STEBATEC®
Measure - Control - Regulate

Technical information

ALLinONE Control system

Wide range of functions, clear and simple operation for pump stations and rainwater tanks, compact design with few components.

Backgrounds

For small and medium-sized wastewater plants, the use of a PLC, which would also be suitable for much larger/complex automation systems, often has an unbalanced price/performance ratio. The repetitive programming effort until a "too powerful" control system is ready for use also tends to be prone to errors and requires increased commissioning effort. Nevertheless, a control system that is too powerful can usually be argued for in favor of standardization - the necessary compatibility with the process control system also serves as justification. Nevertheless, these PLCs are then no alarm devices, modems or firewalls, nor data loggers. The latter devices must be provided additionally.

"Cheap controllers" from the pump manufacturers are not an alternative because the functional and compatibility range required by the standard can also only be achieved with a large number of devices that can be combined.

ALLinONE closes a gap

The inspiration for the creation of the ALLinONE system was the functional and process scope of approx. 80% of the wastewater structures automated by Stebatec to date. ALLinONE now includes all these diverse control functions, whereby only a fraction of the scope is required in each application. In order to enable or disable the project-specific required functions easily and reliably, ALLinONE has a user mask that can be operated without programming knowledge. This means that NO programming work is necessary.

The ALLinONE hardware is a device that includes the functions control, alarm, data communication and data log. This device combined with standard software is therefore the solution for tasks where previous solutions were too complex and too expensive.

Meanwhile, the compatibility for connection/integration to any process control system is ensured due to the large and open interface flexibility.

Figure 1: ALLinONE hardware with the functions control, alarming, data logger, modem mobile and fixed network, switch, firewall, VPN connections, web server, interface to customer process control systems and connection of I/O`s.

Flexibility due to automated production

The ALLinONE production process has been automated from the electrical schematic, router and firewall settings, generation of communication certificates on the Internet, to the configuration of the control software. The dimensions of the electrical cabinet can be adapted to the local space conditions in order to obtain the necessary flexibility.

In the event that changes need to be made to the control system at a later date, these can be made manually, as in a conventional automation project, both on the electrical schematic and on the control cabinet.

ALLinONE controls are manufactured using only standard industrial components, which can be replaced by your own electrician if necessary. This reduces the dependence of the operator on individual companies. Changes to the system, such as changing the current of a pump etc., are possible at any time.

ALLinONE control systems are sustainable automation systems for customers, which can be reconfigured, converted, extended or even partially renewed at any time.

Range of functions

The following control functions are included in ALLinONE:

- Pump control
  - Single pump or 2x <15kW and larger on request
  - Level measurement 4.20mA or float bulbs
  - High level alarm with float bulb

- Rainwater tank control
  - Control of flow regulation/flow measurement
  - Drain pump <15kW and larger on request
  - Screening control
  - Flushing dump control

- Infrastructur
  - Light control
  - Heating/ventilation control cabin
  - exhaust air system basin/pump sump

- Standard features
  - Socket (FI protected) on the front of the control cabinet (type 230V, 400V or Schuko)
  - Touch panel 5"
  - Web server/local small-PLS for PC and Smartphone
  - Overvoltage protection type 1&2 optional
  - Data communication/interface to DCS via DSL or mobile radio <4G
  - Remote maintenance DSL or mobile radio <4G
  - presence switch/alarm suppression

- Alert
  - STEBalarm with SMS, E-Mail, Pager
  - USV-supportet

- Communication
  - DSL or mobile ration up to 4G

The communication side of ALLinONE allows connections to multiple sites, such as a central process control system and other stations that may be involved in the maintenance and upkeep of the structure. The integrated local mini-PLS allows convenient use even without an external control center. The location-independent operation only requires an Internet browser and an Internet connection.

High security on the Internet - high cybersecurity standard. Due to secure VPN connections and an internal firewall, ALLinONE complies with the guidelines and recommendations of IKT and STEPbySTEP. An additional firewall in the outstation is therefore not necessary.

Remote connection

Due to the increasing costs in remote transmission technology (high subscription costs for services that are not needed), STEBATEC offers usage packages for remote connection and alarming. STEBAmobile enables remote access with SMS and data volumes in the Swisscom network.

Certificates/approval

- Routine testing according to 61439
- ATEX Zone I/II (arrangement outside zone)
- Guidelines and recommendations compliant: ICT, STEPbySTEP

Handling

ALLinONE can be operated either on the zoomable touch panel directly on the control cabinet or via web server with any web browser. The menu navigation is easy to understand and optimized. Operating hours and measured data are recorded and can be visualized or exported if required. With versatile interfaces, ALLinONE can be connected to all commercially available process control systems without any functional restrictions, although a connection is often not necessary due to the integrated small DCS. Ideally, the ALLinONE web server can be displayed integrated in the higher-level DCS.

