ecoCUBE® Solutions for Greenhouse Applications

Worldwide Expertise

Safety Power's ecoCUBE® product is being utilized in hundreds of applications to clean exhaust gases from large reciprocating engines. The ecoCUBE® successfully meets some of the most stringent environmental requirements that exist worldwide. When applied to a Combined Heat & Power (CHP) Gas engine, the ecoCUBE® is a very effective device for greenhouse CO_2 augmentation.

ecoCUBE® for greenhouses

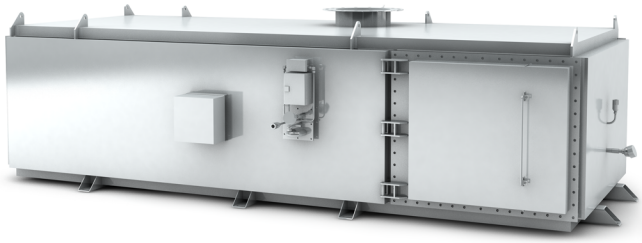
- Efficiently & safely produce CO_2
- Use exhaust temperature to heat water/crops
- Increase production by up to 40%
- Substantially lower CO_2 costs
- Reduce environmental footprint

ecoCUBE® Advantages

For greenhouse applications the ecoCUBE® is typically configured with Selective Catalytic Reduction (SCR), oxidation catalyst and integrated acoustical silencing. All of these components are integrated into a single highly compact reactor housing . Engine exhaust contains NO_x and unburned hydrocarbons (HC) which are harmful to plants. Not only will the ecoCUBE® precisely control the NO_x and HC emissions but it will oxidize CO into CO_2.

- Large installed base
- Excellent product support
- Proven emission constituent reductions
- Integrated acoustic silencing
- Low operating and maintenance cost
- Flexible mounting arrangements
- Space saving design

HORIZONTAL AND VERTICAL MOUNTING OPTIONS



SPI Gas Extractive Analyzer

As part of our greenhouse offering, Safety Power would typically supply our extractive gas analyzer system. This compact system, extracts, conditions and reads NO, NO_2 & CO using ppm accurate chemical based sensors.

In addition, Safety Power can also supply a separate high temperature ethylene analyzer if required for your project.

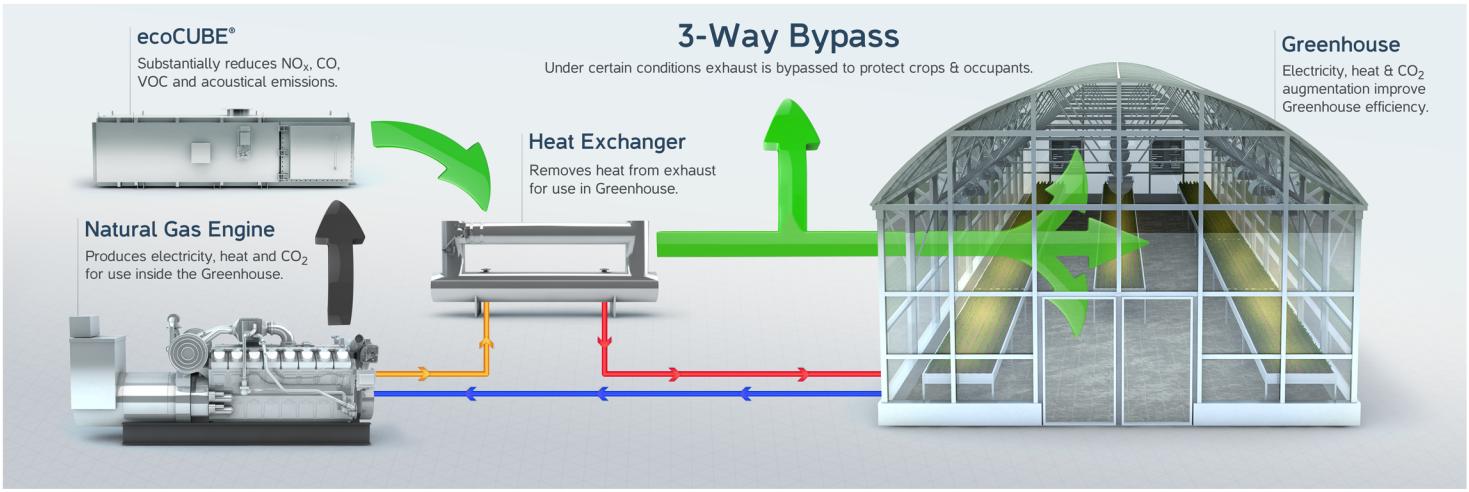
ecoCUBE® CO_2 Augmentation for Greenhouses

Combined Heat & Power (CHP) + CO_2 Augmentation Process

The use of highly efficient natural gas engines allows greenhouse operators to achieve multiple benefits. Firstly, there is the opportunity to generate electricity from the engine based generator. Secondly, thermal recovery from the engine can be used to heat your facility or water. Thirdly, the CO_2 produced by the engine's exhaust can be used as an airborne fertilizer to speed crop development. Compared to conventional liquid CO_2 dosing techniques, a CHP gas engine equipped with an ecoCUBE® system can allow for 40% increase in production and reduced CO_2 costs.

Engine exhaust is passed through the ecoCUBE® as shown in the diagram below. The ecoCUBE® combines multiple functions into a single compact, easy to install housing. One of its most important functions is to reduce poisons in the exhaust gas which could be harmful to plants. To achieve this "poison reduction", the ecoCUBE® uses multiple catalysts that are all contained inside the reactor housing.
Harmful hydrocarbons such as ethylene are reduced and carefully monitored using an optional ethylene analyzer with ppm levels of accuracy. Carbon monoxide is shifted to carbon dioxide creating a rich CO_2 environment so that normal ambient air at 400 ppm is shifted to greater than 700 ppm. NO_X levels can be reduced by over 90% creating an optimal growing environment. In addition to exhaust gas poison reduction, the ecoCUBE® contains integral silencing to reduce engine exhaust acoustics to "hospital grade" levels.

The ecoCUBE® has a control system that continuously monitors exhaust gas conditions. This control system includes extractive CO and NO_X analyzer systems (featured on frontside) and an optional ethylene analyzer. On engine startup before the catalysts become active, exhaust gases are sent to an exhaust stack, bypassing the greenhouse. If at any time, during engine operation, the exhaust gas conditions fail to meet requirements, the exhaust gas is routed through this same stack to protect the crops.



Learn about how our emission control systems work, emission regulations and much more by watching our educational videos at:

www.safetypower.ca/video

About Us

Safety Power is the global innovator in emissions control for large scale diesel and natural gas engines. The company manufactures the FOx®, ecoCUBE® and ecoTUBE™ range of products that reduce NOx, CO and Hydrocarbon emissions on engines from 100kW to 20,000 kW and beyond.

For more information please contact info@safetypower.ca

Terms and Conditions

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Any warranties or performance guarantees are made through formal contract only.