ACTEON 5000-STACSENSE : Calibration procedure for CODeq, BODeq, TOCeq parameters

Equivalence DCO, DBO ou COT:

SAC 254 is a parameter for organic substances dissolved in water that absorb UV radiation. It provides information on water contamination.
Despite the similarities, the parameters can not always be inter-converted.
However, a correlation can be established between the SAC 254 parameter and another parameter such as TOC or COD. The STACSENSE sensor then provides equivalence data.

To obtain the correlation, it is recommended to measure the SAC for a few days on samples of polluted water which will also be analyzed using laboratory measuring equipment according to the standardized method.
The conditions for obtaining useful data for efficient conversion represent daily monitoring with periods of low and high loads, as in the case of urban effluent. During these peak periods, you have to:

• read the SAC value delivered by the StacSense sensor,
• take a representative fluid sample at the sensor location,
• stabilize and store successive samples at 4°C until analysis,
• perform laboratory analyses of the parameter to be correlated.
• use the data to determine a conversion law.

COD, BOD or TOC equivalences are calculated directly in the sensor according to a first degree law.
This pair of coefficients (offset and slope) is specific to each parameter.

Example: COD eq. = SlopeCOD* SAC254 + OffsetCOD

The default conversion coefficients, filled in at the factory, are as follows:
- DCOeq = 1,81 * SAC254 + 0,0
- DBOeq = 0,48 * SAC254 + 0,0
- TOCeq = 0,69 * SAC254 + 0,0

As per the usual calibration process, the user value of the coefficient, offset or slope, such as a reference input value, is entered in a sensor register instead of the factory coefficient.

The user evolves this linear relationship according to the results of a significant measurement campaign with two techniques in parallel, the UV sensor and the laboratory analysis of samples taken regularly, in the same place.

AQUALABO
90 Rue du Professeur Paul Milliez
94500 CHAMPIGNY SUR MARNE
Tel.: +33 (0)1.55.09.10.10- Fax : +33 (0)1.55.09.10.39
info@aqualabo.fr - www.aqualabo.fr

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Example of experimental determination of the conversion coefficient SAC to COD (50mm sensor optical path):

At the beginning of the measurement and sampling campaign, the conversion coefficient SAC254 to factory COD is active (slope value at 1.81; offset zero).

Average COD value provided by the sensor = 36mg/L
Mean laboratory sample test result = 22 mg/L

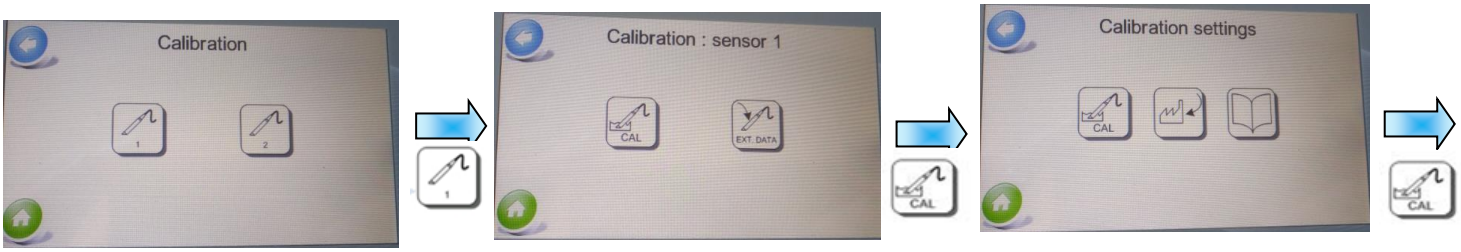
The conversion slope SAC254 to COD is therefore adjusted in the sensor such as 1,81x22/36 = 1,11

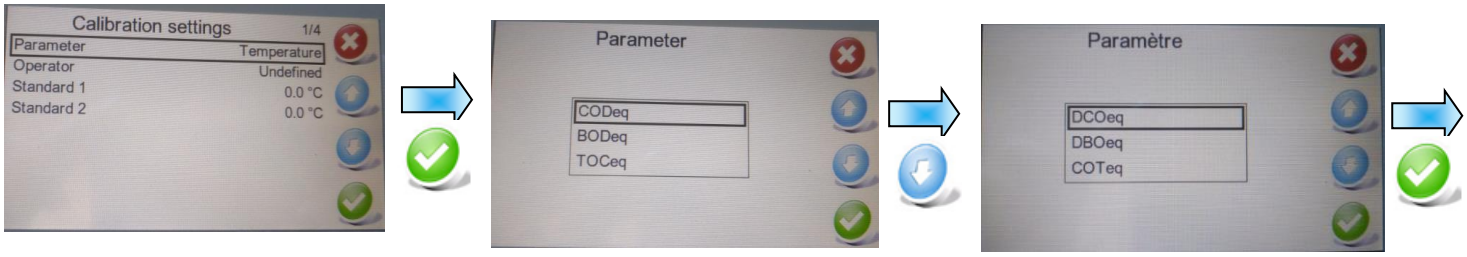
As an example, this coefficient equal to 1.11 was determined on water leaving the treatment plant.

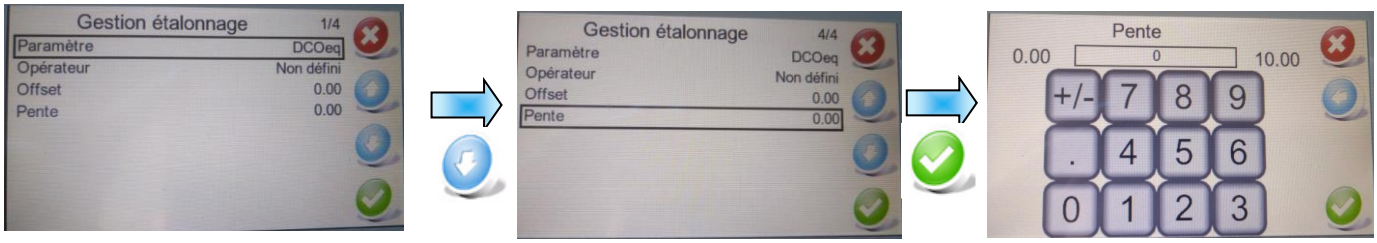
ACTEON 5000 calibration menu. Example for DCOeq parameter

In order to access the menu to adjust the Offset and the slope of each parameter from the SAC254 please follow the following path:

Ecran Principal







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