



Construction and field test of a programmable and self-cleaning auto-sampler controlled by a low-cost one-board computer

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This presentation describes in-depth how a low cost micro-computer was used for substantial improvement of established measuring systems due to the construction and implementation of a purposeful complementary device for on-site sample pretreatment. A fully automated on-site device was developed and field-tested, that enables water sampling with simultaneous filtration as well as effective cleaning procedure of the device's components. The described auto-sampler is controlled by a low-cost one-board computer and designed for sample pre-treatment, with minimal sample alteration, to meet requirements of on-site measurement devices that cannot handle coarse suspended solids within the measurement procedure or –cycle.

The automated sample pretreatment was tested for over one year for rapid and on-site enzymatic activity (beta-D-glucuronidase, GLUC) determination in sediment laden stream water. The formerly used proprietary sampling set-up was assumed to lead to a significant damping of the measurement signal due to its susceptibility to clogging, debris- and bio film accumulation.

Results show that the installation of the developed apparatus considerably enhanced error-free running time of connected measurement devices and increased the measurement accuracy to an up-to-now unmatched quality.