



OVIVO

ONLINE THM ANALYZER



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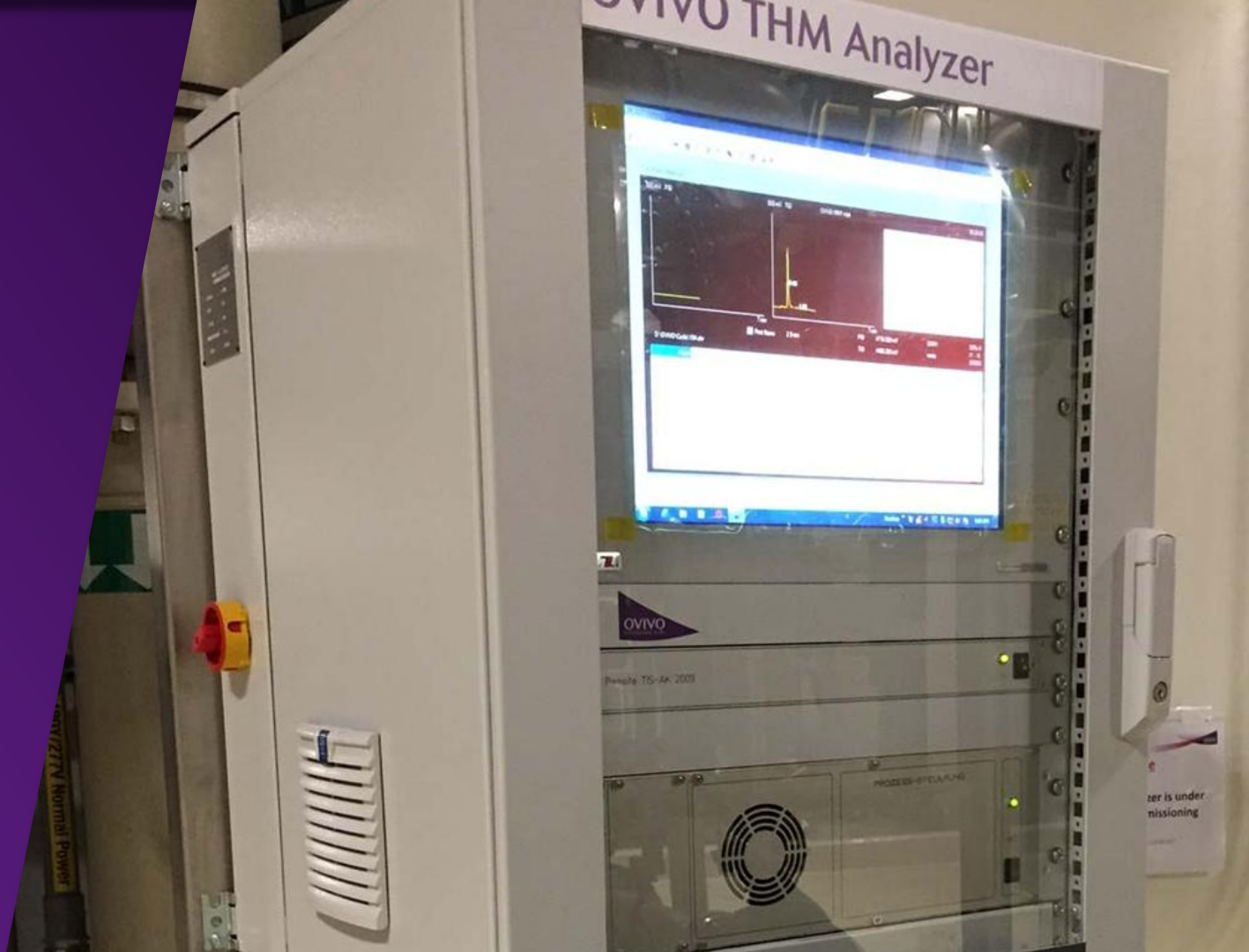
GOEMA

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ONE COMPANY
ONE FOCUS

OVIVO

Online
THM
Analyzer



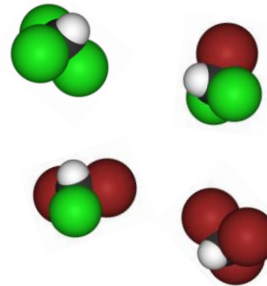
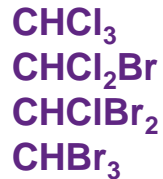
► Ovivo Online THM Analyzer

