

Filling the Methane Gaps

The UNECE ,UNEP CCAC, Pilot Projects for Methane Management

In stages it is proposed to create the models for a full audit of the existing European supply and transportation systems the project targets natural gas facilities and coal mines, this may be expanded as a model to other sectors, within the UNECE member states and to the developing world in cooperation with UNEP internationally.

This includes options to be linked to capacity building, proposed as a project based activity

Objectives are to undertake these direct project based activities in order to facilitate interagency models transfers for the member nations of UNEP ,the CCAC, and the member nations of the UNECE.

The European union and other key UNECE member States have developed capacities for the lab services required to characterise methane moreover the screening services are now well established in some region of Europe.

The proposed characterised models then be used reported for regulatory compliance, or carbon tax assessment's, or as project based activity for cap and trade systems at the discretion of UNECE Member State.

All of these sectorial national programmes require an accurate baseline to report then reduce methane fugitive emissions from the wellheads to the sales and distribution points. In both in the coal sector and oil and gas sector within the extractive industries methane and black carbon are now the focus of the UN Bodies.

The UN ECE PoA project target regions for CMM and NG systems monitoring



Technical Objectives

Both operators and project developers have concerns about both the costs and labour involved in accurate sustainable reporting; we propose that a new combined technical solution may address these issues.

New procedures for stable isotope analysis may be used to identify and characterize specific signatures within organic compounds, i.e. biomarkers maybe used to develop baseline and form a methane isotope and other gases database

As an addition a fibre optic sensing network deployed to add safety, increased security, and allow for sustainable reporting of emissions reductions through the sensing network, our long-term research has been on the Whistle effect, or the acoustic frequencies generated by gas escaping, from a pressure vessel, to atmosphere.

In terms on project monitoring the isotopic sampling systems allow more accurate monitoring of natural gas, for example long sections of pipeline in remote locations in a data set compatible with the past EU DG integration, and research activities.

Our recent focus has been on methane isotope characterisation for creation of methane fugitive emissions database for production of non conventional natural gas and produced and transported natural gas and coal mines.

UNEP CCAC methane data base supporting the “Technology Application Approach to Addressing 9 core emission sources”*

- The CCAC 9 core emission sources of oil and gas methane fugitive emissions
- 5 Downstream and midstream
- Fugitive equipment and process leaks Stage One Screening is the target, then with each operator we may target the other identified sources this includes but is not limited to :
 - Natural gas driven pneumatic devices, pumps
 - Centrifugal compressors with wet (oil) seals
 - Reciprocating compressor rod seal/packing
 - Glycol dehydrators
- 4 Upstream
 - Well venting of liquids unloading
 - Hydrocarbon liquid storage tanks
 - Well venting/flaring during well completion
 - Casinghead gas venting for hydraulically fractured wells
- *CCAC Oil and Gas Methane Partnership Final 5.12.14.pptx

Survey Process: NG system Baseline

- Process:
 1. Each block valve is part of a GPS cluster where a GIS location is applied.
 2. The location is then scanned with remote sensing tools, screening, and systems.
 3. The major culprit valves, those leaking, fugitive methane emissions, are then identified and with the GIS tagged within the GPS cluster assigned with a unit number.
 4. The GPS map is then used to monitor to the Tagged Culprit valves and measured , for baseline, with a High Flow measurement recording.
 5. The Excel spread sheet record of the culprit valves fugitive emissions then serve as a baseline record of methane fugitive emissions.
 6. An engineered solution, this can include a mechanical upgrade is then applied.
 7. Another High Flow measurement, or screening for leak –no leak is then taken and the methane reduction is then converted to a carbon offset based on the differential of the baseline measurements.
 8. The operator then establishes a monitoring program using the screening process and whenever a fugitive emission is detected the High Flow meter, and or other approved meters are used to quantify the leak rate and the accounting processes then make an adjustment in the claim of reduction. Options include the installation of a fixed fiber optic systems and isotopic monitoring both can enable continuous monitoring; this application is for the systems to provide security for pipeline systems is an option supporting baseline screening and security applications.

