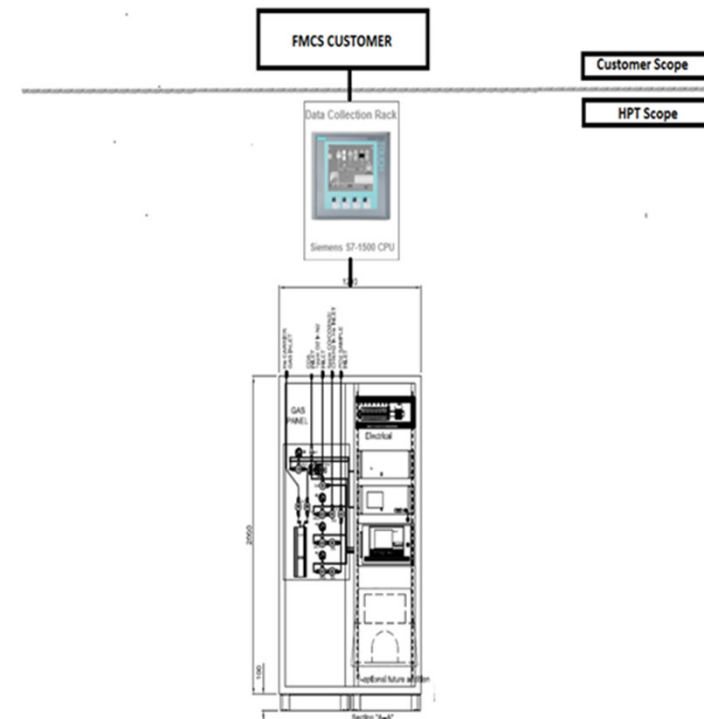


# Analytical Systems CQC

# MI/HPT

## Analyzers specifications

- Independent system integrator. Choice of the best analyzers for the application
- Class 100 clean room assembly, orbital welding, minimization of dead volumes.
- Selection of state-of-the-art components for all wetted surfaces
  - 316 SSL <10 micrometer
- Construction according to SEMI Standard F-20.
- Scada and connection to Customer FMCS
- FMCS installation, maintenance and support at all ST Micro sites by fully trained MI personnel



# Moisture analysis

## Market Players



Tiger Optics Halo KA Max



Servomex Series 700



Meeco

Supplier	Analyser	Technology	Sensitivity Top Model	Notes
Tiger Optics	Halo KA Max	CRDS Laser	ppb	Well accepted by the industry. Probably market leader in semi
Servomex	Series 700	TDL Laser	ppb	Well accepted by the industry.
Meeco	acquavolt	P205	ppm	For PPM requirements best option quality/price

Several options depending on the measurement level requested

# ● Oxygen analysis

## Market Players



Tiger Optics Halo



Servomex Series 500



Servomex Series 4100

Supplier	Analyzer	Technology	Sensitivity Top Model	Notes
Tiger Optics	Halo	Indirect measurement than CRDS Laser	Ppt-ppm	Not a direct measurement. Converts O2 into moisture by adding H2. It requires H2 supply.
Servomex	Series 500	Electrochemical	PPT	Market leader. Direct Measurement
Servomex	4100	Paramagnetic	PPM level	Market lider with the gas companies for PPM measurement

Several options depending on the measurement level requested

Market Players



AS Devices KA 8000

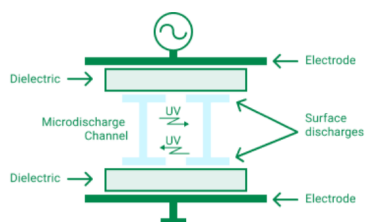
Supplier	Analyser	Technology	Sensitivity Top Model	Notes
AS Devices	KA 8000	Gas Chromatography Plasma emission	100 ppt	Most advanced of its kind. Modular design. Built by the 'inventors' of the Nanochrome. One chassis. TCP/IP for trouble shooting.

Plasma Technology, no hydrogen needed

### Stabilized dielectric barrier discharge (DBD)

PATENTED

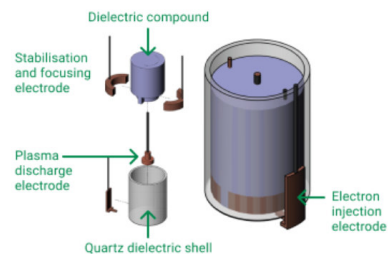
At the core of our Epd technology, a highly energetic plasma source is used to ionize molecules. Its unsurpassed performance is a result of the Epd stabilized dielectric barrier discharge. The DBD isolates the discharge electrodes from the ionized plasma, eliminating sputtering, cell inner wall coating and analyte interference.



