



# GASIFICATION

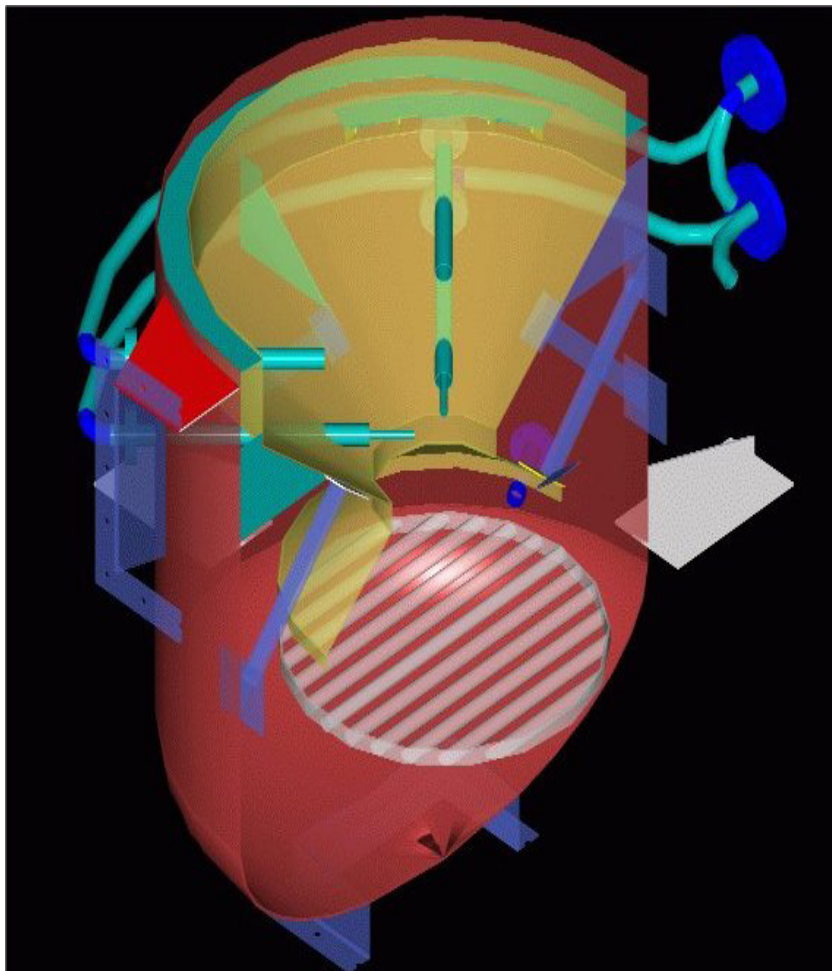
## *Biomass conversion to Syn-gas*

Biomass gasifiers operate by heating biomass in an oxygen-starved environment until the biomass breaks into its constituent chemical components. The process requires the input of heat energy for the endothermic chemical reaction to proceed that splits the molecules apart.

Gasification with air produces a low-Btu gas, with a heating value about one-fifth that of natural gas. Indirectly heated gasification and oxygen-blown gasification produces a medium-Btu gas, with heating values as much as one-half that of natural gas.

The product gas is suitable for fuelling advanced power systems that require clean, gaseous fuels.

Organics has developed and proven its own in-house technology for the efficient gasification of varied biomass streams. Of particular interest is Municipal Solid Waste, although many types of organic waste are suitable for use with this technology to produce energy.



## KEY FEATURES

MAXIMISE ENERGY PRODUCTION FROM BIOMASS WASTE STREAMS

LOW EMISSIONS, WELL WITHIN ENVIRONMENTAL LIMITATIONS

ABILITY TO ACCEPT A WIDE VARIETY OF BIOMASS FEED STREAMS

OPTIONS FOR CALORIFIC VALUE CONTROL

SIZE RANGE UP TO 300 TONNES PER DAY

VENDOR FINANCE AND OPERATE OPTIONS A SPECIALITY



## ADVANTAGES

- Immediate conversion of biomass waste to energy
- Waste reduction to ash for landfilling
- Maximises existing landfill capacity
- Conversion of a waste-stream liability into a resource
- Integrated management options to combined wet wastes and dry wastes into a single energy park
- The absence of excess air in the thermal reduction process prevents the formation of harmful pollutant gases
- Can be located close to the source of waste, thus reducing transport distances and costs
- Plant configuration allows a wide range of waste types to be passed through the thermal reactor
- Gas management system ensures smooth operation of energy generation plant

## WASTE TO ENERGY

There are many types of organic waste stream produced by both industry and society in general. Such waste is at present a public liability, causing difficulties for transfer, handling and long-term disposal.

The major repository for organic waste is presently the landfill site, although society at large is moving inexorably to minimise the use of this technology.

Such waste may be broadly categorised as both dry and wet waste. Where moisture content is high the energy required to dry the waste may be excessive. In such cases the use of gasification would be inappropriate. Organics offers anaerobic digestion systems for wet wastes. (See datasheet ODSR02)

Dry waste may be fed to a gasifier after a minimal amount of processing. Such waste will need to be classified, shredded and, where necessary, dried to an appropriate moisture content.

The Organics gasification system is designed to accept a broad range of organic waste consistencies. This is an essential pre-requisite for systems designed to gasify Municipal Solid Waste.

Disposal by means of gasification will convert waste to energy and reduce disposal requirements.

## THE SYSTEM

Gasifiers have a number of advantages for use in advanced biomass power systems, including reduced emissions, increased efficiencies, and flexibility for use with a variety of biomass feedstocks.

Emissions from advanced power systems, such as gas engines, gas turbines and fuel cells, are extremely low compared with conventional power systems.

Furthermore, these systems can achieve high efficiencies. Replacing less efficient conventional boilers with advanced biomass gasifiers or gas turbines can increase the amount of electricity produced from biomass by 50% or more.

Gasification can take advantage of biomass feedstocks unsuitable for direct burning. When biomass fuels are burned in conventional boilers, the inorganic materials that do not burn, stick to boiler walls and reduce efficiency. Many fast-growing, desirable energy crops and residues have high proportions of these inorganic compounds. Inorganic compounds are removed during gasification as part of the cleanup process. The filtered by-products may then recycle back to croplands.

For further information on the possible use of this technology please contact your nearest Organics office.



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