Pilot Projects Goals

- Generation of additional offsets
- Based on a new Programmatic CDM AM 0023 Version , 4.0 ACM 0009
- High-level timing goals targeting cooperation within the UNECE and the Governments of the membership of the UNEP CCAC



Technical Transfers as project based capacity building

In Poland the UNECE GMI CMM Center of Excellence is in place . A new model using methane isotope characterization is proposed in order to then establish a more accurate reporting model, additional to existing current standard.



In stage one of the Oil and Gas sector project the prefeasibility study includes interviews with field engineering staff . As the program targets advanced leak detection and repair the early stages screening services must be coordinated with the local engineers.

For field engineers a local facility would be required equipped with the following curriculum development and local capacity building : Equipment and Service Suppliers presentations with equipment (white board, clip board, etc.); options for simultaneous translation equipment when required; a cloud based computer network, audio and video equipment for CBT multi media block, overhead and slide projectors . This model can then promoted globally through the UNEP , CCAC , UNECE Methane Partnership

Natural Gas Conservation

- A programmatic approach to reduction of controllable methane emissions.
- The proposed project is promoting multi-lateral cooperation with a number of nations contributing to the program of development for energy conservation
- Within the UNECE membership many bilateral , and multilateral agreements are already in place can allow for technologies transfers from a wide number of suppliers whose technologies are suited to the projects operating environment The Climate and Clean Air Coalition to Reduce Short-Lived Climate Pollutants (CCAC) is a voluntary global partnership of governments, intergovernmental organizations, business, scientific institutions and civil society committed to catalyzing concrete, substantial action to reduce SLCPs (including methane, black carbon and many hydrofluorocarbons).
- The Coalition works through collaborative initiatives to raise awareness, mobilize resources and lead transformative actions in key emitting sectors. CCAC SECRETARIAT hosted by the United Nations Environment Programme
- 15 RUE DE MILAN — 75441 PARIS — FRANCE WWW.CCACOALITION.ORG

UNEP unveils low-cost device for air quality monitoring

- On 1 September 2015 – A ground-breaking air quality measuring device expected to cost up to 100 times less than existing solutions has the potential to “revolutionise” air quality measurement in developing countries and help prevent deaths from air pollution that claim 7 million lives each year, according to the United Nations Environment Programme (UNEP).
- “We know from the World Health Organisation (WHO) that 88 per cent of deaths related to outdoor pollution occur in low- and middle-income countries,” said UNEP Executive Director, Achim Steiner. “Yet it is these same developing countries that typically lack access to data on their air quality.”
- “UNEP's device can spark a data boom to help countries reduce the negative effects of air pollution, potentially saving lives that would have been lost due to air pollution-related illnesses,” Mr. Steiner explained.
- **UNEP Air Quality Monitoring Unit**
- To enable more developing countries to monitor air quality and estimate the health effects, especially in vulnerable human populations and ecosystems, UNEP is designing an affordable national air quality monitoring network based on UNEP Air Quality Units to measure PM 1, PM 2.5, PM 10, SO_x, NO_x, temperature, humidity, location (future units will also have the capability to measure VOC and O₃).
- The overall cost for a typical national air quality monitoring network based on the UNEP Air Quality Unit will range from \$100k - \$200k, as compared to \$250k - which is the current cost of single typical high precision instrumentation station.
- UNEP will publish the blue print for the UNEP Air Quality monitoring Unit as a global public good.

PPI Inc has proposed linkage to the central data portal for a European-wide Greenhouse Gas monitoring network

Filling the Methane Gaps

UNECE UNEP and the CCAC propose EU linkage to the ICOS a pan-European research infrastructure for quantifying and understanding the greenhouse gas balance of the Europe and neighbouring region's.

