



GEV ARC – HPC/AI – THE ROAD AHEAD

GE VERNOVA (GEV) - PUBLIC

Charles Orlowski & Arthur Grimshaw

Continuing Edison's Legacy X3



On April 2nd 2024 General Electric (GE) completed the formation of three separate companies.

- GE HealthCare Technologies Inc. (GEHC)
- **GE Vernova Inc. (GEV)**
- GE Aerospace (GE)



About GEV ARC -



- GE Vernova (GEV) operates through three segments: Power, Wind, and Electrification.
- Advanced Research Center (ARC) – GEV’s corporate R&D laboratory innovating in the areas such as microgrids, energy storage, decarbonization, hydrogen and future fuels, cyber security, power conversion and grid controls and orchestration technologies.
- Based in Niskayuna, New York.
- Spread across 500 acres land with state-of-the-art facility. Work is underway to expand the site for supporting next generation technologies.

Driving the Energy Transition

GE Vernova Advanced Research is a hub for innovation where research and development meets strategy creation, partnership building, and engineering genius. We’re accelerating a new era of available, affordable, and sustainable energy and ambitiously tackling decarbonization, renewables, and electrification with the pioneering spirit to enable a zero-carbon future.

150+

Current R&D projects

420+

Technology partners

250+

Researchers on a mission

Our Technologies and Expertise



- Aerodynamics & Thermosciences.
- AI, Robotics & Software.
- Controls & Optimizations.
- Electrical & Power Systems
- Embedded Systems & Cybersecurity
- Materials Chemistry & Physics
- Materials Coatings & Modeling
- Mechanical Systems & Design
- ????????

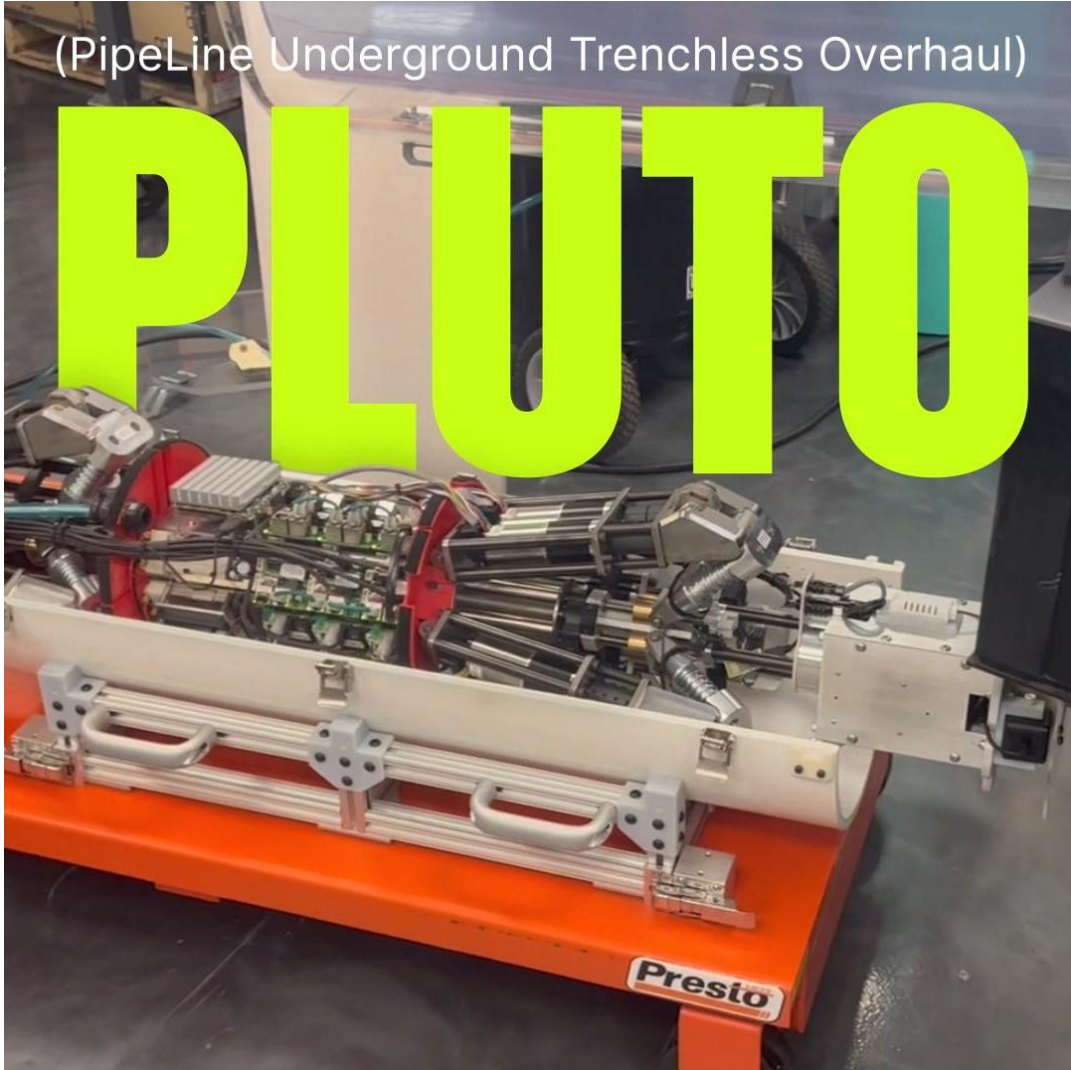
Blade Runners: GE Vernova Is Deploying AI-Enabled Machines to Boost Wind Turbine Blade Quality



After 2,000 labor hours, a beautiful blade is born, weighing in at around 20 tons and measuring roughly 80 meters long. The stresses and strains on the blades are massive, which ups the ante for GEV. To solve the challenge, GE Vernova’s Advanced Research engineers working out of Niskayuna, NY, focused on the nature of blade manufacturing as a “repeatable” process. With a new AI blade inspection process in use, the blades for GE Vernova’s 154-meter rotors will be leaving factories bearing their freshly printed digital quality certificates. You don’t just get an ultrasound at the end of a pregnancy. There are a series of scans and tests that doctors rely on to provide the best care throughout. Our vision is very similar. We are developing and deploying a series of technologies, leveraging AI, to certify the quality of blades in the most critical production steps



PLUTO to the Rescue: Agile Robot Takes Aim at the World's Leaky Pipelines



PLUTO also has the ability to inspect pipes as it moves forward but does its repairs while moving backward. Here's how it works: Tension-spring legs anchor the robot to the interior walls of the pipeline, while small wheels propel it. As PLUTO slowly withdraws, its spray head coats the walls with epoxy, which not only repairs existing leaks but actually forms a new hard wall — a new pipe.

As the world moves through the current energy transition, demand for new oil and gas pipelines is expected to decline. But new forms of energy, such as hydrogen, are anticipated to expand, needing their own pipeline systems. And here's an exciting bonus: PLUTO's not just for tackling the problem of leaks from natural gas pipelines. The robot is expected to be suited to water lines, too.



GE VERNOVA