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## **Dimensioning and Modeling of a Molten Salt Reactor**

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The Oak Ridge National Laboratory scientific programs focus on materials, neutron science, energy, high-performance computing, systems biology and national security. The Laboratory has done many things to advance not only science but overall conceptual ideas dealing with advanced materials, manufacturing as well as energy. In terms of energy, Oak Ridge National Laboratory was one of the first to experiment with the molten salt reactor idea that was established during the 1960s. The Molten Salt Reactor (MSR) Experiment was a prototype for a thorium fuel cycle breeder nuclear power plant. The reactor was constructed by 1964, it went critical in 1965 and was operated until 1969. Since this prototype's introduction to the world, there have been multiple additions to the MSR family. These additions include different arrangements, fuel compositions and power outputs. Some of the most well documented new designs come from Terrestrial Energy and ThorCon Power. Terrestrial Energy is an energy company based in Ontario Canada that is currently working on the Integral Molten Salt Reactor. ThorCon Power is a company based in Florida that has been working on making a Molten Salt Reactor that requires no new technology. Both are very similar to Oak Ridge National Laboratory Molten Salt Reactor and each incorporates its own development to its designs. This project will be gathering and combining all information to create a 3D model that will be utilized for future research involving MSR Monte Carlo simulations.