### Compound electrode

PATENT PENDING

This major breakthrough comes from our innovative compound electrode (patent pending). By nature, DBD generates streamer discharges. This results in a noisy signal impacting the signal-to-noise ratio. The main advantage of our technology is that unlike other DBDs or plasma emission detectors (PEDs), our stabilization and electron injection electrodes (patent pending) are embedded in the compound electrode. This enables the electrode to improve stability by sweeping away the accumulation of charges on the inner surface wall.

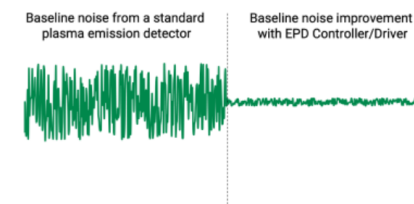


### Epd controller/driver

Even on its own, our compound electrode is unique. The level of performance achieved by the Epd, however, could not be attained without close control over various parameters that affect discharge power distribution. This is the purpose of the Epd controller/driver.

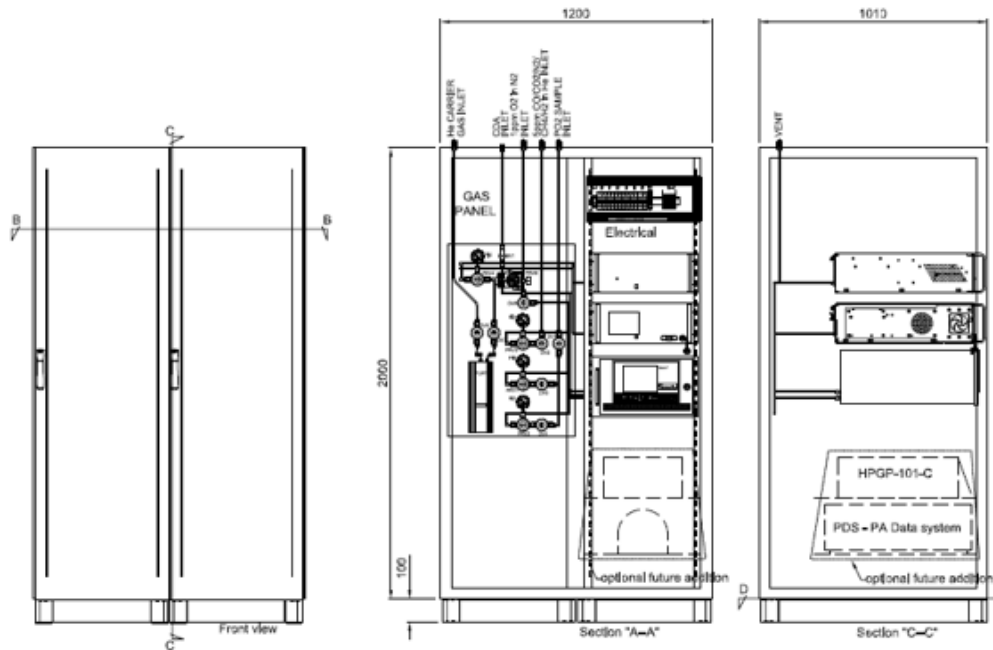
- Force-driven plasma discharge signal improves plasma
- stability compared to other plasma sensing technology
- Adaptive control of driving voltage and frequency
- Stabilization field automatically

