Smart vertical farming in big cities

Cost-efficient and intuitive monitoring of nutrient supply

Culture racks in a vertical farming section to grow vegetables in minimal space. Continuous monitoring helps to increase the product yield and save costs.

Benefits at a glance:

- Compact and space-saving installation
- Simple monitoring of the measured values with the SmartBlue App
- Low maintenance thanks to intuitive handling at every measuring point

Our cities are getting crowded which puts pressure not only on living space but also on agriculture. Thanks to vertical farming cultures, it is possible to grow fresh vegetables such as cabbage and lettuce even in small spaces in big cities all over the globe.
To save money and generate the highest possible product yield in vertical farming, optimal dosing of nutrients is essential. This process can be precisely controlled by monitoring different parameters like pH and conductivity.

Customer challenge

In many cities, space is limited and fresh vegetables need to be grown in the tightest of spaces. Thererore, the plants are cultivated in racks which are placed one above the other. The biggest challenge is to supply the plants with an ideal amount of nutrients, as little as possible and as much as necessary. This keeps costs low without reducing the expected product yield. In keeping with the principle of sustainability, the excess plant nutrient solution is collected and processed for reuse. In this step, both the pH value and the conductivity of the medium, must be analyzed in order to meet the quality requirements.
For operators of vertical farming systems, it very important that the measuring systems are easy and intuitive to install and maintenance is as low as possible.

Our solution

To ensure a comprehensive monitoring of processes, measuring systems are installed in various areas of a farm. They are equipped with liquid analysis sensors for pH and conductivity and Liquiline Compact transmitters. Liquiline Compact CM82 transfers the measured values to the SmartBlue app, enabling easy monitoring of the processes and intuitive sensor calibration via a common smartphone or tablet.

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Easy calibration with the SmartBlue App

pH sensor Memosens CPF81E and conductivity sensor CLS21E

The racks are supplied with nutrient solutions to ensure optimal growth

Thanks to the Plug and Play function and Memosens Technology, the sensors can be connected and exchanged easily via plug connection. In addition, the water quality in the nutrient buffer tank is monitored. Besides the analytical instruments, the level sensor Mircopilot FMR10 is used for level measurement in the tank.

All benefits at a glance

- Space-saving and easy installation to block as little usable space as possible: The compact Liquiline Compact transmitter takes up almost no space.
- The Memosens Technology guarantees secure data transmission and high measuring point availability thanks to the non-contact, inductive coupling.
- Easy operation: After training, the user can control the operation and maintenance via the SmartBlue App with a common smartphone. The same equipment at all measuring points makes operation and handling even easier.
- Secure Bluetooth® connection: The connection is particularly secure and ideally protected against unauthorized access by third parties. The Fraunhofer Institute for Applied and Integrated Security (AISEC) has confirmed that the security requirements have been met.
- Simple monitoring of the measured values with a smartphone.

Components

- Digital conductivity sensor Memosens CLS21E
- Digital pH sensor Memosens CPF81E
- Transmitter Liquiline Compact CM82
- pH buffer CPY20
- Calibration solution CLY11
- Level sensor Micropilot FMR10

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