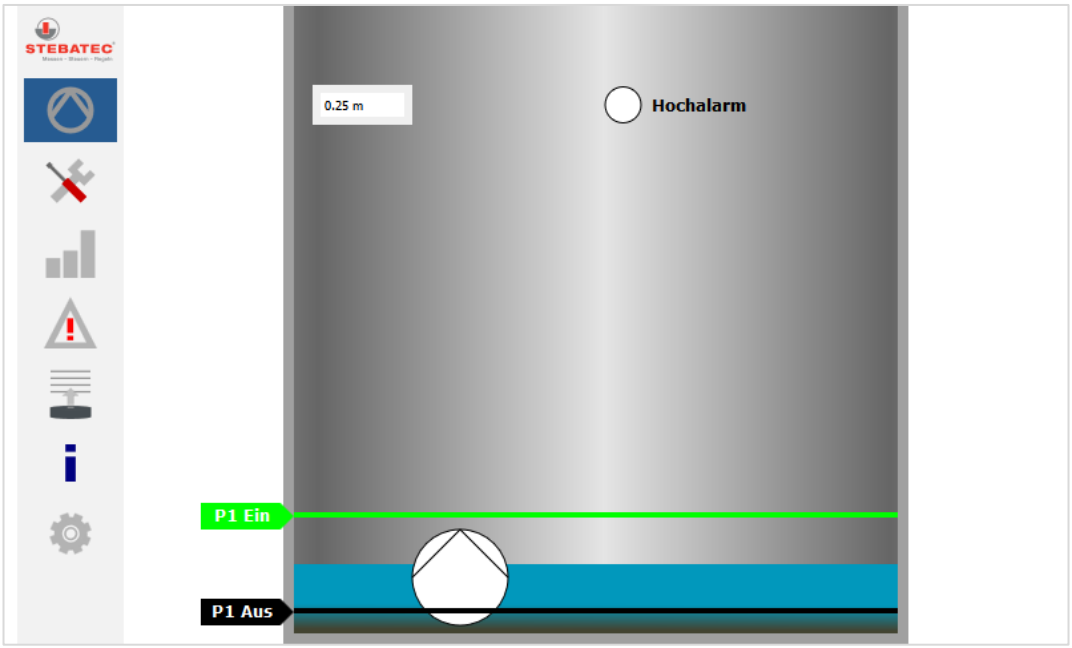

Figure 2: Visualisation of pump control on the zoomable touch panel, whereby, depending on the configuration, several pumps and other components such as exhaust air system etc. are displayed.

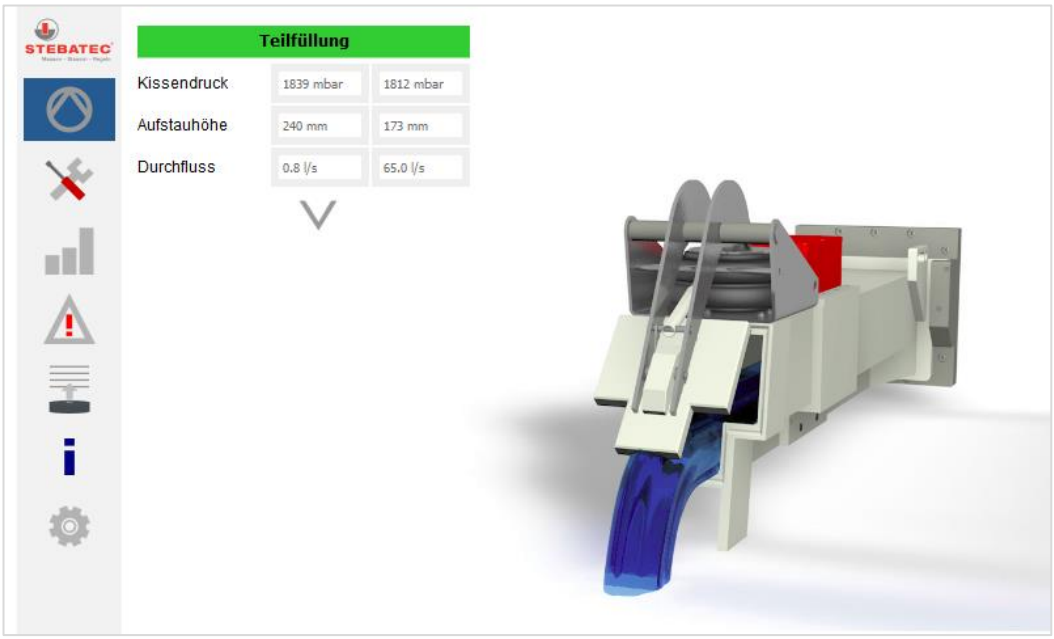

Figure 3: View of ALLinONE panel with integrated control of a rainwater basin's discharge control.

