

California scientist still reinventing the wheel at 94

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At 94, Dick Post is the oldest scientist Lawrence Livermore Laboratory has ever had. And he may be the most fascinating.

Post has visited the Swiss Alps nearly 50 times, regularly flies remote-controlled helicopters with his two sons, plays online Scrabble on his [iPad](#) with his daughter, "Night Court" actress Marjorie Armstrong "Markie" Post, and in the past six months, began piano lessons.

Nearly 20 years after he "retired," the physicist's mind is sharper than those of most men half his age. He works four days a week and drives himself in his Toyota Prius from his home in Walnut Creek, Calif., to the lab. He spends his workdays tackling complex equations on a yellow legal pad and a laptop running a sophisticated [math program](#).

"I have lots of fun on it," he said, discussing the software. "It's a tremendous research help."

Post's latest project - perfecting a prototype of his lightweight "flywheel," a cylindrical, rotating battery - could revolutionize the [energy industry](#), storing and creating energy better than any conventional electro battery on the planet.

"We said, 'To heck with electromagnetic, we're going with electrostatic,'" Post said, laughing.

Bob Yamamoto, a [mechanical engineer](#) and principal investigator on the

project, compares working with Post to being around a college student with 60 years of experience. Post, he said, exudes a level of enthusiasm that's hard to keep up with.

"Independent of his age, he has ideas coming out of his mind minute-by-minute," Yamamoto said. "He's so full of energy from all these ideas he has over the weekend that every Monday morning he can't wait to call me and talk to me about them."

Post retired in 1994, but still clocks in about 30 hours a week at the lab. He's paid for as much as 20 hours, collects [retirement benefits](#) and gets industry support as a technical adviser on his inventions.

Post's official title is "rehired retiree scientist" - he's one of 150 to 175 lab employees with the distinction - but none are quite like him. He holds about 30 patents and has added 15 records of invention - an early step to obtaining a patent - since turning 90.

From a young age, Post said wanted to apply physics to help solve the world's energy problems. Born in 1918 in Pomona, Calif., he grew up in Claremont, Calif., and cultivated an early fascination with ham radio technology.

After World War II, when Post was stationed at the U.S. Naval Research Laboratory and assigned to Pearl Harbor, he finished graduate studies at Pomona College and moved to Stanford, earning a Ph.D. in physics in 1950. He spent a year at Berkeley's Radiation Laboratory (now Lawrence Berkeley Laboratory), working with Nobel Prize winners, noted nuclear physicist Herb York - the Livermore Lab's first director - and physicist Edward Teller, known as the "father of the hydrogen bomb."

Post began fusion research, the focus of most of his 60-year lab career.

He pioneered magnetic mirror fusion, a novel approach for containing fusion plasma.

Stephen Dean, president of the Fusion Power Associates, met Post in 1962 when Dean was director of magnetic fusion at the U.S. Atomic Energy Commission. Post, he said, was fusion's "key experimental leader" with a gift for explaining his ideas.

Walnut Creek, Calif., physicist Ken Fowler, 82, a University of California at Berkeley professor emeritus and the Livermore Lab's associate director of fusion research for 17 years, worked with Post for 20 years and admired his talent.

"When he had a good idea, he just did it," Fowler said. "Invention is the name of the game in a place like Livermore; he was just the best one at it."

Post's research papers included one of the first "textbooks" on mirror fusion. It was translated into Russian, which is how Livermore Lab physicist Dmitri Ryutov, 73, learned of him in the 1960s. Post's writings made a big imprint on Ryutov, who left Russia for Livermore in 1994 to work with his mentor.

"He's not just a physicist, he's an inventor," Ryutov said. "That's a very rare combination."

In the mid-1980s, the fusion budget was cut, and Post shifted to flywheels and inventing magnetic levitation systems such as the Inductrack, a levitating train that uses magnets to hover above the track.

The 1990s revived the interest in flywheels as storage for solar and other energy systems. Technology had finally caught up with ideas that Post had decades before: in a 1973 article for Scientific American - co-

written with his son Stephen - Post envisioned flywheel uses for storing energy and powering cars and homes.

Post has been called the "father of the modern flywheel," a title he dismisses as "too generous." The rapidly spinning devices not only store energy with minimal losses, but they also generate it.

"It's a very old idea, storing energy in the form of rotation in an object," he said, comparing it to a potter's wheel.

Post visualizes underground installations of the graphite fiber-composite flywheels at power plants, and smaller devices for homes and cars. He hopes to test them within a year.

"Energy bills would be essentially zero," he said.

Last year, Post received the Livermore Lab's first Lifetime Achievement Award, which he calls "the frosting on the cake."

However, there's a much grander constant that propels his research.

"Energy is the bottom line. If I've got an idea I can contribute, I'd like to work on it as long as I need to."

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