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SUSTAINABLE ENERGY

The process involves a number of stages, namely:

- 1) Biomass mainly from forestry is dried and then subject to pyrolysis
- 2) 30% of this by weight produces wood alcohol (methanol) which would be suitable for transport or converted to other biofuels

The residual 70% from pyrolysis is charcoal. This can be stored until needed when it gets ground to a powder and blown into a direct carbon fuel cell. The cell is provided with oxygen from an electrolysis plant and this generates electricity. This process produces electricity with double the efficiency of a conventional coal fired power station. The by-product is a very pure carbon dioxide which can be liquefied for sequestration or more usefully turned into methane by the Sabatier process. This reaction using catalysts is exothermic and this heat will be used for drying the biomass or in supplying some of the heat for the pyrolysis. Clearly, the amount of gas produced will depend on the amount of electricity generated.

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RENEWABLE PRODUCTION OF FUELS

