EXCELLENCE IN TECHNOLOGY TRANSFER AWARD

Argonne NATIONAL LABORATORY

PRESSURE CONSOLIDATION REFUELING TECHNOLOGY

Argonne National Laboratory and PDC Machines, Inc.

THE CHALLENGE / OPPORTUNITY

Fuel cell electric vehicles (FCEVs) offer an attractive alternative to gasoline-powered vehicles, electric vehicles, or hybrids. **FCEVs do not produce carbon or air pollutant emissions,** and when compared with typical plug-in cars that travel about 100 to 370 miles on a single charge, **FCEVs promise 300 to 400 miles per fill-up.**

However, widespread adoption has been limited, due in part to the cost of the refueling infrastructure, which requires expensive and often inefficient compressor and gas-storage systems.

THE TECHNOLOGICAL / SCIENTIFIC ADVANCEMENT

Researchers at the U.S. Department of Energy's (DOE's) Argonne National Laboratory developed a **patented gas-fueling technology, known as pressure consolidation,** for optimized fueling of FCEVs and lower overall cost.

The technology increases the efficiency of the compressor. With this higher throughput, there is a **200% increase in fuel transfer which, in turn, lowers equipment costs by 30%.**

THE COLLABORATION

Argonne NATIONAL LABORATORY

PDC MACHINES.COM

The technology was transferred to PDC Machines (Warminster, Pa.) via:

- A license of Argonne IP, including two U.S. patents, one U.S. patent application, and multiple foreign patent applications.
- A DOE **H2@Scale cooperative research and development agreement** — in which the R&D effort was jointly supported by PDC Machines and DOE's Full Cell Technologies Office — to develop a **customized version of Argonne's Hydrogen Delivery Cost model (HDSAM) software.**

THE IMPACT

PDC has integrated the technology into its hydrogen fueling systems and is commercializing it in the U.S. and abroad. PDC is expanding its manufacturing facilities, adding domestic clean manufacturing jobs, and increasing U.S. exports.

The technology has enabled a **significant reduction in hydrogen refueling cost and has improved efficiency** — both of which are crucial for the accelerated deployment of FCEVs.

To learn more, contact **partners@anl.gov**

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