



BEST START

Partner Company Profile



Military operations demand reliable, efficient, and secure energy sources, especially in contested environments. Traditional fuels like diesel are logistically burdensome and environmentally harmful, while alternatives such as hydrogen or battery systems often fall short in cost, storage, or power density.

AZA Power Systems emerged from nearly a decade of research at the University of Minnesota. Its unique technology uses a modified turbulent jet ignition system with pre-combustion chambers to enable efficient ammonia combustion in internal combustion (IC) engines. Ammonia, widely available and energy-dense, offers a strategic alternative to fossil fuels. Unlike hydrogen, which is difficult to store, or methanol, which is costly to produce, ammonia is easy to transport, remains stable indefinitely, and can be synthesized using wind, solar, or nuclear power.

A Clean, Scalable Fuel Solution for the Warfighter

AZA's innovation lies in its prechamber technology, which replaces diesel fuel injectors with minimal engine modifications. This approach slashes emissions by 99% compared to diesel while maintaining the power density and reliability critical for military operations. By building on decades of IC engine and ammonia production advancements, AZA delivers a low-risk, high-value solution to strengthen the military's energy resilience.

Energy security is a top priority for the U.S. military. AZA's ammonia combustion technology addresses this by providing a fuel source that is logistically efficient and environmentally

sound. Ammonia's global availability allows military units to source fuel locally, reducing dependence on vulnerable supply lines. AZA's technology also enhances operational flexibility. Ammonia's stability eliminates fuel degradation risks, a key advantage for remote or

unmanned sites. While ammonia requires careful handling, the military's rigorous protocols make it an ideal adopter. By integrating ammonia, forces can achieve energy independence, cut supply chain risks, and meet emissions targets without sacrificing performance.



Breakthrough Combustion Technology

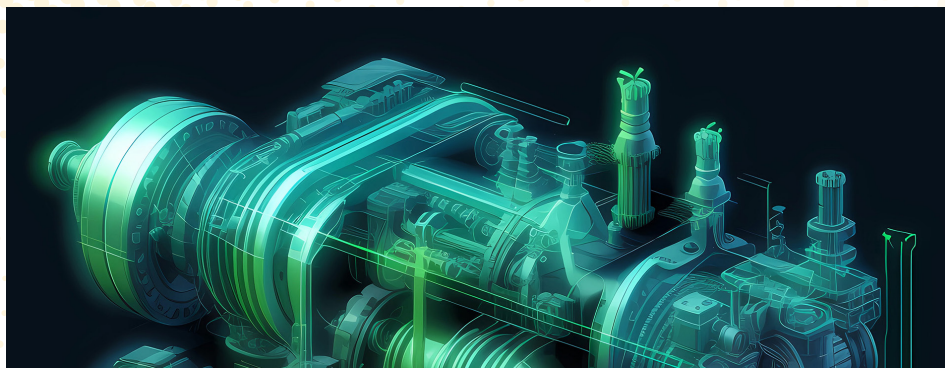
AZA stands out by delivering clean combustion without the drawbacks of competing solutions. AZA's prechamber technology uniquely combines affordability, power density, and near-zero emissions, setting a new standard for ammonia combustion. While clean ammonia is not yet cheaper than fossil energy, AZA's technology has tangible impacts in reducing greenhouse gas by 99% over the

original diesel engine. With this decrease in emissions plus a low cost of entry in that AZA's model is to repower existing equipment, AZA technology is one of the lowest cost means to reduce greenhouse gas emissions in situations where battery electric is not power dense enough to provide a solution.

AZA has proven its technology in tests at the University of

Minnesota's Murphy Engine Research Lab in small-scale engines, with peer-reviewed studies underway. The company is now moving toward commercial use, starting with stationary power generation for data centers and critical infrastructure.

By late 2025, AZA Power will adapt its technology for medium-speed engines, opening markets in rail, mining, and short-haul maritime. At the same time, AZA is refining combustion efficiency and minimizing emissions further. The company also holds key intellectual property in thermal burners for ammonia, paving the way for partnerships with major energy providers to modernize power generation.



About AZA Power

Founded in 2021, AZA has progressed rapidly from research to commercialization, supported by Minnesota's Grid Catalyst and the University of St. Thomas' BEST START program. With a team of experienced engineers and strategists, AZA is leading the shift toward ammonia-based energy—beginning in

Minnesota and expanding globally. By leveraging ammonia's advantages, AZA provides a fuel that is clean, abundant, and logistically superior. For the military, this means stronger energy security, reduced operational vulnerabilities, and a practical way to meet environmental goals.

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About BEST START

BEST START provides the crucial support businesses need to bring their visionary technologies to life. Whether refining smart grid technologies, enhancing green energy applications, or creating efficient solutions for power generation, BEST START partners with Minnesota companies to move technology forward. BEST START is a collaboration of three organizations—DEVCOM Army Research Laboratory, the University of St. Thomas in Minnesota, and ETC, a nonprofit defense solutions provider.