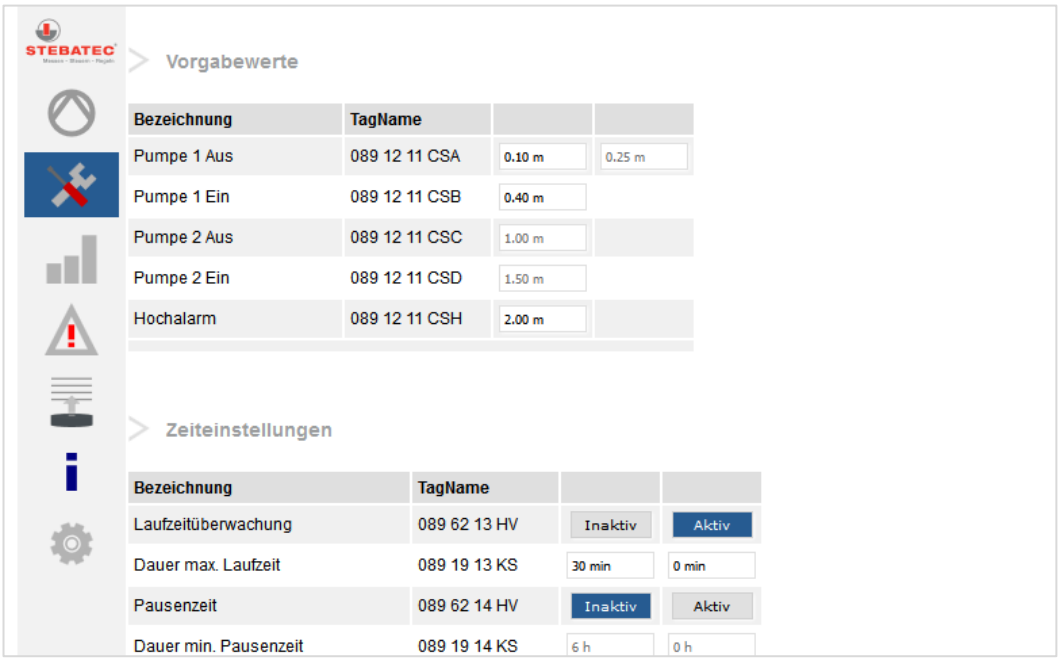

Figure 4: Insight into the parameterization.

