

Advanced Biofuels USA, a nonprofit educational organization, advocates for the adoption of advanced biofuels as an energy security, economic development, military flexibility and climate change solution.



Just A Minute (or So) about Renewable Fuels Episode 4

Advanced Biofuels USA Presents Biofuels yesterday, today and tomorrow. The origins of biofuels, how we use them, and possibilities for the future.

Yesterday

In the early days of cars and trucks, there wasn't a system of gas stations. So cars and trucks were built to use the fuel that could be made on farms or near where the cars and trucks were used. Thus, the original Ford Model T ran on ethanol and the first diesel engines used peanut oil. When gasoline came into use, later Model Ts were the first [“flex-fuel” vehicles](#). They could use ethanol and gasoline. And, eventually, gasoline was sold mixed with ethanol, as we do today.

Today

Today, you buy biofuels at the “gas” or “petrol” station. In the US, almost all the regular gasoline is [E10—or 10% ethanol](#), a biofuel; some is [15%, E15](#). You might also see 20% and even 30% ethanol blends. The more ethanol in the fuel, the higher the octane. Ethanol use increased as a replacement for [MTBE](#), an animal carcinogen that leaked into groundwater from gas station tanks. After many lawsuits, it was banned in about half the US states. However, it is still used in gasoline in other parts of the world and could be replaced with safer ethanol.

You can also buy biodiesel blends. In the US often 2-5% of petroleum diesel is biodiesel; and some fleets use 20% or even 100% biodiesel, in public works equipment and farm equipment or in specially adapted cars and trucks. So, you do use biofuels today, even if you don't know it.

Racing

Biofuels have been used in [Green Racing](#). Cars racing in the old ALMS (American Le Mans Series) used a variety of renewable fuels experimenting with biobutanol, cellulosic E85, E10 and E20. And NASCAR uses E15.

Aviation

Renewable aviation fuel is called [“Sustainable Alternative Fuel” or SAF](#). Globally, more than 40 airlines now have already implemented SAF at some level, with about 200,000 commercial flights using SAF since 2011.

Buses

Some [buses](#) around the world use renewable natural gas or biomethane for fuel in engines that can use compressed natural gas. This chart compares the greenhouse gas emissions among different fuels. You can see the greenhouse gas emissions benefit over petroleum diesel.

Trucks

[Trucks](#) on the roads today can also use [renewable natural gas \(RNG\)](#), as well as biodiesel blends and renewable diesel, also known as [HVO](#) or green diesel. It can completely replace petroleum diesel.

Individual Transportation: Cars and Motorcycles

In the US, you can use E15 or 15% ethanol fuel in vehicles built since 2001. At this time [motorcycles](#) may only use up to 10% ethanol fuel, E10, which is the most common fuel at gas stations in the US.

Ships

In January 2020, the international [maritime](#) organization's regulation to reduce dangerous sulfur oxide emissions from ships went into effect. Now [low sulfur](#) renewable fuels help the shipping industry meet these requirements.

Military

[Military](#) aircraft and ships around the world can use renewable fuels as well.

Bioheat

Biofuels can also be used for [heating](#). Bioheat fuel is a blend of cleaner-burning ultra-low-sulfur heating oil and biodiesel. Ethanol [cookstoves](#) are a safe alternative to indoor wood and charcoal fires and can be used for meal preparation.

Future

In the future we can expect to use [renewable hydrogen](#) or ethanol, for fuel cell powered cars and trucks. Work is being done to optimize gasoline engines for E30, 30% ethanol.

What about [rockets and missiles](#)? Well research is being done to use renewable fuels in those too.

For more information about advanced biofuels visit [advancedbiofuelsUSA.org](#) an online educational nonprofit library with nearly 40 thousand items.

.....

Three questions you should be able to answer after watching Episode 4:

What are the origins of "flex-fuel" vehicles?

What are the common ethanol percentages used commercially?

Name at least 4 ways biofuels are used today.

[WATCH VIDEO](#) Click on tags for details.

by Hannah DelSordo, a junior at Dickinson College majoring in International Studies and French, volunteers at Advanced Biofuels USA in preparation for a career working on environmental issues and policy.