OVIVO has developed a specific online process analyzer for trihalomethanes detection in potable, process and high purity water:

OVIVO THM1501

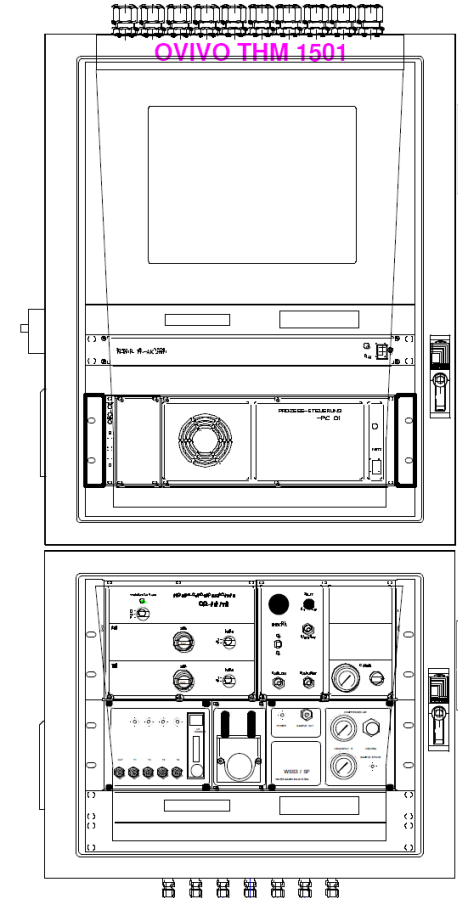
Measured parameters:

- Chloroform
- Dichloro-monobromo methane
- Chloro-dibromomethane
- Bromoform
- Total THMs
- Total TOC related to THMs



► Ovivo Online THM Analyzer

- Unique process Analyzer
- Suitable for raw water, process water and UPW
- Continuous automatic online sampling and analysis
- Up to four channels including grab sampling
- Single measurement cycle time: 15 to 30 min, 48 to 96 samples analyzed per day
- Calibration with a standard solution typically done once a month
- Data logging - reports can be generated daily, weekly or monthly showing min/max limits
- Detection limit: < 1 ppb for each component



► Ovivo Online THM Analyzer

Measuring principle: head-space Gas Chromatography with highly reliable and sensitive PID/TID detectors.

Thermal Ionization Detector (TID)

- TID has a high selectivity for volatile halogenated hydrocarbons (VOC).
- The central part of the detector is a special ceramic element with a platinum wire which is heated to a temperature of 300°C (572 °F).
- At this temperature and with applied voltage, gas molecules (THMs) passing through the separation column are ionized and the resulting ions can be accurately detected and quantified.

