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## 6 Nuclear Energy Companies Building Molten Salt Reactors

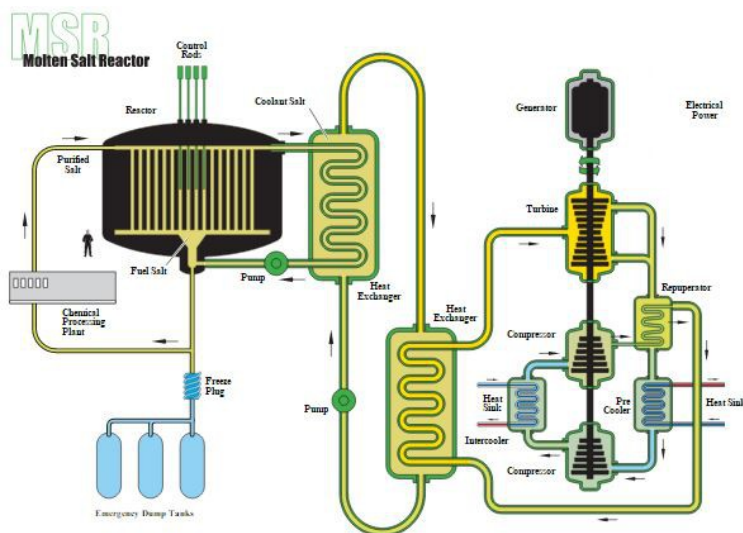
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<http://tinyurl.com/ox3o8jb> OR

<https://www.nanalyze.com/2015/10/6-nuclear-energy-companies-building-molten-salt-reactors/>

According to the [World Nuclear Association](#), electricity demand almost doubled from 1990 to 2011, and is projected to grow 81% from 2011 to 2035. Nuclear power currently provides for about 11% of the world's electricity, and 21% of electricity in [OECD countries](#). While nuclear power is the most environmentally benign way of producing electricity on a large scale, accidents like Fukushima and Chernobyl have given the nuclear energy industry a bad reputation in the eyes of the general public.

In order to increase the use of nuclear power, we need to rethink the technology being used with a focus on safety. One such approach is the [Molten Salt Reactor](#) (MSR) which is expected to be cheaper, safer, and generate less nuclear waste when compared to traditional nuclear reactors. The below schematic shows how the concept works:



Source: Wikipedia

The technology must hold some promise, as there are now 6 companies pursuing some form of an MSR.

#### **Terrestrial Energy (Ontario Canada)**

Founded in 2013, Terrestrial is developing their “Integral Molten Salt Reactor” (IMSR) into a small modular design, with its three first-of-a-kind models ranging from 29 MWe to 290 MWe which will be suited for remote communities and industrial operations. Their International Advisory Board includes influential individuals such as the former CTO of Lockheed, a former [NRC](#) Commissioner, a former EPA Administrator, and the former President of [Bechtel](#) Nuclear. Terrestrial expects to build and license its first MSR by early next decade, and has signed a Letter of Intent to conduct R&D activities with Canadian Nuclear Laboratories.

#### **Moltex Energy (London, England)**

Founded in 2012, Moltex has developed a genuinely new reactor concept which parts ways from the conventional MSR design. Named the “Stable Salt Reactor”, this reactor uses molten salt fuel held in static fuel tubes, rather than conventional ‘pumped circulation’ designs. Protected by worldwide patents, this British invention is expected to reduce engineering complexity and regulatory burden. The Company’s next step is to carry out a preliminary safety assessment with nuclear regulators after which they can then begin to look at economic feasibility.

#### **ThorCon Power (Florida USA)**

Thorcon has spent the past 4 years designing a simple molten salt reactor which requires no new technology. The Company claims their pilot was already proven through the [Molten Salt Reactor Experiment \(MSRE\)](#) which began in 1959 and ended in 1969. They need to simply scale that original design, and believe that there is no technical reason why a full-scale 250 MWe prototype cannot be operating within four years. Their packaged nuclear power plant units based on this design will be buried 30 yards underground and will be “walkaway safe”. Production is expected to start by 2020.

#### **TerraPower (Washington USA)**

Founded in 2008, TerraPower counts Bill Gates as both an investor and their Chairman. The Company’s technology is referred to as the “traveling wave reactor” (TWR) and uses [depleted uranium](#) which greatly simplifies the nuclear fuel cycle.

Just last month they signed a “memorandum of understanding” with the China National Nuclear Corporation (CNNC) which they called “the next step towards developing a prototype”.

### **Flibe Energy (Alabama USA)**

Founded in 2011, Flibe proposed to use thorium as a nuclear fuel instead of uranium. The founder Kirk Sorensen, both a nuclear engineer and rocket scientist, claims that corporate interests have prevented thorium from being used as a nuclear fuel. Flibe’s [liquid fluoride thorium reactor](#) is expected to cost several hundred million dollars to build.

### **Transatomic Power Corporation (Massachusetts USA)**

Founded in 2010, Transatomic is the only company which has disclosed their funding amounts, 3 rounds totaling \$5.5 million from investors that included Peter Thiel. The Company is developing their “Waste-Annihilating Molten Salt Reactor” (WAMSR) which is a 520 MW molten salt reactor which uses the waste from traditional reactors as a fuel source. While a traditional reactor may use up to 4% of the energy in their uranium fuel, the WAMSR utilizes 96% consequently reducing nuclear waste to 2.5% of what is produced by a typical reactor. Overnight cost of the WAMSR is \$1.7 billion, and they are currently running lab-scale experiments to refine the design for the prototype facility which is expected to be complete by 2020.

One commonality across all six of these companies is that they are all in the very early stages of development, and consequently don’t need much funding yet. This also means that we’re a long way from retail investors being able to participate in MSR technology as an investment. A big investment round for any of these companies would signal a departure from the concept stage onto the building stage.

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