



OFFICE OF TRANSPORTATION AND AIR QUALITY

WASHINGTON, D.C. 20460

September 25, 2024

Mr. Robert J. Wargo
Fidem Energy, LLC
650 25th Street NW, Suite 500
Cleveland, TN 37311

Dear Mr. Wargo:

This letter is in response to your alternative measurement protocol (AMP) submission of March 11, 2024, under 40 CFR 80.155(a)(3). In your letter, you requested that the EPA approve the use of Rotary-Type Gas Displacement flow meters that meet the voluntary consensus standard body method ANSI B109.3 as an alternative to the flow meters specified at 40 CFR 80.155(a)(2).

The regulations at 40 CFR 80.155(a) specify that the volume of biogas, renewable natural gas, and renewable compressed natural gas or liquified natural gas must be continuously measured using specified flow meters. The regulations allow for the EPA to approve an alternative measurement protocol under 40 CFR 80.155(a)(3) if a party demonstrates that they are unable to continuously measure using the specified methods and the party demonstrates that the alternative measurement protocol is at least as accurate and precise as the specified methods. The regulations at 40 CFR 80.135(c)(3)(iii) and (d)(3)(iii) outline the requirements for biogas production and RNG production facilities, respectively, to request an alternative measurement protocol under 40 CFR 80.155(a)(3).

Your submission included information that described how Rotary-Type Gas Displacement flow meters that meet ANSI B109.3 conduct measurement, listed applicable voluntary consensus standards bodies, described routine maintenance and calibration for Rotary-Type Gas Displacement flow meters, described the measurement frequency of Rotary-Type Gas Displacement flow meters, and included a comparison with supporting data between the accuracy, precision, and reliability of the alternative measurement protocol and the requirements specified in 40 CFR 80.155(a)(2).

Based on our review of your March 11, 2024, submission and the voluntary consensus standards listed in your AMP submission, the EPA approves your March 11, 2024 AMP submission and a biogas producer or RNG producer may register its facility to use Rotary-Type Gas Displacement flow meters that meet ANSI B109.3 under 40 CFR 80.155(a)(3) so long as the producer meets the conditions

specified in the attachment and all other applicable regulatory requirements at 40 CFR part 80, subpart E.

We note that your submission and this AMP approval do not address whether a specific facility satisfies the criteria for the approval of an AMP under 40 CFR 80.155(a)(3)(i). A facility that intends to use Rotary-Type Gas Displacement flow meters covered under this AMP approval must address this criterion in its registration submission as described in the regulations at 40 CFR 80.135(c)(3)(iii)(A) or (d)(3)(iii)(A), as applicable.

If you have any questions related to this general AMP approval, please contact Robert Anderson at anderson.robert@epa.gov.

Sincerely,

A handwritten signature in black ink, appearing to read "Byron Bunker", is positioned above the typed name.

Byron Bunker, Director
Implementation, Analysis and Compliance Division
Office of Transportation and Air Quality

EPA Determination that Rotary-Type Gas Displacement flow meters that meet ANSI B109.3 meet the requirements for an alternative measurement protocol under 40 CFR 80.155(a)(3)(ii)

Summary

On March 11, 2024, Fidem Energy, LLC submitted an alternative measurement protocol request under 40 CFR 80.155(a)(3)(ii). The regulations at 40 CFR 80.155(a) specify that the volume of biogas, renewable natural gas (RNG), and renewable compressed natural gas (CNG) or liquified natural gas (CNG) must be continuously measured using specified flow meters. The regulations allow for the EPA to approve an alternative measurement protocol under 40 CFR 80.155(a)(3) if a party demonstrates that they are unable to continuously measure using the specified methods and the party demonstrates that the alternative measurement protocol is at least as accurate and precise as the specified methods. The regulations at 40 CFR 80.135(c)(3)(iii) and (d)(3)(iii) outline the requirements for biogas production and RNG production facilities, respectively, to request an alternative measurement protocol under 40 CFR 80.155(a)(3).

