



New Technology in Gas analysis

CO₂ quality Analyzer Line for CIB (Consorzio Italiano Biogas) – Ecomondo

07/112024

In partnership with



ETG present and future

- ETG designs and manufactures advanced and innovative gas analyzers for Industrial market, Universities and R&D Institutes
- Advanced technology and Innovative solutions (production and distribution)
- Complete project management
- Planning, start up and service

ETG location and quality certification

ETG New location
New Laboratories



QA International has certified
ETG RISORSE E TECNOLOGIA
complies to the standard
UNI EN ISO 9001: 2015 (ISO 9001:
2015)

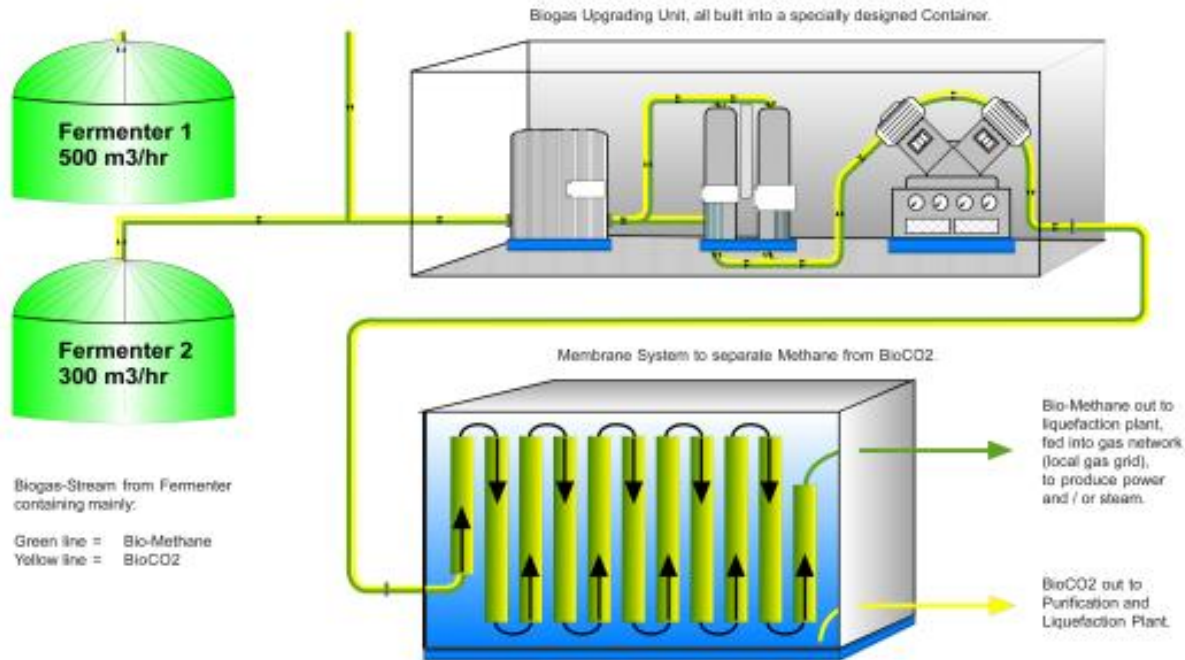
Production :

- Biogas and Syngas Analyzers (ETG 6500/MCA100/MCA100 P)
- TDL gas analyzers ETG 6900 / ETG Drone for CH₄ leak
- Calibrators (CAL G100)
- FTIR ETG 9500
- (Portable) Emission Analyzers (ETG 7600)
- ETG QE-PAS Ambient Gas Analyzers (ETG 8900 QEPAS)
- Special products (ETG 7500, SEMICONDUCTOR SYSTEM)
- Other projects running



CO₂ quality application

BIOGAS Plant with BIOGAS Upgrading Modules to separate Bio-Methane from BioCO₂.



