



## Thorium Breeder Cum Reactor

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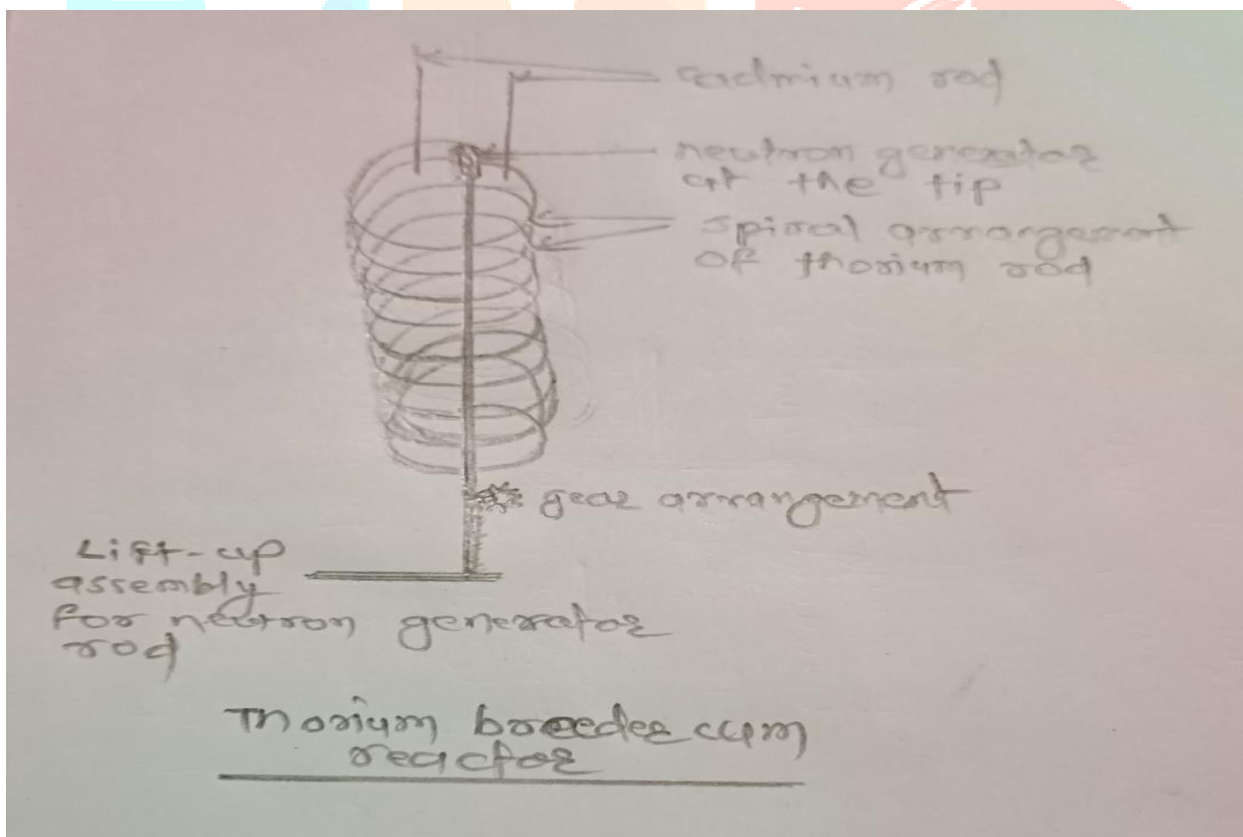
Dy.EE, Nagpur.

**Abstract:** As Th-232 is not a fissile element, required to breed it in to a fissile element and then to be used in nuclear reactor. In the following arrangement of reactor, breeding of thorium is done in U-235 and U-233.

**Keywords:** - Th-232, fission, thorium breeder, thorium reactor, U-233, U-235.

### I. INTRODUCTION

Here neutron generator at the tip of the rod which emits the neutrons continuously, moves upward to downward direction in rotating form along the spiral arrangement of the thorium rod.



**Fig: Thorium Breeder cum Reactor**

These neutrons convert Th-232 in to U-235 and U-233, comes downward and again fully lift up at starting point of spiral arrangement of Thorium and again neutron bombarding starts for next cycle. Here Thorium Th-232 continuously converts in to U-235 and U-233 slowly and also gets fission reaction after bombarding of neutrons. Total time required to breed the 1) U-235 and 2) U-233 is as follows. At starting 7 to 7.25 Hrs required for U-235 breeding but once this period completes, we have uranium, for next shutdown and start-up of reactor. Also breeding of U-233 takes 27 days 19 minutes and is available after that for continuous fission.

In above cadmium rods are used as a moderator for neutrons capture and stop the fission reaction.

## II. CONCLUSION

In this way, thorium breeder cum reactor is differ from thorium salt reactor where thorium is breded chemically.