Based on EPA staff review of the March 11, 2024, submission, the EPA has determined that Rotary-Type Gas Displacement flow meters are as precise, accurate, and reliable as meters specified at 40 CFR 80.155(a)(2) so long as a facility installs, operates, calibrates, and maintains the meter consistent with ANSI B109.3.

The following sections describe how the March 11, 2024, submission satisfies the applicable regulatory requirements at 40 CFR 80.135 and 80.155, and how biogas and RNG production facilities using Rotary-Type Gas Displacement flow meters must submit as part of their registration submissions under 40 CFR 80.135.

Description and VCSB standards

The regulations at 40 CFR 80.135(c)(3)(iii)(B)-(C) and 80.135(d)(3)(iii)(B)-(C) require a description of how measurement would be conducted under the alternative measurement protocol and a description of any standards or specifications that apply for the measurement of biogas and RNG, respectively. Any Rotary-Type Gas Displacement flow meter submission under the ANSI B109.3 and EN 12480 must include a description of the specific Rotary-Type Gas Displacement flow meters and data that demonstrate how the meter meets specification in ANSI B109.3, EN12480, OIML R137 parts 1 and 2, and NIST Handbook 44. A list of standards could include:

- ANSI B109.3 Rotary-Type Gas Displacement Meters
- EN 12480:2018 Gas meters - Rotary displacement gas meters
- NIST handbook 44, Specifications, Tolerances, and Other Technical Requirements for Weighing and Measuring Devices (<https://doi.org/10.6028/NIST.HB.44-2024>)
- ASME PTC 19.5 Flow Measurement Performance Test Codes
- OIML R 137 – 1 & 2 Gas meters Part 1: Metrological and technical requirements and Part 2: Metrological controls and performance tests
- ISO/IEC 17025 General requirements for the competence of testing and calibration laboratories

- ISO 14164 Stationary source emissions – Determination of the volume flowrate of gas streams in ducts – Automated method

Any facility wishing to utilize this general AMP approval must note in their registration submission under 40 CFR 80.135 that they are using a Rotary-Type Gas Displacement flow meter as described in this AMP approval letter and must note in their registration submission under 40 CFR 80.135 that they intend to use Rotary-Type Gas Displacement flow meters that meet at a minimum ANSI B109.3 and OIML R137 Parts 1 and 2 installed at their facility.¹

Calibration and maintenance

The regulations at 40 CFR 80.135(c)(3)(iii)(D) and 80.135(d)(3)(iii)(D) require a description of all routine maintenance and the frequency that such maintenance will be conducted for an alternative measurement protocol.

Based on our review of the VCSB standards cited in your March 11, 2024, submission, calibration must be performed according to ANSI B109.3, EN 12480, OIML R137, NIST Handbook 44, or ASME PTC 19.5-202. If the Rotary flowmeter is calibrated with water or other fluid not identical to RNG, the equivalency to RNG flow must be demonstrated. Based on our review of the VCSB standards cited in your March 11, 2024, submission, calibration must be performed according to procedures in ANSI B109.3 Section 7.6, Appendices A and D, EN 12480 or a similar standard such as OIML R137 Parts 1 and 2, NIST Handbook 44, or ASME PTC 19.5-2022 at a competent calibration laboratory (e.g., ISO/IEC 17025). Any facility wishing to utilize this general AMP approval must note in their registration submission under 40 CFR 80.135 that the facility intends to meet the calibration specifications in ANSI B109.3, EN 12480, OIML R137, ISO/IEC 17025 or describe an alternative calibration procedure. If utilizing an alternative calibration procedure, the facility must describe how the alternative will ensure proper operation of the meter in their registration submission.

