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A Different Kind of Nuclear Reactor in China

Rather than using fuel rods encased in water as in most reactors, engineers in China are building pebble-bed reactors that use billiard ball-size fuel spheres known as pebbles. Amassing these pebbles inside the reactor creates nuclear fission, which heats a gas. The gas in turn heats water into steam, driving a turbine. The reactor core consists of 420,000 of these fuel spheres, and every 15 seconds one is removed and replaced by another one. Experts say these reactors offer a safer nuclear alternative.



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Pebble-Bed Reactor

Schematic

FUEL SPHERES

HELIUM GAS
Passes between spheres, absorbing their heat.

GRAPHITE BRICKS
Act as a reflector to enhance the reaction.

REACTOR CORE

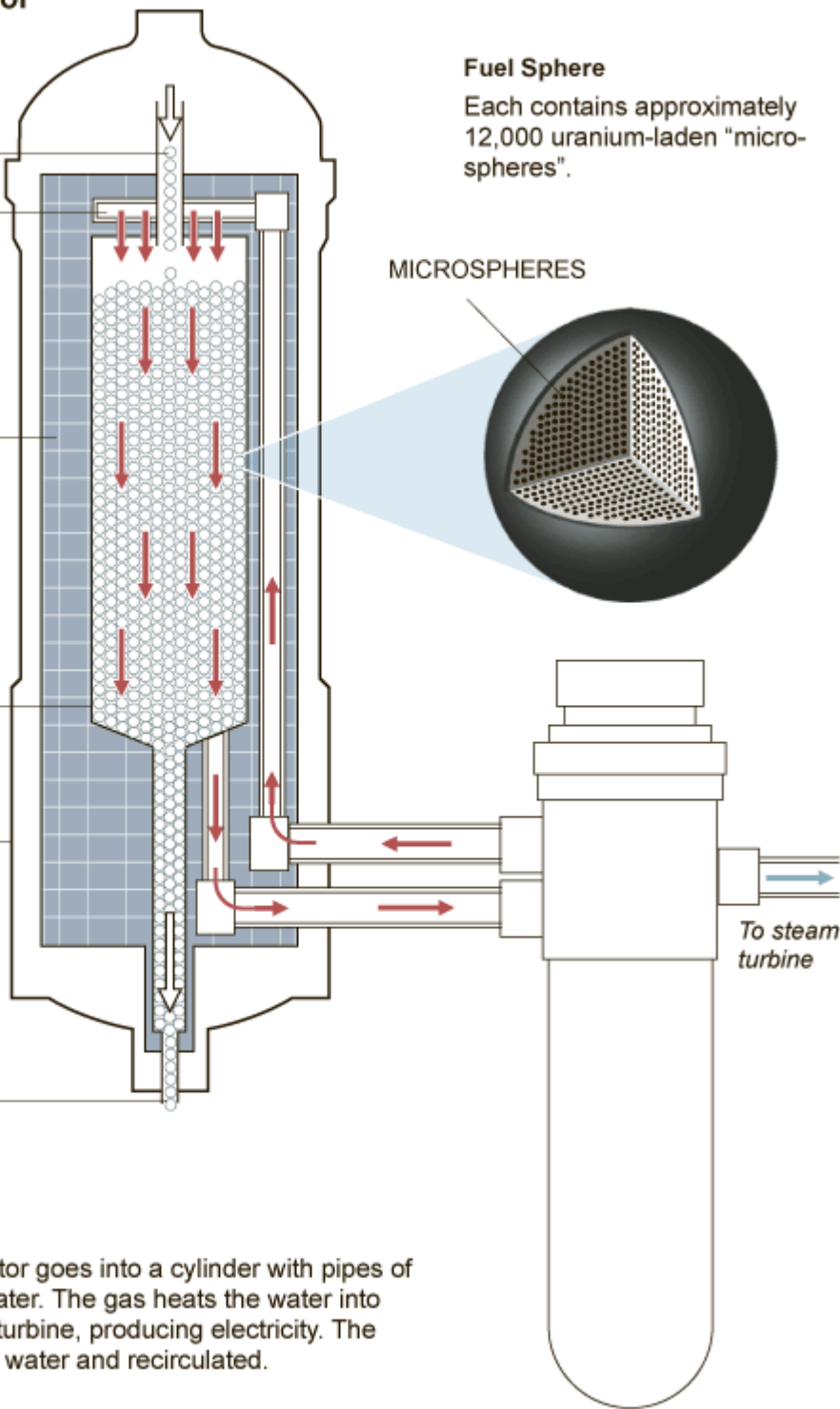
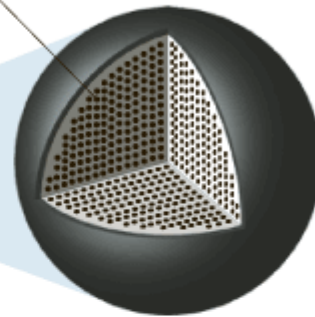
REACTOR VESSEL

EXITING FUEL SPHERES
Can be reused up to 15 times.

Fuel Sphere

Each contains approximately 12,000 uranium-laden "micro-spheres".

MICROSPHERES



Heat Exchanger

Helium exiting the reactor goes into a cylinder with pipes of hot gas and pipes of water. The gas heats the water into steam that is sent to a turbine, producing electricity. The helium is cooled by the water and recirculated.

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Frank O'Connell/The New York Times | [Send Feedback](#)

Sources: Chinergy; Institute of Nuclear and New Energy Technology at Tsinghua University; Arizona State University

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