Vaisala advances direct air and point source carbon capture with cutting-edge measurement solutions

Vaisala's MGP241 and CO□ instruments revolutionize carbon capture with unmatched accuracy, efficiency, and cost savings across systems

BURLINGTON, MA, UNITED STATES, April 16, 2025 /EINPresswire.com/ -- As the demand for scalable carbon capture technologies grows across industries, Vaisala sets a new standard for precision and efficiency in both direct air capture (DAC) and point source carbon capture with its innovative MPG241 multigas probe and comprehensive suite of CO2 measurement technologies.

CO□ measurement in carbon capture systems traditionally relies on large, complex extractive gas analyzers housed in bulky instrumentation racks with intricate pumping systems. Vaisala's approach replaces cumbersome systems with compact, inline measurement instrumentation that delivers continuous, real-time data, minimizes maintenance and calibration, and dramatically reduces costs.

"If you haven't measured it, you haven't captured it," "said Antti Heikkilä, Vaisala's Product Line Manager, Industrial Decarbonization. "By continuously providing precise, real-time CO□ data at critical points in carbon capture processes, our solutions help operators optimize plant operations, reduce energy consumption, and ensure transparent emissions reporting," continued Heikkilä. DAC and point source are fundamentally different approaches to carbon capture. DAC captures CO□ molecules from the atmosphere, requiring the enrichment of CO□

concentrations from approximately 420 parts per million to over 95% volume. Point source capture, in contrast, captures CO□ emissions from industrial sources — power plants, cement kilns, steel mills, etc. — where CO□ concentrations are already significantly higher.

Despite these differences, the demand for precise measurement throughout the capture process endures as a unifying factor. Vaisala's comprehensive CCUS product portfolio enables accurate monitoring at three key points: incoming gas, high-concentration product gas, and lean gas returning to the atmosphere. In both applications, real-time measurement allows operators to verify CO□ removal rates and optimize plant performance using mass balance calculations, a critical tool as carbon capture operations scale up to millions of tons of CO□ removal annually.

Transforming measurement technology for a new era of carbon capture
For DAC applications, Vaisala offers both ppm-level CO□ measurement instruments and the MGP241 for high-concentration gas streams, ensuring accurate monitoring at every stage of the process. Precise CO□ measurement helps evaluate sorbent efficiency, optimize adsorption-desorption cycles, and maintain energy efficiency. Additionally, Vaisala's weather and environmental sensors provide fundamental environmental data — such as wind speed, humidity, and temperature — that impact DAC system performance.

In point source capture, the MGP241 provides in-line measurement at multiple locations, eliminating the need for complex extractive sampling systems. Accurate CO□ measurement before and after the capture process enables operators to verify the capture rate, detect potential process inefficiencies, and comply with emissions regulations.

Regardless of the approach required, as carbon capture facilities transition from pilot projects to fullscale operations, precise measurement is essential—not only for the success of these facilities but also for advancing the global fight against climate change.

Visit Vaisala.com for more information on carbon capture measurement solutions.

About Vaisala
Vaisala is a global leader in measurement instruments and intelligence for climate action. We equip our customers in carbon capture, utilization and storage with devices and data that help improve their measurement and process efficiency, transparency and robustness. With almost 90 years of innovation and expertise, we employ a team of over 2,300 experts committed to taking every measure for the planet.

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