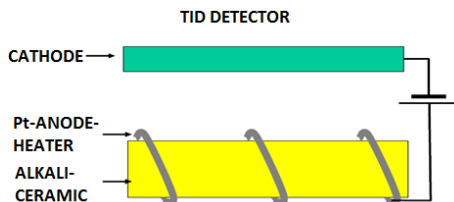
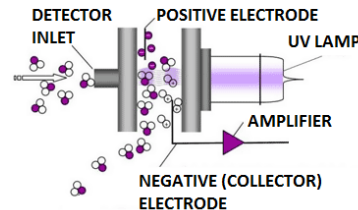
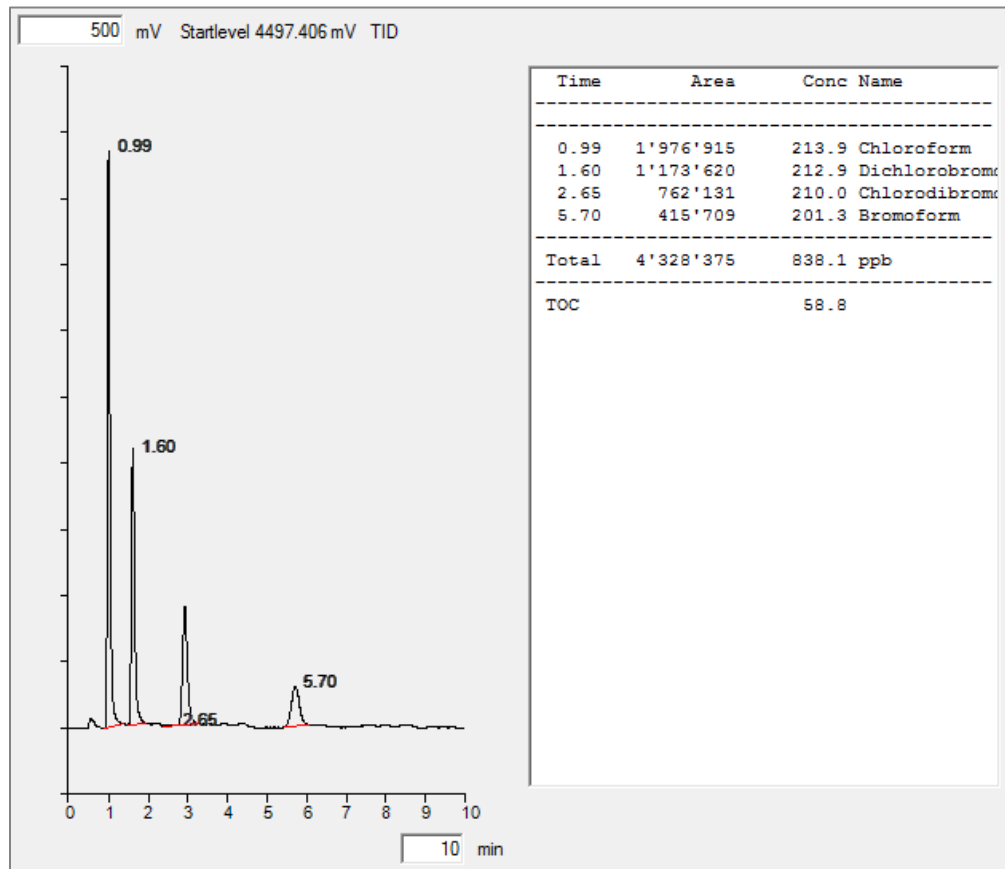
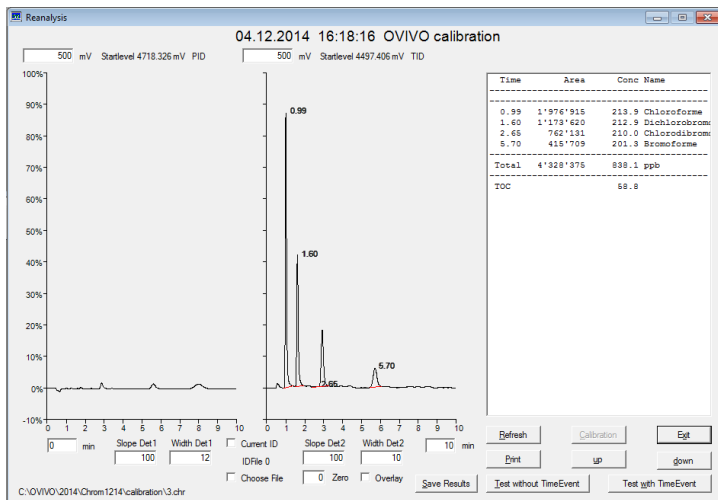


Photo Ionization Detector (PID)

- PID has a high selectivity for aromatic and aliphatic hydrocarbons.
- The PID detector generates a monochromatic UV light
- Molecules with smaller ionization potential than energy level of the UV radiation are ionized.
- The positively or negatively charged ions generate an electric current being the actual detector's output. Produced current is proportional to the concentration of a given compound.

