

## **BIOETHANOL PRODUCTION**

Bioethanol is an alcohol made by fermenting the sugar components of biomass.

Today, it is made mostly from sugarcane and starch crops. With advanced technology being developed by the Biomass Program, cellulosic biomass, like trees and grasses, are also used as feedstocks for ethanol production.

Starch content of biomass feedstocks like corn, potatoes, beets, sugarcane, wheat, barley, and similar can be converted by fermentation process into alcohol (ethanol).

Fermentation is the biochemical process that converts sugars into ethanol (alcohol). In contrast to biogas production, fermentation takes place in the presence of air and is, therefore, a process of aerobic digestion.

Bioethanol producers use specific types of enzymes to convert starch crops such as corn, wheat and barley to fermentable sugars. Some crops, such as sugar-cane and sugar beets, naturally contain fermentable sugars.

The simplified fermentation reaction equation for the 6-carbon sugar, glucose, is:



Bioethanol can be used as a fuel for cars in its pure form, but it is usually used as a gasoline additive to increase octane and improve vehicle emissions and may also be used as a hydrogen source for fuel cells.

Latin America, dominated by Brazil, is the world's largest production region of bioethanol.

In developing countries interest in alcohol fuels has been mainly due to low sugar prices in the international market, and also for strategic reasons.

In the industrialized countries, a major reason is increasing environmental concern, and also the possibility of solving some wider socio-economic problems, such as agricultural land use and food surpluses.

As the value of bioethanol is increasingly being recognized, more and more policies to support development and implementation of ethanol as a fuel are being introduced.

Simplified diagram showing bioethanol production process is attached here to.

# IMTE AG

Power Consulting Engineers

