

# CharMaker MPP

## mobile pyrolysis plant



## Conversion of waste wood to biochar products

A core expertise of Earth Systems is the application of existing and new bioenergy technology for the conversion of biomass resources to energy, and solid and liquid products. One technology designed and manufactured by Earth Systems is a batch pyrolysis furnace intended for the conversion of woody biomass waste to a valuable char product. This technology was built for the Australian Government as part of their river management operations in Victoria.

A common issue with stranded woody biomass is that mobile plant machinery access issues can preclude successful recovery of the biomass. Transport costs can also undermine the economic recovery of biomass for other purposes. Earth Systems has now addressed this difficult problem by inventing a mobile pyrolysis technology that is easily transportable – the technology goes to the biomass. The pyrolysis technology is based on a shipping container design and hence integrates simply with all standard methods of transport suitable for shipping containers.

Pyrolysis is the high temperature treatment of the woody waste in a low oxygen environment. Pyrolysis can be used to convert woody waste into charcoal or a special form of char known as biochar, which has a variety of valuable applications.

The technology is applicable to any woody biomass where transport or economic issues preclude removal. Alternatively, multiple pyrolysis units can be deployed with a bolt-on bio-liquids recovery system for a longer-term fixed bioenergy hub arrangement. The technology is also particularly useful for the treatment of invasive pest tree and plant species providing a method of complete destruction with minimal risk of spread. A sophisticated thermal oxidiser arrangement also makes the technology suitable for contaminated biomass sources where contaminants can be volatilised and destroyed in the high temperature afterburner flue system.

### KEY FEATURES OF THE CHARMAKER MPP:

- Internationally patented technology based on a novel and rapid pyrolysis process for large sized woody biomass.
- Easily transported unit with access to most remote areas.
- Batch processing with 13 and 30 m<sup>3</sup> internal volume per batch for the MPP20 and MPP40.
- Pyrolysis converts biomass to ~1 to 2.5 tonne biochar per batch.
- Processes all larger wood feedstocks, including logs. Minimal feedstock pre-treatment is required (**no chipping required**).
- Batch processing takes a few hours (normally 4~6 hrs per batch)
- Targeted temperature range can be selected from 300-550°C.
- Destruction of all pathogens.
- High quality char product with a very high fixed carbon content.
- Very low to zero smoke emissions.
- High thermal energy output.
- Minimal operating costs – unit operates itself after loading with auto-turn off at end of run – can be operated unattended.
- Global remote connectivity via smart phone and computer.
- Designed for farm and forestry machinery operation.
- Capacity for high grade heat export to industrial processes.
- Bolt on bio-liquids recovery plant also available for pyrolygneous liquids (wood vinegar/smoke water) and bio-oil.

For more information see:

<http://www.esenergy.com.au/technology-solutions/charmaker>



Biochar

### About Biochar

Produced from biomass (typically plant matter), specifically for use in soil amendment. It has received much interest recently for its potential uses in improving soil properties and also as a simple means for capturing and storing atmospheric carbon.

Potential benefits to soil include improved nutrient and water retention, reduced soil acidity and increased habitat for beneficial soil microbes.

