ABSTRACT

In this thesis the construction and calibration of an air quality measurement system is described and explained. The construction happens broadly via a metal box, a Raspberry Pi, a sensor board with sensors and a regulated power supply. The air quality measurement system has been named Seacanairy. The name refers to the sea, since it is specifically built to operate on board of seagoing ships. 'Canairy' refers to a canary and to air. Canaries were in fact the first air quality measuring devices used by mankind in the mining industry. The 'air' emphasizes it is about air quality. Once the Seacanairy was completely built, it had to be calibrated. The conversion of measured voltages to gas concentrations in ppb is fully explained. Since only the producer's calibration was not sufficient, the calibration algorithms have been modified to be more realistic. The complete elaboration of the calibration is included in an Excel file. Through this file it is possible to execute a fast and accurate calibration on the measurement results.