Continuous measurement of bioCO₂ from recovery plants and storage tanks

Standards EIGA and ISBT

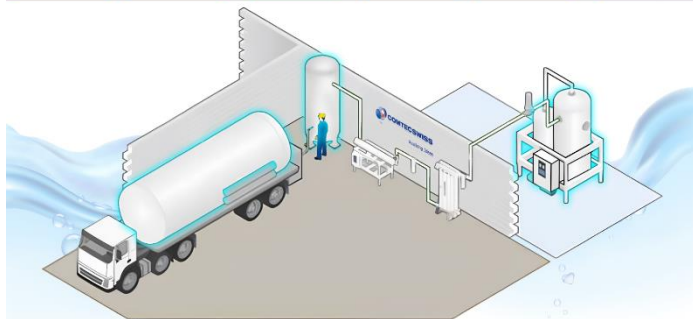
- Aldehydes < 0.2 ppm FTIR
- Ammonia < 2.5 ppm FTIR
- Carbon Monoxide < 10 ppm FTIR
- Ethanol < 0.2 ppm FTIR
- Methanol < 0.2 ppm FTIR
- Mercaptan (PFUV)
- Benzene < 0.02 ppm (GC PID)
- SO₂ < 1 ppm (PFUV)
- H₂S < 0.1 ppm (PFUV)
- H₂O < 20 ppm (FTIR)
- Xylene < 1 ppm (GC PID)
- Phospine < 0.3 ppm FTIR
- NO < 2.5 ppm FTIR
- NO₂ < 2.5 ppm FTIR
- Acetone < 0.2 ppm FTIR
- HCN < 0.5 ppm FTIR
- Ethane < 20 ppm FTIR
- Propane < 20 ppm FTIR
- Pentane < 20 ppm FTIR
- Benzene < 0.02 ppm (GC PID)
- O₂ < 30 ppm (ECD)
- CO₂ 99.9% purity FTIR



Main features

- Continuous analysis from CO₂ capture plants and tanks
- EIGA and ISBT compliance for Food Grade purity CO₂
- Up to 6 sampling points
- Automatic cycle and manual operation
- Simple to use, with advanced Graphical User Interface

Main Control Window and compliance certificates



STATUS: on Testing 09-09-06



Name	Values	Unit	Name	Values	Unit
O2	106.13	ppm	Toluene	0.00	ppb
MFC1	2.40	l/min	Ethylbenzene	0.00	ppb
MFC2	0.20	mL/min	m-p-xylene	0.00	ppb
NFM	0.61	l/min	O-xylene	0.00	ppb
SO2	1.12	ppb	1,3-Butadiene	0.00	ppb
TRS	1.31	ppb	CO2	99.99893	%Vol
Benzene	0.00	ppb	H2O	0.00	ppm

Status: FROM GUI 11:41:07



CARBONIC 4401
CO2-Gas Analysing Certificate
Protocol

CARBONIC 4401 CO2-Gas Analyser Certificate

Final Summary of Test executed

tested value of CO2-Purity 99.98%

CO2-Humidity in dew point / ppm - 56°C 18.2

Source of Sampling 02 from CO2-Recovery Plant

Analysing Start Date and Time 29.07.2024 08:33

Analysing finished Date and Time 29.07.2024 09:30

We hereby certify that the CO2-Gas Analysis Report has been made according to Specification of ISBT- and EIGA-Specification for Food Grade CO2 for the Food- and Beverage Industry.

CO2-Analysis Report has been issued for:

Company Name

Place

Truck Plate

Driver's Name

Additional Information

COMTECSWISS AG Realizing Ideas
Fuchsbühlstrasse 6
8580 Arbon / Switzerland

Swiss Design and Performance
Tel. +41 71 411 81 38
Fax +41 71 411 81 69
E-Mail: info@comtecswiss.com