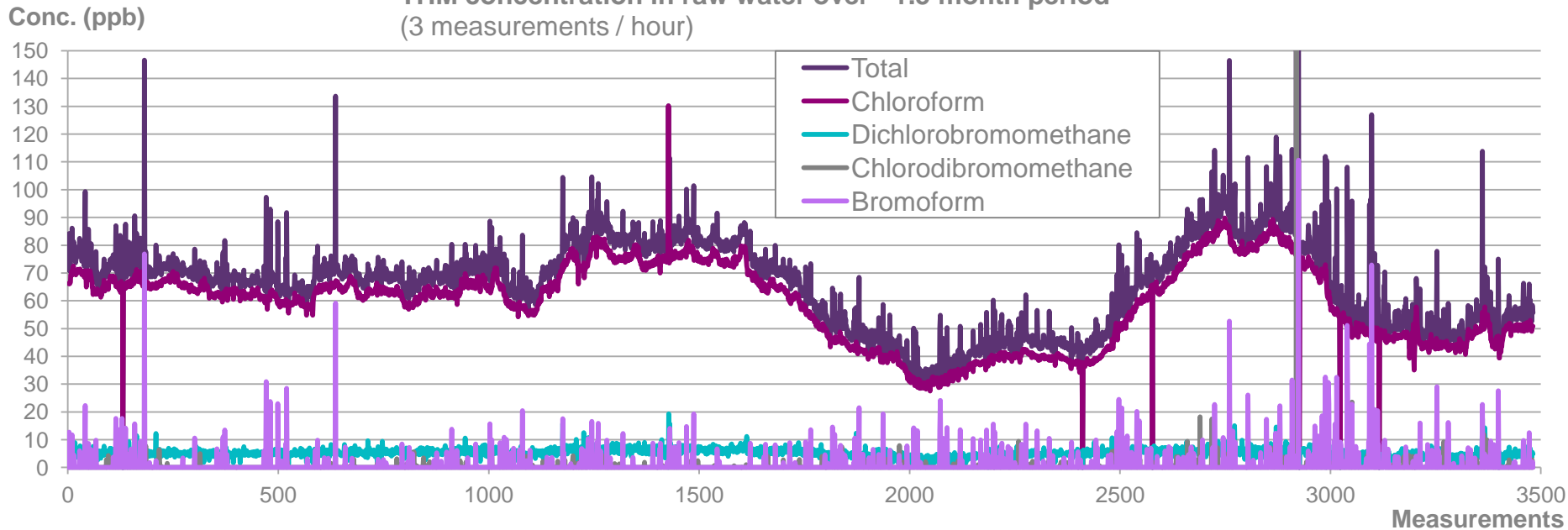


► Ovivo Online THM Analyzer - Chromatogram



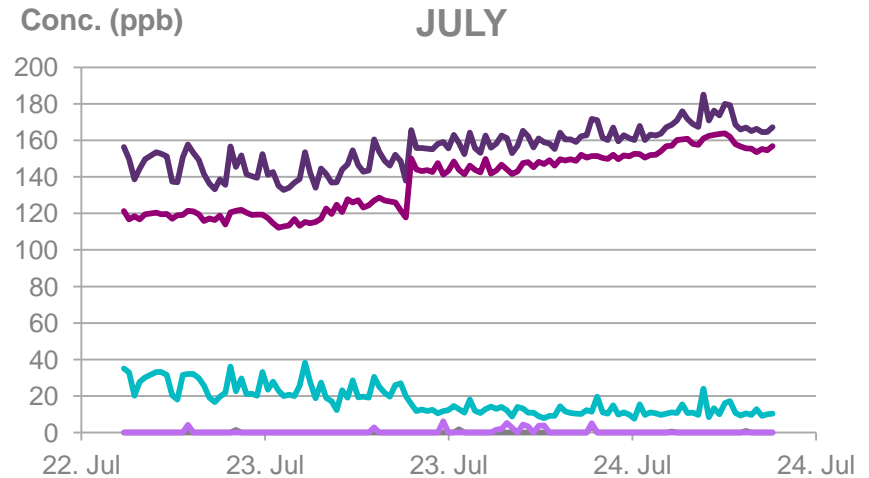
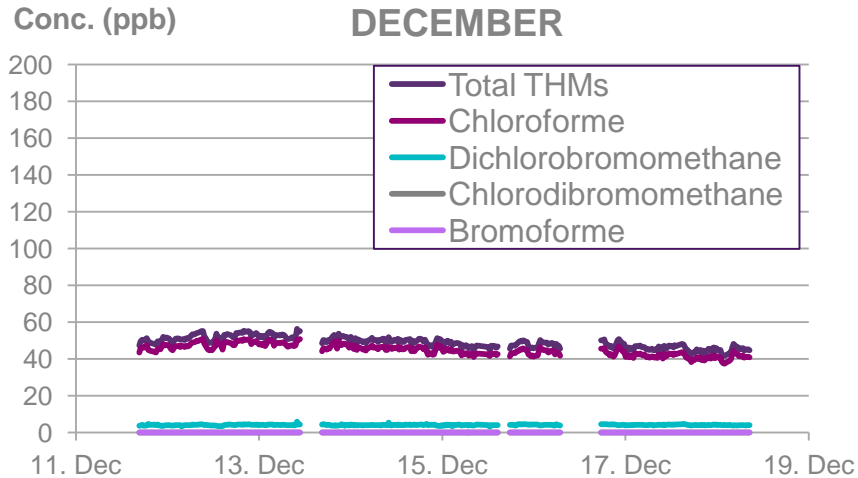
► Ovivo Online THM Analyzer – Field data

