Read the script and complete the script with the following words:

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| --- | --- | --- | --- | --- | --- | --- | --- |
| energy | products | country | fuel | create | biomass | plants | organic |

We all know that it takes a lot of fuel to keep our \_\_\_\_\_\_\_\_running, right? Cars, trucks, planes, trains… what if we can develop a whole new world of renewable sources for those fuels. Well…. Good news! We already are. We can \_\_\_\_\_\_\_clear new renewable transportation fuels from\_\_\_\_\_\_, trees and a range of other organic materials, in other words BIOMASS. Ok, so Biomass is an \_\_\_\_\_\_\_\_material from forced steadings and wastes to crops going to produce energy and from other renewable \_\_\_\_\_\_\_sources like algae, they can all be converted into fuels. Scientists and engineers are finding a new way to make biofuels that can take the place of conventional fuels like gasoline, diesel or jet fuel. Here is where biofuels have a great advantage, they can be made from leftovers or waste\_\_\_\_\_\_\_\_, for examples non-enable sources like wheat straw and corn cops are often left for mega agricultural production and some can actually be used to create fuel and in the near future crops can be grown specifically for energy like fast growing trees and grasses.

Right now bio refineries with new technologies are being built to convert biomass into fuel, power and even bio products like plastic, socks and cosmetics, and many biofuels can be seen as an integrator of existing vehicles and \_\_\_\_\_\_ systems from diesel, gasoline and even jet engines.

So, How does it work? Essentially, biomass solid parts are broken down and then refined into biofuels. There are a lot of ways to do this:

1. Enzymes can be used to break down biomass into liquid sugar, then microorgs. Like yeast ferment that sugar into renewable fuels.
2. Extreme heat can break down biomass too when you take oxygen out of the mix, biomass is rapidly broken down into a biocrude oil that can be refined into biofuels, and a little bit of oxygen to extreme heat and \_\_\_\_\_\_\_\_\_ solids are converted to a gas, and that gas can be converted into a biofuel.

As technology develops, researches at the US. Department of energy and its national laboratories co-working to make biofuels more efficient, sustainable biomass resources, more effective enzymes organisms and catalysts all help to break down the cost of producing biofuels. The end result is fuel you can use anywhere or any way that you would use petroleum based fuel, palm grown biofuels, clean and renewable and a big step forward for America’s energy security.