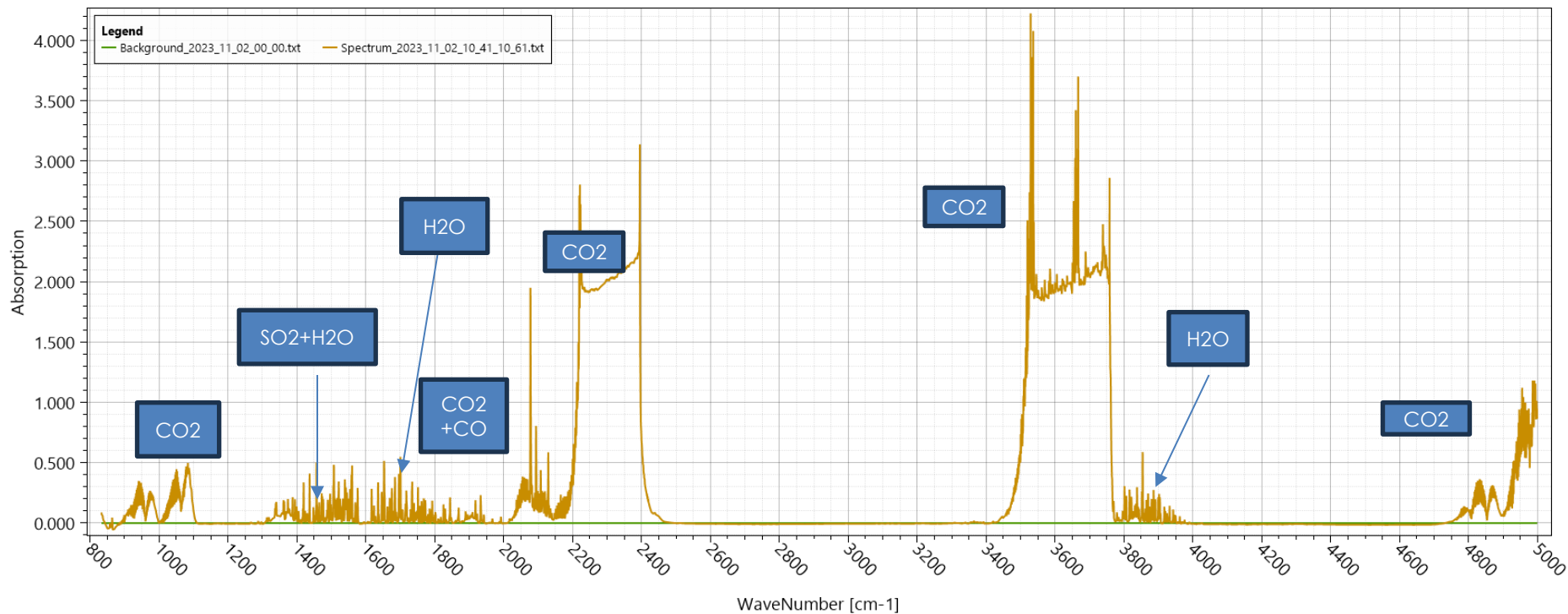


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The results of the probe of CO2 is as follows: from PLANT COMPLIANT

Test Parameter	U.M.	Test Method	Test Result	Specification
CO2	%Vol	FTIR	99.994	>99.99
H2O	ppm	FTIR	0.000	<20
CO	ppm	FTIR	0.000	<10
NH3	ppm	FTIR	0.000	<2.5
NO	ppm	FTIR	0.000	<2.5
NO2	ppm	FTIR	0.000	<2.5
O2	ppm	ECD	7.532	<30
CO5	ppm	FTIR	0.000	≤0.1
HCN	ppm	FTIR	0.000	<0.05
PH3	ppm	FTIR	0.000	<0.3
CH4	ppm	FTIR	0.000	≤0.05
tot. Hydrocarbons	ppm	FTIR	0.000	≤50
Heavy Hydrocarbons	ppm	FTIR	0.000	0
Unsaturated Hydrocarbons	ppm	FTIR	0.000	0
Alcohols	ppm	FTIR	0.000	<20
Phenols	ppm	FTIR	0.000	<20
Acetone	ppm	FTIR	0.000	<100
Ethylene Oxide	ppm	FTIR	0.000	<100
Formaldehyde	ppm	FTIR	0.000	<100
Acetaldehyde	ppm	FTIR	0.000	<0.2
Ethylene glycol	ppm	FTIR	0.000	<100
Vinyl Chloride	ppm	FTIR	0.000	<100
Benzene	ppb	GC-PID	0.000	<20
Toluene	ppb	GC-PID	0.000	<1500
Ethylbenzene	ppb	GC-PID	0.000	<1500
m-xylene	ppb	GC-PID	0.000	<1500
O-xylene	ppb	GC-PID	0.000	<1500
1,3-Butadiene	ppb	GC-PID	0.000	<100
SO2	ppb	PFUV	1.242	<1000
TRS	ppm	PFUV	0.000	<100

CO₂ High concentration ~ 100% Spectrum Example

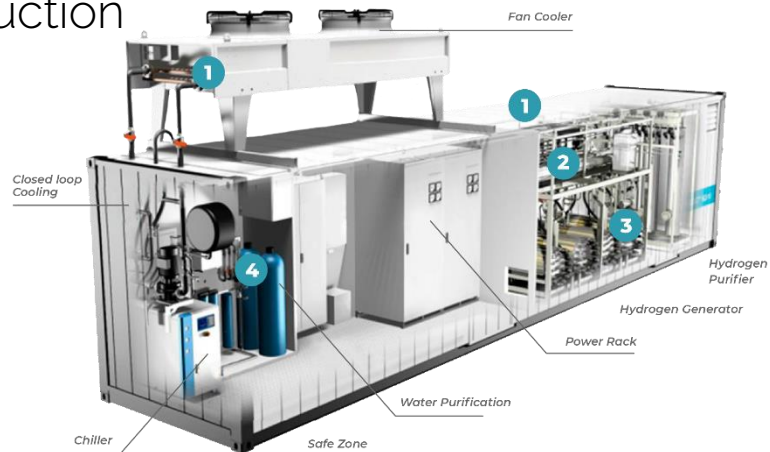


ISO 14687 contaminants

- Water
- Total Hydrocarbons
- Methane
- Oxygen
- Nitrogen
- Carbon Dioxide
- Carbon Monoxide
- Total sulphur compounds
- Formaldehyde
- Formic Acid
- Ammonia

Hydrogen Application (examples..)

- Metallurgic industry
- Pyrolysis
- Fuel cells
- H₂ production



Thanks for the attention

Umberto Serra – u.serra@etgrisorse.com

Fabrizio Manassero – manassero@etgrisorse.com