#### BENEFITS OF EPD CONTROLLER/DRIVER



# Analytical systems

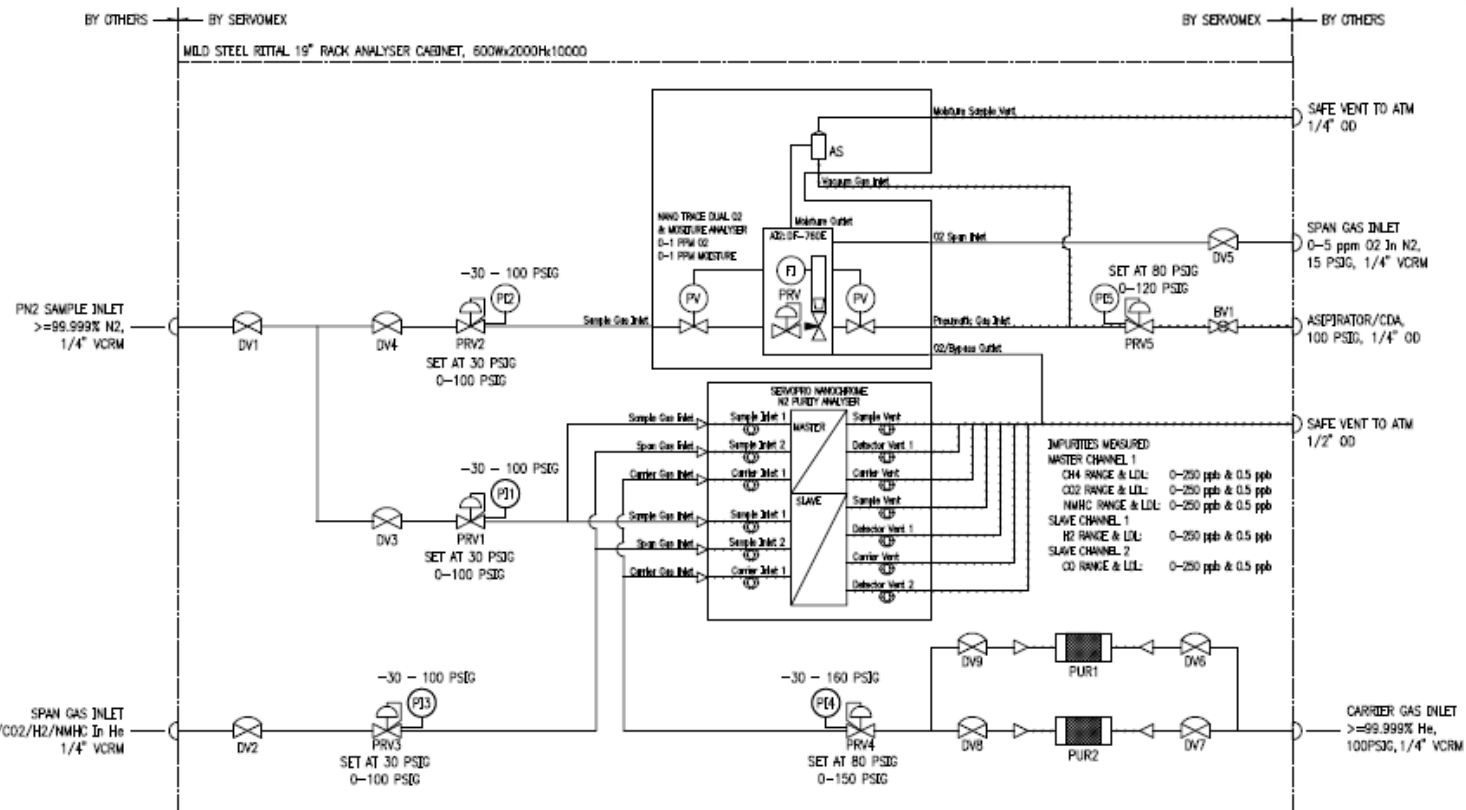
Example of a N2 analytical rack



Typical components

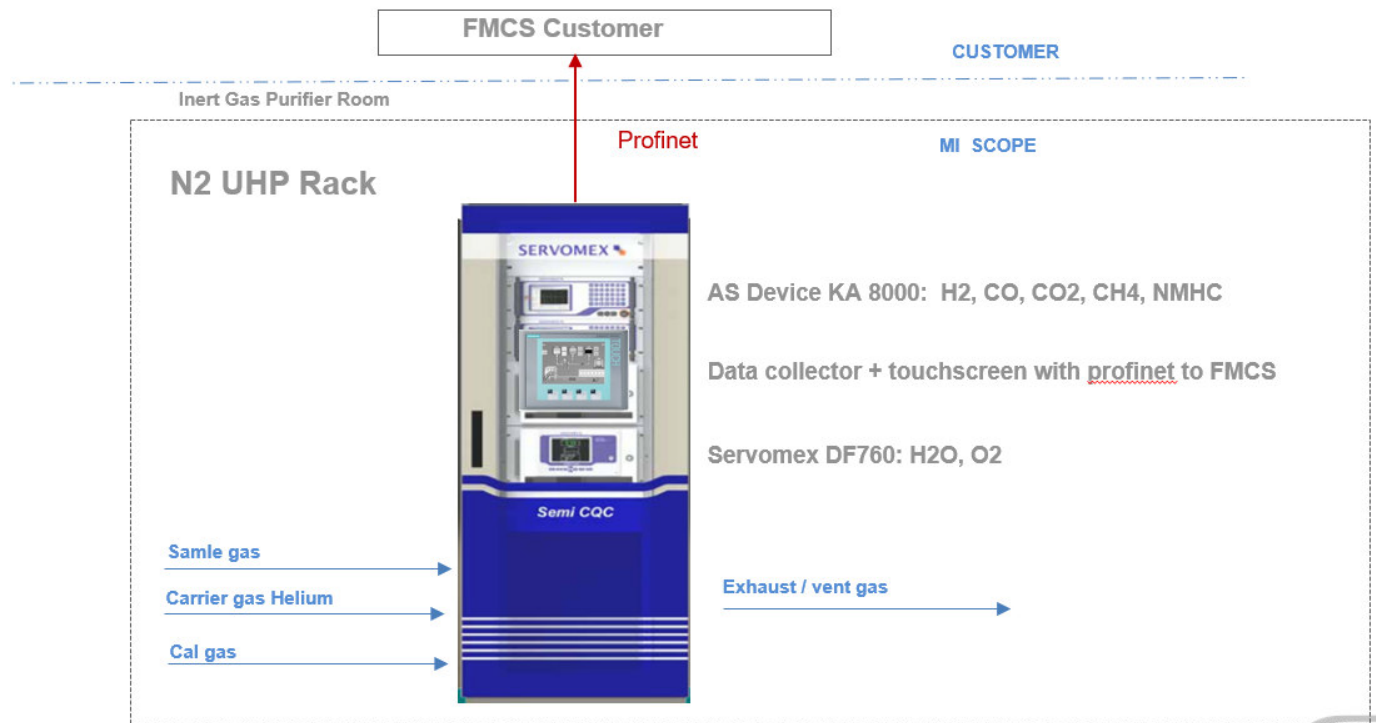
RIF.	DESCRIZIONE	MARCA	CODICE	Q.
DV1	MANUAL VALVE	SWAGELOK	8LVV-DPFR4-P1	1
DV2	MANUAL VALVE	SWAGELOK	8LVV-DPFR4-P1	1
DV3	MANUAL VALVE	SWAGELOK	8LVV-DPFR4-P1	1
DV4	MANUAL VALVE	SWAGELOK	8LVV-DPFR4-P1	1
DV5 / DV5A	MANUAL VALVE	SWAGELOK	8LVV-DPBW4-P-GR	2
DV6	MANUAL VALVE	SWAGELOK	8LVV-DPFR4-P1	1
DV7 / DV7A	MANUAL VALVE	SWAGELOK	8LVV-DPBW4-P-GR	2
DV9 / DV9A	MANUAL VALVE	SWAGELOK	8LVV-DPBW4-P-GR	2
DV11	MANUAL VALVE	SWAGELOK	8LVV-DPFR4-P1	1
DV12	MANUAL VALVE	SWAGELOK	8LVV-DPFR4-P1	1
BV1	MANUAL VALVE	SWAGELOK	SS-4P-4T	1
PRV1	PRESSURE REGULATOR	SMC	AR30 + PRESSURE GAUGE	1
PRV2	PRESSURE REGULATOR	APTech	AP 1010 SM 2PW MV4 MV4	1
PRV3	PRESSURE REGULATOR	APTech	AP 1010 SM 2PW MV4 MV4	1
