Office for TechnologyCommercialization

Fast, Efficient, Small Scale Conversion of Biomass to Syngas

This technology is a method for converting solid or liquid biomass such as soybean oil, wood waste or corn into synthesis gas (syngas) which is a mixture of hydrogen and carbon monoxide. Syngas can be used as a fuel source, hydrogen source or as an intermediate for the production of other chemicals.

The process is suitable for small scale allowing the production of syngas on a distributed basis at the source of the biomass. This technology can potentially be incorporated into a portable device that can be used where the biomass is readily available, eliminating the costs of transporting the biomass to a centralized processing location.

Particles of solid nonvolatile carbon and hydrogen containing fuel, such as cellulose, hemicellulose, starch, lignin, and their monomer components, can be rapidly volatilized by catalytic partial oxidation to produce hydrogen and carbon monoxide in high yields with a total time in the reactor of less than 50 milliseconds.

Features & Benefits

- Compatible with multiple feedstocks including solid or liquid biomass
- Eliminates the need to transport biomass feedstocks
- Fast reaction time (> 50 ms)
- >99% conversion
- Does not require external heat to operate, keeping the system very simple
- Operates at atmospheric pressure
- Compatible with feedstocks that contain moisture

Technology Status

Process has been successfully demonstrated in the lab.

IP Status

Patents pending worldwide.

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