ICOS Carbon Portal is a junction between researchers and others interested in carbon data and climate change. The aim is to provide data for further research, {and project based activities } but also to provide the general public with easy accessible visualizations of climate research.

The Carbon Portal offers access to research data from ICOS scientists all over Europe, as well as easily accessible and understandable science and education products. All measurement data available in the portal is quality controlled through the three thematic centers, divided into Ecosystem, Atmospheric and Ocean Thematic Centers and a Central Analytical laboratory.

Dedicated researchers all over the world will contribute to the elaborated products catalogue and through past EU supported programs the EU capacities' to both characterise and monitor methane fugitive emissions is in place

These past EU DG supported programmes have developed the European scientific capacity to create a new CO2 GHG data base and have a more limited capacity to support a dedicated UN methane data base for the member nations within the regions of the UNECE and now under formal interagency UNECE UNEP partnership can address the main sources of controllable methane fugitive emissions from two key sectors, oil and gas and coal mines.

Facilities screening with DATASETS FROM DATAGURU

- The EU Carbon Portal provides access to external and internal datasets using web standard interfaces (e.g. WCS) for automated access to the data and will offer graphical interfaces for human users. The kind of data that can be explored and downloaded is shown by this DataGURU application developed at Lund University.
- This demonstrates the use of a graphical interface to search, find, select and access data. In the ICOS Carbon Portal the underlying data architecture will be completely different, and we will develop our own human interfaces, but this DataGURU app gives nevertheless a good idea of how things will work and look like. <https://www.icos-cp.eu>
- This addition the methane database proposal represents the lower cost for screening and monitoring natural gas in two key energy sectors and by using and the recording of the proposed methane emissions within these systems applications isotopic signature provides a platform for further collaboration within the EU , and globally within the linkage to the UNECE , Committee on Sustainable Energy and the partnership with the UNEP CCAC

Meetings and Presentation Agenda Nov /Dec 15

Driver

Methane is now known to be a Ozone depleting substance

Methane with a lighter weight transports to the upper layer of Ozone and attaches itself to the Ozone , creating a different compound for a cycle between 12 and 22 years it then converts back to a methane compound , Ozone , and water .

The water as vapor in the atmosphere being denser increases the global warming factor to 84 times CO2

24th Session of the Committee on Sustainable Energy

18 - 20 November 2015 Salle VII, Palais des Nations, Geneva

Under this year's theme of Pathways to Sustainable Energy, the 24th session of the Committee on Sustainable Energy offers the possibility to member States to review progress of the implementation of the programme of work 2014-2015 before discussing and endorsing the future programme of work 2016-2017 and the strategic framework of the UNECE sub-programme on sustainable energy 2018-2019.

Filling the Methane Gaps is proposed

The focus of the meeting will therefore be on the Committee and its six subsidiary bodies on energy efficiency, cleaner electricity production, coal mine methane, gas, renewable energy and resource classification and how the work has been contributing to solutions sought by member States in sustainable energy. Five groups of experts also need to prepare their work plans for 2016-2017.

<http://www.unece.org/index.php?id=38539#/>

Event CCAC High Level Assembly

DEC 8 Paris The Climate and Clean Air Coalition to Reduce Short-Lived Climate Pollutants (CCAC) High-Level Assembly will gather CCAC ministers and Heads of partner organisations to evaluate the CCAC's progress, provide input on the direction of the CCAC's future work and learn about the latest policy and scientific developments related to short-lived climate pollutants (SLCPs).

read more: <http://climate-l.iisd.org/events/ccac-high-level-assembly-3/> <http://climate-l.iisd.org/events/ccac-high-level-assembly-3/>

6th UNECE Gas Centre Industry Forum

- 16 December 2015

(starting at 10.00 hours), Salle XII, Palais des Nations, Geneva

<http://www.unece.org/index.php?id=39216#/>