THM concentration in raw water over ~1.5 month period
(3 measurements / hour)



► Ovivo Online THM Analyzer – Field data

- **THMs** concentrations in chlorinated water may vary strongly over seasonal changes. These variations can impact various process steps and TOC level at UPW point of use.
- **THMs** present in raw water:

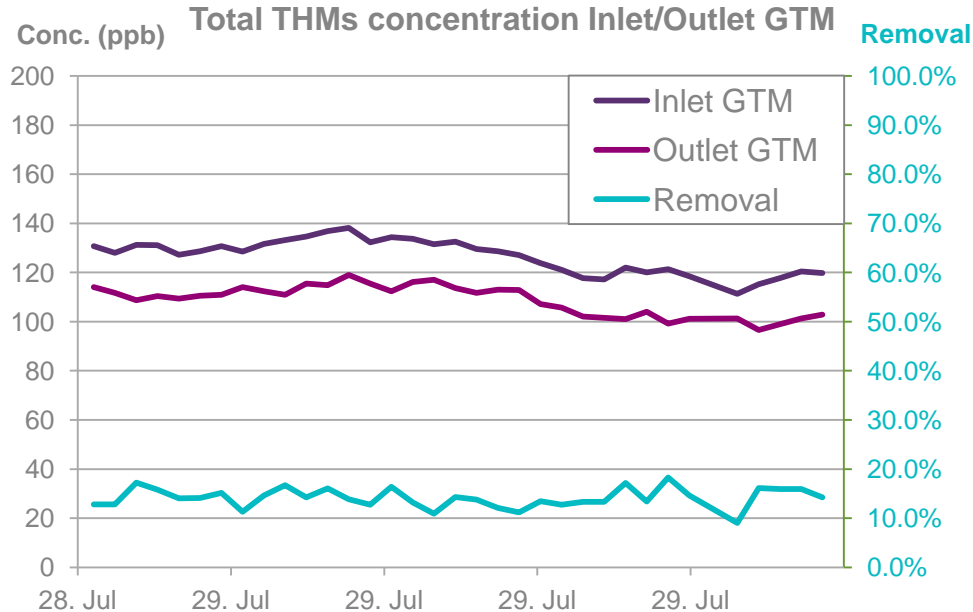


► Ovivo Online THM Analyzer at water treatment plant

Online THM Analyzer brings multiple benefits to water treatment plant:

- Detailed survey of raw water quality in terms of THMs content
- Control of processes capable of reducing THM levels:
 - Survey and control of Degasifying process steps (FDG, MDG, VDG)
 - Survey and control of Reverse Osmosis process steps
 - Survey and control of UV-oxidation steps
 - Survey and control of saturation level of ACF media in real time
- UPW: monitoring and TOC speciation (non covered part by LC-OCD (volatile))

