Critical Environment Technologies™

APPLICATION GUIDE

CO_2 Enriched Crop Production

FCS Controller with CO, CO_2 & Combustible Gas Detectors

Peace of mind. Guaranteed.

Continuous monitoring of carbon monoxide, combustible gas and carbon dioxide in crop production

Greenhouses and other types of indoor grow rooms provide a structure for growing plants in a controlled environment. To create favourable growing conditions, reliable heating, cooling and ventilation systems must be used. If these systems are not maintained or are not properly monitored they may cause serious hazards to human health and may result in the destruction of property. Heating may be supplied be supplied by sunlight, natural gas, propane gas, fuel oil, wood or electricity. Gas powered equipment produces carbon monoxide. CO_2 enrichment in greenhouses allows crops reach their full growth, development and yield potential. Enriching the air with CO_2 can be done by means of the combustion of natural gas or using cylinders of liquefied compressed gas or a carbon dioxide generator. CO_2 displaces oxygen and if a leak occurs or inadequate, faulty ventilation exists, it could cause an asphyxiation hazard.

Critical Environment Technologies' FCS 4-Channel Controller and a CGAS detector with an internal carbon monoxide sensor connected to an ESH-A remote propane (or methane) gas sensor, plus two CGAS carbon dioxide detectors, one for plant health and one for life safety monitoring is the solution.

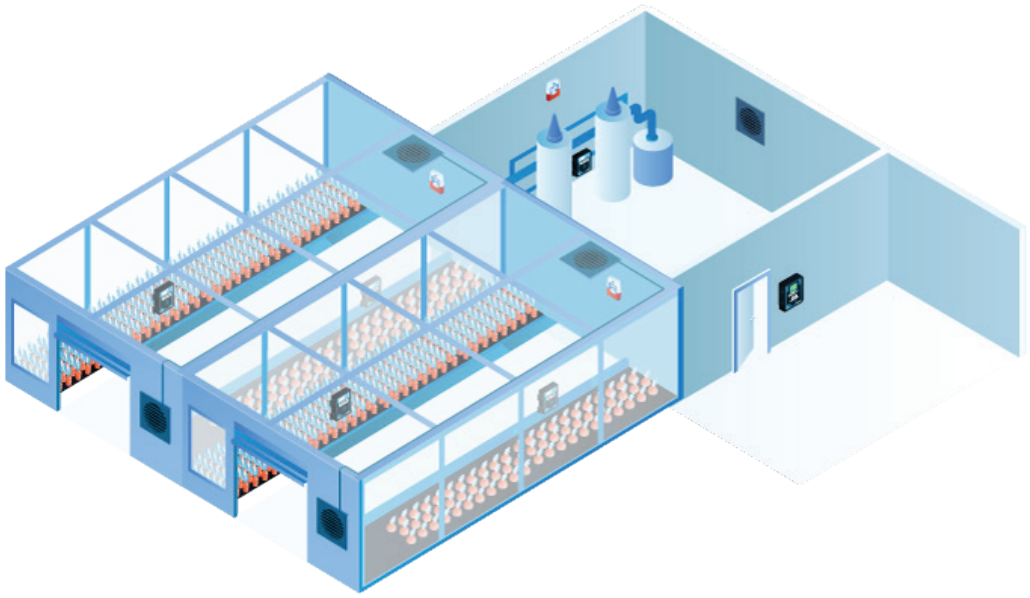
1877.940.8741

help@cetci.com

Critical Environment Technologies™

Continuous Monitoring of Carbon Monoxide (CO) Carbon Dioxide (CO_2) & Combustible Gas in Greenhouses

Two gas detectors should be mounted inside the furnace room - one for monitoring potential leaks in the pipes supplying the gas to the furnace and the other monitoring carbon monoxide levels generated by the furnace. A well maintained, efficiently burning furnace produces very small amounts of CO, but a dirty, inefficiently burning one can product deadly amounts. To monitor the CO levels, an CGAS-D-CO-R should be mounted inside the furnace room at the "breathing zone" (4 -6 ft from the floor). Connected to the CGAS-D-CO-R should be a remote sensor. If the furnace uses propane, an ESH-A-C3H8-100 remote sensor with an internal propane sensor should be used, mounted 6 inches off the finished floor, close to the pipes supplying the gas to the furnace. If the furnace uses natural gas, an ESH-A-CCH4-100 remote sensor with an internal methane sensor should be used instead, mounted 6 inches from the ceiling above the pipes supplying the gas. Inside the room should be an audible/visual alarm device such as the RSH-24V-R Remote Strobe/Horn.



Mounted outside the door of the furnace room should be an FCS 4-Channel Controller. If there are additional entrances to the room, each should have a remote visual/audible alarm device outside the door.

Inside the greenhouse should be two CGAS-D carbon dioxide gas detectors both mounted in the growing area. One mounted 6 - 7 ft / 72 - 84 in for plant health and another mounted at 30 - 46 cm/ 12 - 18 in for life safety monitoring. In this type of application one CO_2 monitor covers approximately 3,000 ft^2 / 288 m^2. Additionally, a CO_2 gas detector should be installed in the in carbon dioxide cylinder storage room for life safety purposes (not required if supply of CO_2 is outside the building).

Each gas detector provides continuous monitoring of the gas levels in the air and will communicate with FCS, which in turn will display the gas level readings and in the event of a leak / high gas concentration, will control equipment such as the ventilation system, shut off the furnace, trigger the remote horn/strobe devices or other set responses as configured using its 4 internal relays. The FCS-4 accepts Modbus® RS-485 digital communication or analog (4 - 20 mA) signal (must add Option -AI). Up to a maximum of four transmitters can be connected to the FCS-4. If more than 4 channels are required, other models of the FCS are available that offer 8, 32 or up to 128 channels.

1877.940.8741

help@cetci.com