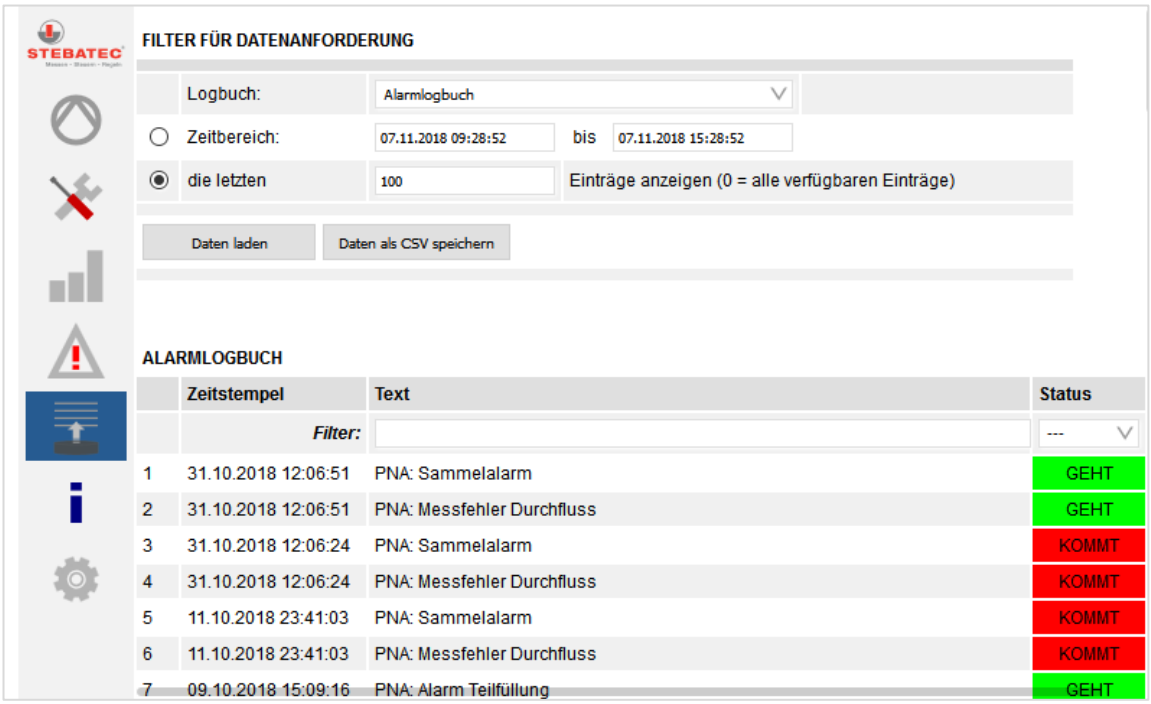

Figure 5: Alarm list of the ALLinONE system, with the possibility of searching for specific alarms with the filter or exporting the list.

Technical information

- Electrical supply
  - 1x230V - 3x400V / ab 13A - 63A

- Protection systems:
  - Overvoltage protection, as required
  - Residual current circuit breaker for light and socket circuits
  - Lockable safety switches
  - Motor protection switch
  - PTC / Klixon monitoring
  - Leakage monitoring with immersed aggregates

- Drive technology:
  - Soft starter or direct starting

- Current indication of the gensets by means of ammeter and marker pointer

- Communication interfaces
  - Modbus TCP

Additional equipment / available separately

- - Fill level measurements
- - Pumps, machines and infrastructure outside the control cabinet
- - Heating/ventilation/exhaust air system
- - Lighting
- - Open field cabin
- - Higher-level host system
- - Delivery/assembly/commissioning

Dimensions

The dimensions of the control cabinet can be defined and adapted to the specific project. Reserve sizes and reserves for the signal inputs and outputs and the fuses are also possible.

Switch cabinet minimum dimensions WxHxD 500x600x250mm

Figure 6: ALLinONE for 1 wastewater pump using the example pumping station in Meiringen BE/CH; Cabinet WxHxD 500x600x250mm retrofitted in an existing concrete cabin.

Figure 7: ALLinONE rainwater basin control with pneumatic discharge control in the control cabinet Biel BE/CH LxWxH 800x800x250mm.

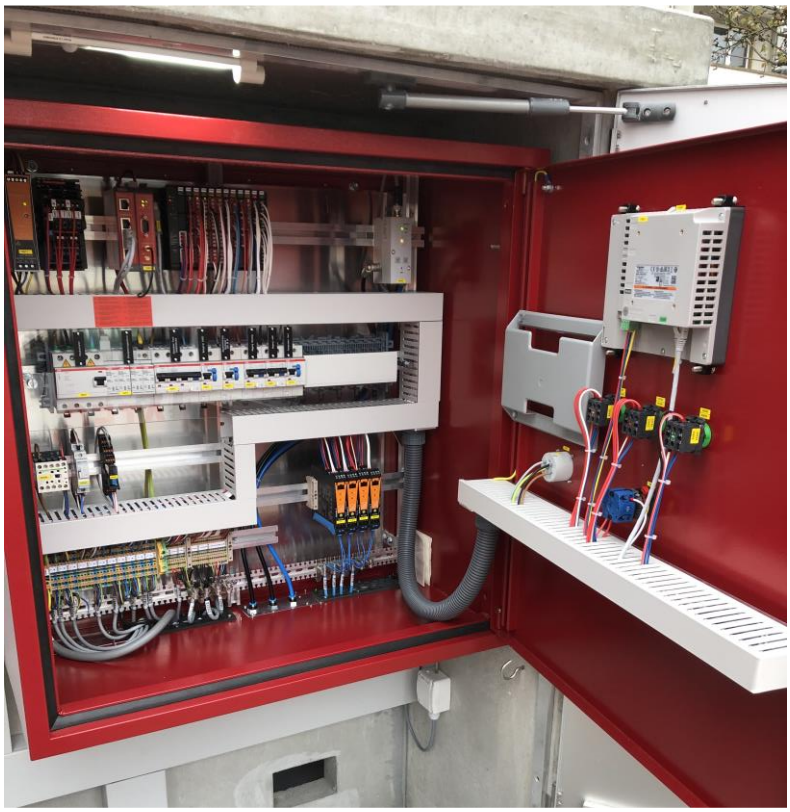

Figure 8: ALLinONE interior using the example of the Dättnau stormwater tank of the city of Winterthur; cabinet WxHxD 1000x800x300mm incl. space reserves.

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