GREENHOUSE

WHAT IS IT?

Excess CO2 that might otherwise go up a smokestack can instead be directed into greenhouses. This allows crops to more easily meet their peak photosynthesis potential. The CO2 acts as a fertilizer and accelerates plant growth.

MOST COMMON USES?

Greenhouses are used to grow high value food crops, flowers, and horticultural plants. They are also used to grow algae that is then harvested to create liquid fuels.

HOW IS IT MADE?

CO2 is an ubiquitous byproduct of combustion. In greenhouses, the CO2 is channeled through emitters placed along plant root zones. The even distribution of emitters and the close proximity to the leaves balances the benefits throughout the greenhouse.

DESTINATION/FATE

Releasing CO2 to the environment is a major cause of global climate change. Combustion should be avoided if at all possible. If it cannot be avoided, then using available CO2 in a greenhouse with new cash crops or fuels can reduce the releases and create new value.

CONCERNS

Exhaust gasses from combustion may contain more than just CO2. Toxic byproducts of combustion can be deleterious to workers and/or to plants. Clean natural gas combustion is preferred for greenhouse applications. When working in greenhouses with enhanced CO2 levels, workers need to mitigate the risks of exposure. When intake of CO2 into the bloodstream becomes excessive, a condition known as acidosis occurs. Exposure to very high levels can overwhelm the body's compensatory mechanisms leading to injury or death.

OPPORTUNITIES FOR INTEGRATION

If CO2 is a byproduct, look for opportunities to co-locate greenhouses that can use that CO2 as a fertilizer. Excess thermal energy from stacks may also be beneficial in some greenhouse applications.