

Next-generation Vegetable Factory System

Cyber Green

ENZAN KOUBOU has been engaged in research on operational management and environmental control at vegetable factories for more than 20 years, applying the control technology for various devices and machines (precision measuring instruments, tunnel shield machines, etc.) used in the fields of construction and civil engineering. In particular, our research over the years has produced various simulation technologies, including database-driven production plans. These technologies are used in many different fields, and we have received high marks from our users.

Primary examples of systems provided

- Water quality monitoring system at Osaka Marine Fisheries Research Center
- Air conditioning control system at Kansai International Airport
- FA system at a major automobile manufacturer
- Environmental control system at Yokogawa Green Farm

Cyber Green vegetable factory system will support the safety and security of the production of food.

Advanced vegetable factory system of the future

This advanced system for vegetable factories supports environmental management and control of things like temperature, humidity, liquid fertilizer pH, EC and year-round planned production and comes with a simulation function as well. The basic sensor configuration includes a water temperature gauge, pH gauge, EC gauge, thermometer, hygrometer, CO2 concentration meter, photon flux density meter and remote web camera. The conditions and settings can be adjusted according to the customer's needs, and customization is available, including GUIs (graphical user interfaces).

Proprietary sensor technology

High-speed bacteria detection sensors for vegetable factories developed in collaboration with TFD CO., LTD. provide thorough hygiene control for hydroponic culture systems. Using optical and signal processing technology, they scan test objects and reagent reactions at high speeds to quickly determine the presence of bacteria. The device also supports online testing and can be used to regularly test the liquid fertilizer at the vegetable factory.

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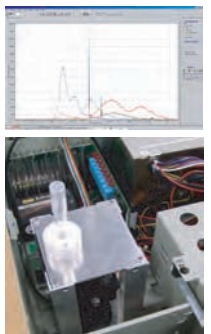


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Main features included in the Cyber Green vegetable factory system

■ Data logger function

Various sensors collect data in cycles as short as one second. Sensors can also be added and modified as necessary.

■ Data storage function (Database construction)

Various collected data and calculations are stored on the hard disk drive and can be used to create graphs, forms and simulations.

■ Alarm monitoring function

The collected data is constantly monitored, and alarms go off instantly in the event that abnormal data is detected. Information on the occurrence and recovery can be checked on the history screen.

■ Trend graph function

The collected data is displayed in detailed time series graphs. The graphs allow quick identification of changes in the data and can be enlarged or reduced on the monitor as desired.

■ Instrument reading display function

The instrument readings can be displayed in the form of a bar graph to see the current values on the various sensors. This allows for easy comparison and adjustments.

■ Form creation function

Daily and monthly reports are created automatically and can be edited as necessary.

■ Self maintenance function

System maintenance, including checking communication status and adding or editing signals, can be performed easily using this intuitive function.

■ Production status/current value monitoring function

Vegetable production status and current environmental data is summarized on a single screen to provide a quick snapshot of the overall status.

■ Analysis function (X-R control chart)

This screen is for quality control and allows the user to view everything from growth status to quality and health in real time for timely action.

■ Simulation (planned production) function

This function provides a vegetable production simulation to forecast future production and accurately respond to our clients' needs.

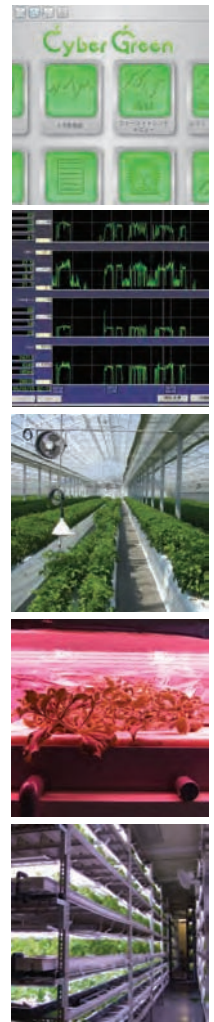
■ E-mail function (for alarms)

Real time data from the alarm monitoring function can be sent to mobile phones and other devices via e-mail to allow for a quick response.

■ Remote camera monitoring function

A high-resolution web camera allows the vegetables to be monitored at all times from any location using a computer or mobile phone.

※ We can develop and include any function according to the customer's needs.



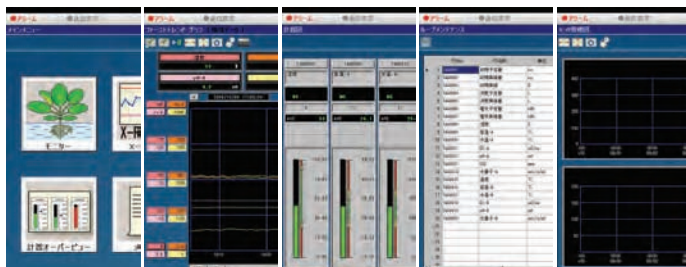
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