The U.S. government is investing millions of dollars in what it considers a promising new industry for American manufacturing: nuclear reactors. The plan is to build hundreds of mini-reactors, dot them around the U.S. and export them overseas.

Developments of these reactors are already in the works, and at one office park in Lynchburg, Va., where one of these reactors is being assembled, the traditional signs of nuclear reactors are nowhere to be found. There are no cooling towers that look like smoke stacks, no clouds of steam over the buildings — just a research building and a tower about nine stories tall.

Inside, the plant's manager, Doug Lee, leads the way down through secure doors. It feels like the inside of a refrigerator but noisier. Spinning fans and water pumps drown out the sounds of hissing steam. At the reactor core, Lee stops.

"I can't let you in here," Lee says. "But this is the base of the tower, and this is the lower portion of the large tower you saw when you came in. This is our simulated reactor vessel."

It's simulated because the design still needs Nuclear Regulatory Commission approval.

"This is analogous to the core in a nuclear plant where the fission reaction takes place," Lee says.

The entire reactor — the core, the cooling system, everything — is self-contained in this rocket-shaped steel cylinder. The industry says that makes it safer. And the reactors will be
small enough to build in a factory and ship on trucks, like prefabricated houses. They'll generate about one-tenth the power of a typical nuclear power plant.

Assistant Energy Secretary Pete Lyons sees promise that goes beyond a new energy gadget. He sees jobs.

"One of the features of these small reactors is that they can be entirely manufactured here in the United States," Lyons said. "They can literally be made in the USA. With the large plants, that's simply physically impossible."

Lyons pictures churning reactors out in factories, shipping them to utilities to replace aging coal plants or selling them to developing countries — which can't afford a full-scale $15 billion nuclear plant.

"We are trying to jump-start a new U.S. industry," he says. "That's my goal: a U.S. industry, U.S. jobs, clean energy."

In November, the Energy Department invested in Babcock & Wilcox mPower, the nuclear company that built the prototype in Virginia. In total, the government plans to invest more than $400 million. Industry officials like B&W mPower President Chris Mowry say the launch funding is to get off the ground, but ultimately the reactors need to be mass-produced.

"MPower is not going to be measured in terms of success in terms of building tens of these things, but in terms of hundreds of these things," Mowry says. "We're not trying to build a Rolls Royce; we're trying to build a Ford."

That model worries Ed Lyman, a nuclear physicist with the Union of Concerned Scientists.

"My feeling is that if you're going to have a nuclear power plant, it'd better be a Rolls Royce," he says. Lyman says small reactors carry a host of safety, security, environmental and economic
"Nuclear power is a technology which is much more suited for large plants, centralized and isolated from populated areas in as small a number of places as possible," Lyman says.

He says every nuclear power plant is a target for terrorism or is at risk during a disaster. Lyman says the closer the reactors are to populated areas, the more of a threat they potentially become. That's one reason Lyman is not convinced enough demand exists for mass production. He also worries about selling them overseas.

"It's a developing country that doesn't have a substantial electrical grid that is precisely the kind of country I would not want to see have any kind of nuclear power plant," he says.

But the industry counters that these reactors are so small and self-contained, they are almost "plug and play." Smaller, cheaper, with less staff — it's your entry-level nuclear reactor, perhaps coming online in about a decade.