PRV4	PRESSURE REGULATOR	APTech	AP 1010 SM 2PW MV4 MV4	1
PRV5	PRESSURE REGULATOR	APTech	AP 1010 SM 2PW MV4 MV4	1
PRV6	PRESSURE REGULATOR	APTech	AP 1010 SM 2PW MV4 MV4	1
PI 2	PRESSURE GAUGE	BROOKS	C122 -30 / 0 / 100 PSIG VCRF	1
PI 3	PRESSURE GAUGE	BROOKS	C122 -30 / 0 / 100 PSIG VCRF	1
PI 4	PRESSURE GAUGE	BROOKS	C122 -30 / 0 / 100 PSIG VCRF	1
PI 5	PRESSURE GAUGE	BROOKS	C122 -30 / 0 / 100 PSIG VCRF	1
PI 6	PRESSURE GAUGE	BROOKS	C122 -30 / 0 / 100 PSIG VCRF	1

# Analytical Systems piping diagram





# ● Analytical systems



## ● Maintenance and Calibration intervals

Monthly:

- Span Calibration of AS Device ( H<sub>2</sub>, CO, CO<sub>2</sub>, CH<sub>4</sub>)
- Top up O<sub>2</sub> cell of DF760 with replenishment solution (2 monthly)

3-6 Monthly:

- Span calibration O<sub>2</sub> DF750

Yearly + :

- Zero the oxygen analyzers
- Change the purifier of carrier gas (every 3 to 4 years)