

# ENDURANCE BIOENERGY REACTOR™

ENERGY ON DEMAND

## WHAT IS IT?

Argonne's Endurance Bioenergy Reactor™ (EBR) is a simple, easy-to-use portable system that uses bacteria to produce fuel that can be used directly by diesel engines and generators.

## WHY IT'S NEEDED

This promising technology provides a viable alternative for military and civilian personnel who need reliable power sources when they are not near a power grid. For military applications, the EBR prolongs operations, reduces costs and improves safety by decreasing reliance on supply chains and eliminating dangerous convoy missions to deliver more fuel.

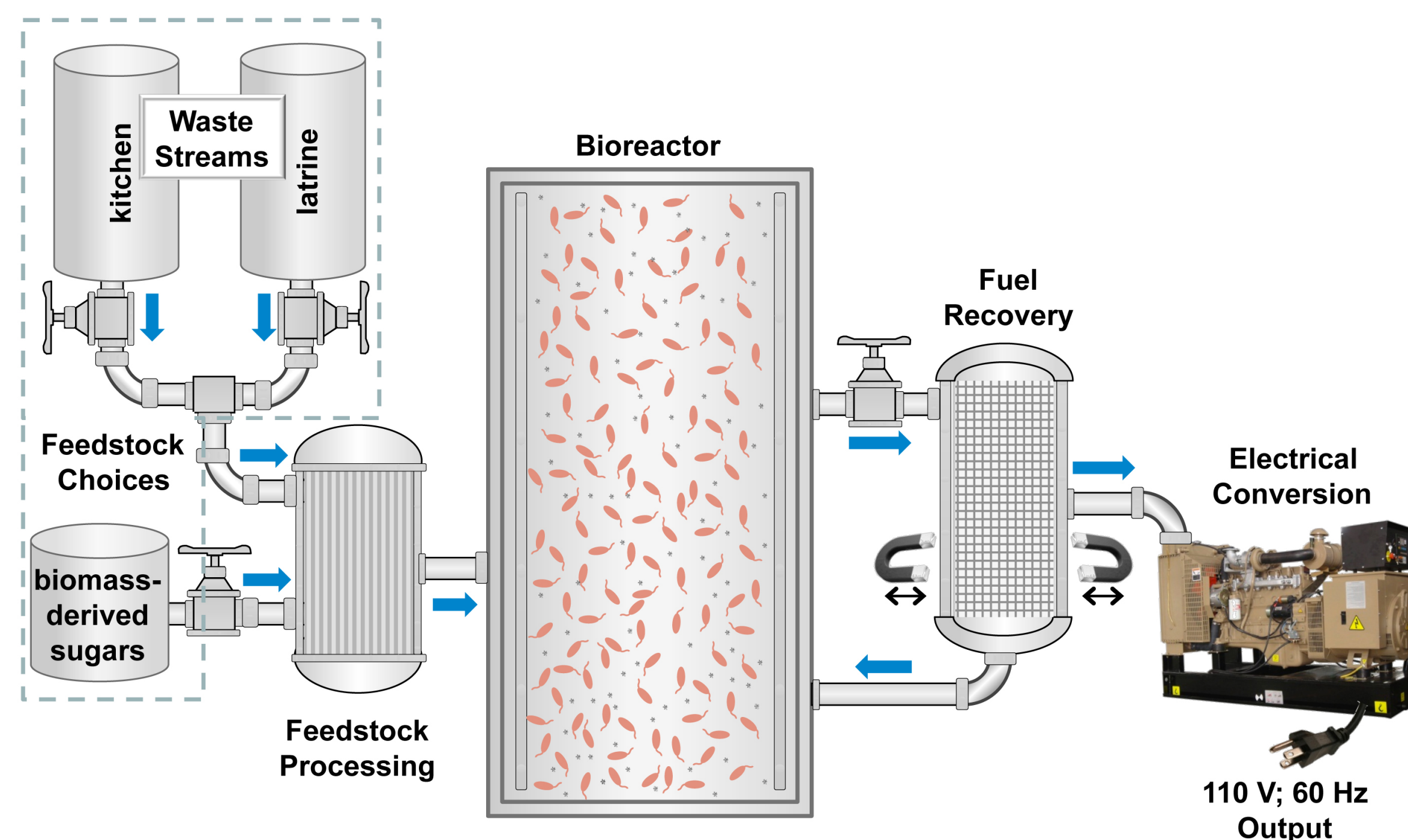


EBRs can help fulfill the energy requirements of America's military forces, deployed or at home.

## HOW IT WORKS

Argonne scientists have developed bioengineered photosynthetic bacteria capable of producing a long-chain alcohol called phytol from a variety of feedstocks, including food waste and latrine waste. With chemical and physical properties similar to diesel fuel, phytol is considered a "drop-in ready" biofuel, meaning it is ready for immediate use by diesel engines and generators with no further refinement necessary.

### Endurance Bioenergy Reactor™ Operation



In collaboration with the United States Air Force, Argonne researchers incorporated this groundbreaking discovery into a portable fuel-generating system called the EBR. The system is comprised of a large bioreactor with continuous filtered feedstocks as input (tolerates a variety of carbon and energy sources, even mixtures of sources that may be available in a given area). Once filled and growth is initiated, the engineered bacteria can begin converting waste into biofuel. The EBR is able to produce 25 to 50 gallons of biofuel a day.



The photosynthetic bacteria within the EBR efficiently convert waste from kitchens or latrines into long-chain alcohols. Once separated from the fermentation broth, these serve as surrogates for diesel fuel that can be used alone or in blends to power vehicles or generators.

## BENEFITS

In addition to military applications, the EBR's mobility and simplicity make it a logical choice for energy production in remote and disaster areas. It is also seen as a rapidly deployable tool for humanitarian activities around the world, providing energy when and where it's needed.

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