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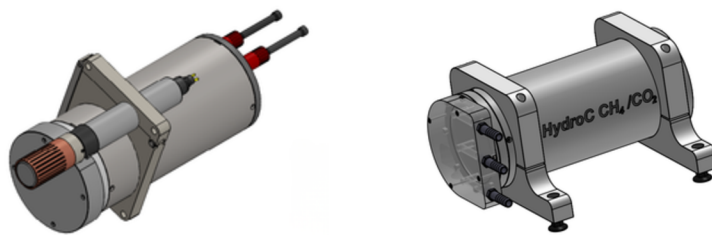


-4H-JENA ENGINEERING LAUNCHES CONTROS HYDROC™ CH₄/CO₂ COMBI – INTEGRATED METHANE AND CARBON DIOXIDE SENSING FOR SUBSEA AND FLOW-THROUGH APPLICATIONS

-4H-JENA engineering GmbH today announced the launch of the CONTROS HydroC™ CH₄/CO₂ Combi, expanding the proven CONTROS HydroC™ family with combined methane (CH₄) and carbon dioxide (CO₂) detection in a single compact sensor platform. Designed to reduce subsea hardware complexity while delivering reliable in-situ data, the new product line supports demanding scientific and industrial monitoring tasks – from long-term ocean observations to offshore integrity and leak detection.

Following successful early deployments, the first HydroC™ CH₄/CO₂ Combi systems are already in operation, with additional customer evaluations underway.

Monitoring both CH₄ and CO₂ is increasingly important for understanding and managing greenhouse gas pathways in marine systems, as well as for operational applications such as subsea leak detection and CCS monitoring. By integrating both gases into one device, the HydroC™ CH₄/CO₂ Combi helps users save space, weight and energy, while simplifying installation and system architecture.



Two configurations – subsea and flow-through

To support a broad range of deployment scenarios, the HydroC™ CH₄/CO₂ Combi is available in two versions:

- HydroC™ CH₄/CO₂ Combi (Subsea) – a pressure-tolerant solution for deep-sea operation up to 6,000 m, suitable for integration into ROVs, AUVs, moorings, observatories and lander systems. The subsea version uses a robust tough-membrane concept optimized for long-term underwater deployments.
- HydroC™ CH₄/CO₂ FT Combi (Flow-Through) – designed for flow-through measurements in water, and additionally available for CH₄/CO₂ measurements in air. For air operation, the FT version features an ePTFE membrane, enabling flexible use in shipboard and laboratory setups as well as air–sea exchange studies.

How it works – robust sensing for long-term data

In operation, seawater is guided through the sensor flow head. Dissolved CH₄ and CO₂ diffuse through the sensor's membrane interface into an internal gas circuit and are routed to the detector chambers. The subsea version is based on a tough-membrane design for long-term underwater operation, while the FT version uses an ePTFE membrane for air measurements (in addition to water operation). CO₂ is measured via high-precision NDIR, while CH₄ is measured with TDLAS to provide high sensitivity and selectivity. Calibration coefficients stored in the sensor firmware convert concentration-dependent signals into output data, supported by additional reference sensors inside the gas circuit.

Key benefits

- Combined CH₄ + CO₂ in one compact system to reduce below-surface complexity
- Deep-sea capability (up to 6,000 m) for long-term subsea deployments (subsea version)
- Water and air measurement capability for flexible monitoring workflows (FT version)
- Robust membrane concepts tailored to subsea and air/flow-through operation (tough-membrane / ePTFE)
- User-friendly operation with CONTROS DETECT® software (real-time visualization, configuration, data download)
- “Plug & Play” delivery concept with cables, connectors and software included

“By combining methane and carbon dioxide detection in one compact HydroC platform, we are making it easier for customers to deploy greenhouse gas monitoring at scale—whether on autonomous subsea platforms, shipboard flow-through systems or fixed stations,” said Uwe Posner, Senior Sales Manager at -4H-JENA engineering GmbH. “This launch is a strong addition to the HydroC family and supports both research and operational monitoring with reduced effort and high-quality data.”

Designed for

The HydroC™ CH₄/CO₂ Combi supports a wide range of applications, including:

- Climate studies and long-term environmental monitoring
- Ocean acidification and greenhouse gas research
- Air–sea gas exchange studies (incl. air measurement capability via FT)
- CCS-MMV projects (monitoring, measurement, verification)
- Offshore energy and subsea infrastructure monitoring / leak detection
- Limnology, freshwater control and aquaculture monitoring

Availability and options

The HydroC™ CH₄/CO₂ Combi and HydroC™ CH₄/CO₂ FT Combi are available now. Typical options include internal data logging, anti-fouling solutions, and integration packages depending on the deployment scenario. Customers can also integrate the sensor into advanced observing systems such as -4H-FerryBox or stationary research stations.

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