

Source and Site Level Reconciliation of Methane Emissions at the Midstream Sector





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This study evaluates the **snapshot reconciliation**, **an instantaneous comparison**, **of site and source level quantification methods** to understand how it can be implemented to verify current bottom-up data and provide midstream operators with recommendations to achieve consolidated Level 5 inventories





Context

- Efficient methane reduction efforts require reliable, measurement-based and transparent quantitative inventories.
- Site-level measurement technologies serve as essential tools for gathering data on





emissions at operational sites. However, significant knowledge gaps persist regarding the performance of these technologies in real-world conditions and their effective utilization to enhance the accuracy of reported data by operators.

Project Methodology

- A **field campaign** was carried out at a compressor station operated by Fluxys in Zelzate, Belgium. It involved an intensive two-day campaign where two distinct operational modes of one of the site's compressors were tested.
- During the campaign, different site-level methods were deployed in parallel with source-level techniques.







Photos Fluxys Belgium David Samyn

Key insights

 The analysis resulted in recommendations for implementing snapshot reconciliation in alignment with OGMP 2.0 guidelines, for the verification of Level 4 inventories with one point in time site-level measurements. Comparison of instantaneous source level and site level estimations for each relevant mode

- Source level instantaneous quantification (based on operational data the day of the measurements) incl. uncertainty range.
- Site level quantification incl. uncertainty range

Avoid focusing exclusively on the overlap of uncertainty bands, as this approach may result in lack of clarity about the next steps

Learnings from the comparison to be incorporated to a consolidated inventory

Verified/consolidated inventory per relevant mode In addition to overlap comparison, these questions may be more useful:

- Did the site level method identified any additional source not included in current inventory?
- Is there a clear over / under estimation of known sources? (e.g. bigger differences of approaches detected in one equipment).

Does the comparison show that variability in emissions is not properly captured for one or more sources in current inventory?

Examples of learnings:

- Include so far unknown sources
- Arrange further direct measurements/optimize quantification on sources where you have identified unknown variability or clear under/over estimation

Recommendations prioritize identifying and addressing areas of improvement in the quantification, rather than primarily focussing only on the potential overlap between site and source level approaches, as site-level methods uncertainties are high, and in real-world environments often significantly outside the accuracy claimed by measurement technology vendors.

The outcomes of this study offer valuable insights into several key aspects:

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- (I) Performance of Site-Level Methods: Understanding the capabilities and limitations of site-level quantification methods in real-world field conditions. It is our understanding that this is the first time that such an extensive benchmarking of commercially available site-level measurement methods has been performed, which should be of high value to industry and regulators selecting and approving measurement technologies.
- (II) Reconciliation Recommendations: Providing practical guidance for implementing effective reconciliation procedures, focusing on achieving robust and transparent methane inventories. It is advisable to shift the focus away from the overlap of uncertainty ranges and instead use the analysis to identify current inventory gaps, ensuring the development of robust inventories that can be improved year after year.

