



ASSISTANT ADMINISTRATOR FOR AIR AND RADIATION

WASHINGTON, D.C. 20460

September 11, 2025

Mr. Bobby K. Cherian
Sr. Vice President, Government Affairs
Hyllion Inc.
1202 BMC Dr.
Cedar Park, TX 78613

Via email: bobby.cherian@hyllion.com

Dear Mr. Cherian:

This letter responds to your April 14, 2025, letter requesting a regulatory interpretation regarding Hyllion Inc.'s KARNO generator technology. Specifically, you requested that the U.S. Environmental Protection Agency (EPA) determine that Hyllion's KARNO generator is not regulated as a nonroad engine under the Clean Air Act ("CAA").¹ This letter also responds to your August 12, 2024 letter requesting EPA to determine if the KARNO generator is subject to the New Source Performance Standards (NSPS) for Compression Ignition (CI) Stationary Internal Combustion Engines (40 CFR Part 60, subpart IIII) and/or the NSPS for Spark Ignition (SI) Stationary Internal Combustion Engines (40 CFR Part 60, subpart JJJJ) under section 111 of the CAA.

As detailed below, applying the information that Hyllion has provided to EPA in your submissions and in meetings with the EPA, we have concluded that Hyllion's KARNO generator is **not** an internal combustion engine, and therefore, is neither a nonroad engine nor stationary internal combustion engine within the meaning of our regulations.

Further, because the KARNO generator is neither a nonroad engine nor stationary internal combustion engine under EPA regulations, the KARNO generator technology is not subject to the NSPS for CI

¹ 42 USC 7550(10) states that the term "non-road engine" means an internal combustion engine (including the fuel system) that is not used in a motor vehicle or a vehicle used solely for competition, or that is not subject to standards promulgated under section 7411 of this title or section 7521 of this title.

Stationary Internal Combustion Engines, the NSPS for SI Stationary Internal Combustion Engines, the regulations at 40 CFR Part 1039-Control of Emissions from New and In-Use Nonroad Compression-Ignition Engines, or the regulations at 40 CFR Part 1048-Control of Emissions from New, Large Nonroad Spark-Ignition Engines.

Your letters and submissions to EPA describe the KARNØ device as a “closed-cycle heat engine that uses external continuous flameless oxidation to produce electricity using double-sided linear mechanics.” You provided that this heat engine propels a linear generating system, deriving its motion from temperature differences, and that the engine can use a variety of fuels, such as natural gas, hydrogen, and propane. The generation of heat occurs through the external oxidation of fuels, and this thermal energy is transferred to helium gas enclosed within a separate sealed cylinder. According to your submissions, this helium—and not the products of the fuel oxidation process—expands, thereby propelling linear motion in a connected piston-shaft system, which includes a sequence of permanent magnets situated on the shaft passing through electrical coils to produce electricity.

NSPS subparts IIII and JJJJ, 40 CFR Part 1039, and 40 CFR Part 1048 apply to internal combustion engines only.² In an internal combustion engine, the expansion of the gases produced from combustion applies direct force to a component of the engine, such as pistons. However, based on your letter and submissions to EPA, we have determined that the KARNØ generator is an external combustion engine because the expansion of the gases produced from combustion does not apply direct force to the mechanism of the engine and propel the motion of the oscillator. Instead, the KARNØ generator’s products of combustion are separated from the working fluid (helium gas), and the expansion of the working fluid propels the motion of the oscillator, making the generator an external combustion engine. Therefore, it is our view that neither the manufacturer nor the owners and operators of the KARNØ generator are subject to the referenced EPA standards that apply to nonroad engines and stationary internal combustion engines.

If you have any questions about this response, please contact Nick Hutson, Group Leader of the Energy Strategies Group, at Hutson.Nick@epa.gov or Cleophas Jackson, Branch Supervisor of the Gasoline Engine Compliance Branch, at Jackson.Cleophas@epa.gov.

Sincerely,



Aaron L. Szabo
Assistant Administrator

² 40 CFR 1048.801 Defines spark-ignition as, among other characteristics, having operating characteristics similar to the Otto combustion cycle. An Otto combustion cycle engine is a form of internal combustion engine.