Based on our review of your submission, the maintenance procedures you specified in ANSI B109.3 Section 7 and Appendix A should help ensure reliable operation of Rotary-Type Gas Displacement flow meters if followed. Any facility wishing to utilize this AMP approval must note that they intend to follow the maintenance and operation requirements in EN 12480, ANSI B109.3, as well as maintenance procedures recommended by rotary meter manufacturers. If utilizing an alternative maintenance procedure, the facility must describe how the alternative will ensure proper operation of the meter in their registration submission.

Measurement frequency

The regulations at 40 CFR 80.135(c)(iii)(E) and 80.135(d)(iii)(E) require facilities to submit a description of the frequency of all measurements and how often such measurements will be recorded under the alternative measurement protocol. ANSI B109.3 does not state a frequency of measurement protocol. Producers utilizing ANSI B109.3 for acceptance for use of a Rotary-Type Gas Displacement flow meter must demonstrate in their registration submission(s) that their Rotary-Type Gas Displacement flow

¹ Note, the facility should not submit copies of referenced VCSB standards as part of their registration submission.

meter(s) can measure and record data at a minimum of every one (1) second consistent within the definition of continuous measurement at 40 CFR 80.2.²

Any facility wishing to utilize this general AMP approval must include a description of the frequency of measurement and how often such measurements will be recorded as part of their registration submission under 40 CFR 80.135. If the facility intends to meet the frequency specified in the definition of continuous measurement at 40 CFR 80.2, the facility should note that. If the facility wishes to use a less frequent measurement or recording frequency, the facility must specify what that frequency is and demonstrate how that frequency will result in measurement equivalent or better than the specified measurement and recording rates for continuous measurement at 40 CFR 80.2.

Accuracy, precision, and reliability comparison

The regulations at 40 CFR 80.135(c)(3)(iii)(F) and 80.135(d)(3)(iii)(F) require a comparison between the accuracy, precision, and reliability of the alternative measurement protocol and the requirements specified in 40 CFR 80.155(a)(1) and (2), as applicable, including any supporting data. In your March 11, 2024, submission, you included information including supporting data that compared the accuracy, precision, and reliability of Rotary-Type Gas Displacement flow meters and meters specified at 40 CFR 80.155(a)(2).

Based on our review of your March 11, 2024, submission, the listed VCSB standards, and other submissions requesting AMPs for Rotary-Type Gas Displacement flow meters, we have determined that Rotary-Type Gas Displacement flow meters that meet ANSI B109.3, EN 12480, ASME PTC 19.5, and OIML R 137 – 1 & 2 are as accurate, precise, and reliable as flow meters specified at § 80.155(a)(2) as long as the producer demonstrates that the Rotary-Type Gas Displacement flow meters are selected for use, as per the guidelines in ANSI B109.3, EN 12480, ASME PTC 19.5, and OIML R 137 – 1 & 2, and are compliant with the minimum accuracy and repeatability specifications in ANSI B109.3, EN 12480, ASME PTC 19.5, and OIML R 137 – 1 & 2.

Any facility using Rotary-Type Gas Displacement flow meters covered under this AMP approval should note in their registration submission under 40 CFR 80.135 that they are relying on the EPA's determination in this letter to demonstrate the comparison of accuracy, precision, and reliability of Rotary-Type Gas Displacement flow meters that meet ANSI B109.3, EN 12480, ASME PTC 19.5, and OIML R 137 – 1 & 2 and the meters specified at 40 CFR 80.155(a)(2) and describe how their Rotary-Type Gas Displacement flow meters comport with ANSI B109.3, EN 12480, ASME PTC 19.5, and OIML R 137 – 1 & 2.

² The regulations at 40 CFR 80.2 define "continuous measurement" as "the automated measurement of specified parameters of biogas, treated biogas, or natural gas as follows: (1) For in-line GC meters, automated measurement must occur and be recorded no less frequent than once every 15 minutes. (2) For flow meters, automated measurement must occur no less frequent than once every 6 seconds, and weighted totals of such measurement must be recorded at no more than 1 minute intervals. (3) For all other meters, automated measurement and recording must occur at a frequency specified at registration."