as it is simulated using SRIM software. The results from the code is in close conformance with the published literature of the 14 MeV Frascati neutron generator system. This calculation was to get an estimate of the amount to be handled in the System during an experiment shot.

- The technology which we have decided to use for the exhaust gas clean-up is the Getter bed technology. The decision is based on the Criteria based matrix selection method (Pairwise Comparison and Pugh Matrix).

- At present Getter bed technology is being used for storing Tritium in the applications related to fusion community as well as in Fission. But they could have more utility. If we inject tritium and N2 to these beds at room temperature, they collect the tritium and leave the N2 in the gas phase for disposal. This would be a nice, simple, fast separation system. TSTA actually used this method, but did not quantify its performance. One worry is that uranium will nitride. So, through this experimental facility the idea is to show that the bed capacity will not degrade over time. Also, the separation efficiency would be characterized.

- Different experiments to confirm if Getter beds are one of the best alternative to the existing technologies being used for tritium separation planned for the near future. Thereby contributing to the fusion community working together on the International level.