► Ovivo Online THM Analyzer – Optimizing degasification processes

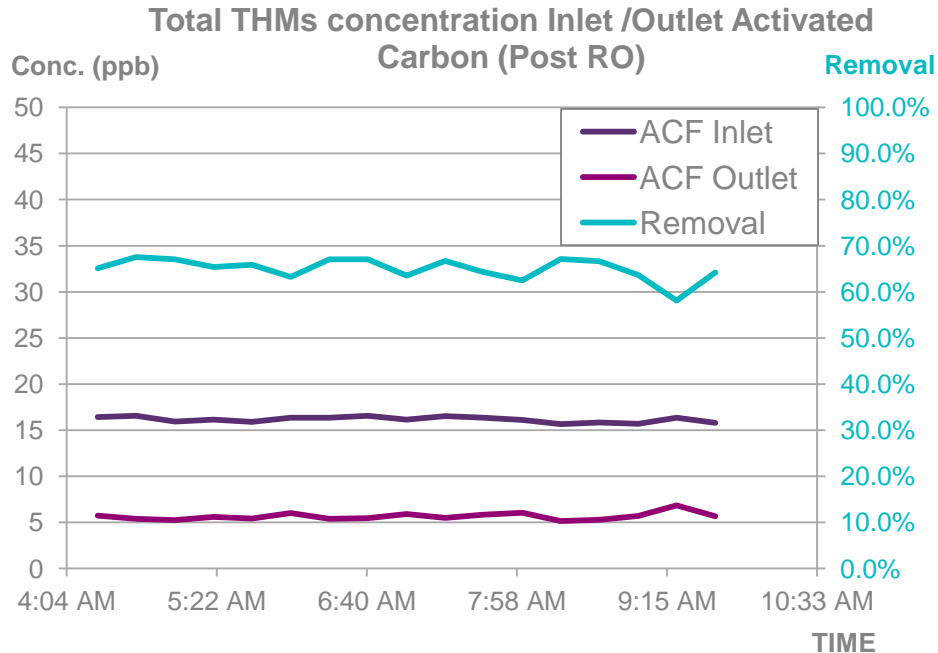


Online THM monitoring allows optimization of degasification systems performance (FDG, GTM, VDG) to maximize THMs removal.

Measured GTM performance:

- **Measured THMs removal:** ~10-20%
- PP membrane contactors recommended for CO₂ removal
- Area: 2370 ft²/module
- Feed flow: ~240 gpm/module
- N₂ flow: ~5.2 SCFM/module
- Vacuum Pressure: ~27 in Hg

► Ovivo Online THM Analyzer – Real-time monitoring of ACF exhaustion



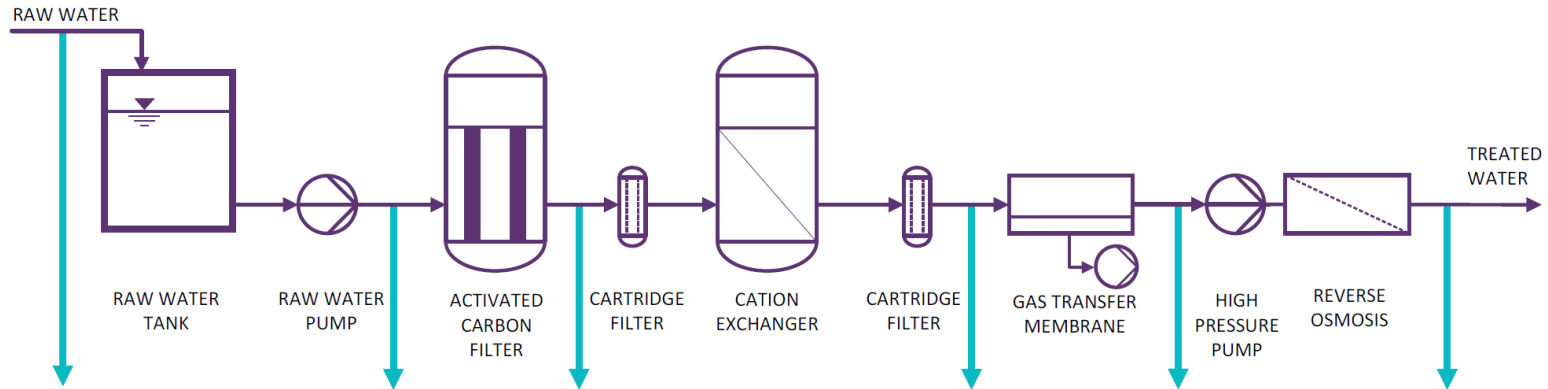
Online THM analyzer allows monitoring of ACF systems performance :

- Survey and control of saturation level of ACF media in real time
- Triggering ACF regeneration: chemical regeneration / steaming
- Planning logistics of ACF media exchange

Measured ACF performance:

- **Measured THMs removal: ~60-70%**
- At the time of the measurement ACF media had their THMs breakthrough capacity exceeded and were about to be replaced.
- The expected total THM concentration at the outlet of fresh ACF media is ~1 ppb.

► Ovivo Online THM Analyzer at water treatment plant



SUGGESTED SAMPLING POINTS FOR **OVIVO THM ANALYZER** AT WATER TREATMENT PLANT

UP TO FOUR CHANNELS OF CONTINUOUS MONITORING!