



# Methods to Reduce GHG Emissions for JS-1 / JS-2 Production



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## Methods to Reduce GHG Emissions for JS-1 / JS-2 Production

There are several processing methods that can be used to reduce GHG emission for the production of JS-1 / JS-2 Joint Synthetic Fuel

- Feedstock Blending
- Pyrolysis
- CO<sub>2</sub> to CH<sub>3</sub>OH (Methanol) Conversion
- Algae Bioreactors





## Methods to Reduce GHG Emissions for JS-1 / JS-2 Production

The processing methods used by ISF Inc. will allow for the introduction of carbon neutral feed stock to be blended prior to processing.

- Solid Municipal Waste
- Biomass
- Agricultural waste
- Algae
- Solid Waste from Water Treatment
- Live Stock Manure

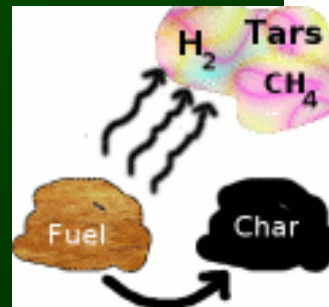




## Methods to Reduce GHG Emissions for JS-1 / JS-2 Production

Through pyrolysis, all feed stock will be turned into base compounds that can be used for efficient processing & fuel production.

- Synthetic Gas / Producer Gas
- Oils of Pyrolysis / Synthetic Crude
- Char / Gasification Feedstock

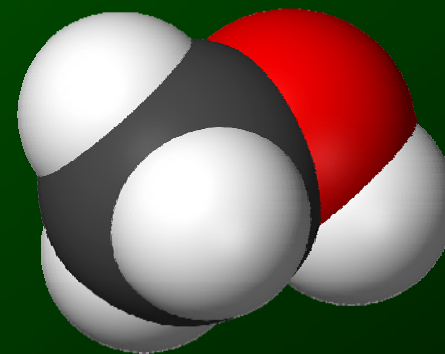


By separating into base compounds less emission will be created.



## Methods to Reduce GHG Emissions for JS-1 / JS-2 Production

Current advances in process technology has created units that can convert carbon dioxide directly into methanol.



Methanol can be used for various applications.

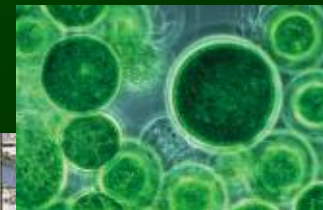
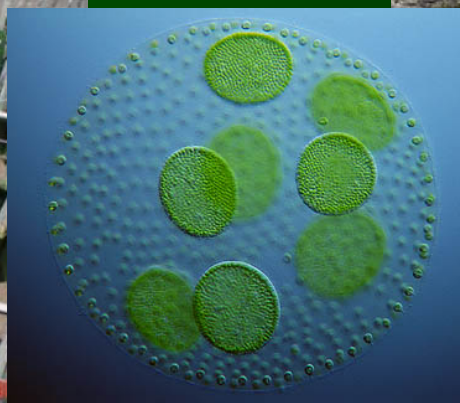
- Flex Fuel for Flex Fuel Vehicles
- Direct Methanol Fuel Cell for Electric Cars
- Converted into Gasoline



## Methods to Reduce GHG Emissions for JS-1 / JS-2 Production

Tail gas not consumed by processes can be sent to bioreactors for consumption by algae.

- Consumes  $\text{NO}_x$  &  $\text{SO}_x$
- Created Biomass (May Be Used as Feed Stock)





## Methods to Reduce GHG Emissions for JS-1 / JS-2 Production

Initial JS-1 / JS-2 production can make use of readily available coal and use enough of these methods to be carbon neutral.

In time, the coal can be gradually replaced with alternative feed stock such as biomass & solid municipal waste while maintaining the properties of JS-1 / JS-2, thus making it carbon negative and renewable.

