PowerSecure

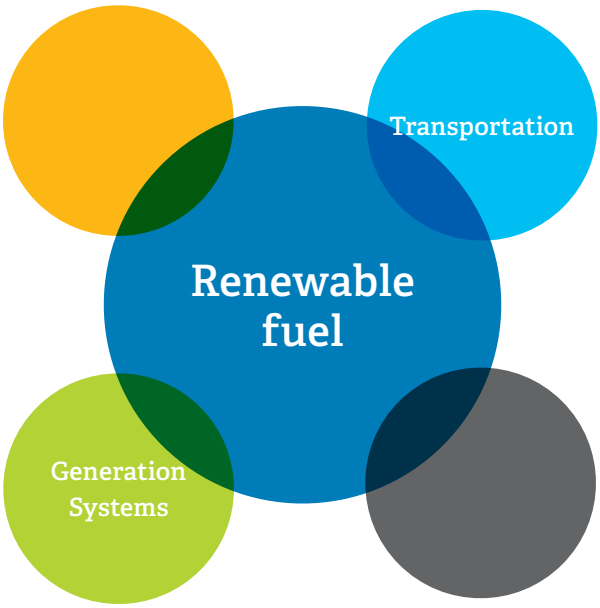
PowerBlock Generation Systems

Renewable Fuel Ready:

Uncovering the Science Behind Renewable Fuels and the Path to Net Zero

The Path to Net Zero

Fuel that powers everything



Environmental impact of renewable fuels

How renewable fuels can help accelerate reaching net zero

Renewable Diesel

80%
Carbon reduction when compared to fossil diesel

Zero
New carbon emissions from the engine and less pollution

Produced from
100%
Renewable raw materials

Renewable Natural Gas

51%
Life cycle reduction of greenhouse gas emissions

21x
Less potent emissions than methane released directly into the atmosphere

Uncovering the Science Behind Renewable Fuels

What constitutes a renewable fuel?

As "drop-in fuels," renewable diesel and renewable natural gas (RNG) are fully interchangeable with their fossil counterparts, requiring no modifications to existing equipment and no blending of fuels. Therefore, both renewable fuels can be fully utilized in existing pipelines, storage tanks, and engines with no investment in new infrastructure required.

Renewable Diesel

- **Feedstock:** Renewable diesel is made from 100% renewable raw materials, such as used cooking oil or animal fat from food industry waste that contains already-existing carbon molecules, which can be processed into renewable fuels over and over again.
- **Method of Production:** Renewable diesel is made through various processes that remove oxygen from the feedstock, making it a viable substitution for fossil diesel with no blending required.
- **Renewable v. Biodiesel:** Often spoken of interchangeably, they are very different products although both are made from organic biomasses. Renewable diesel's manufacturing process creates a fuel that, unlike biodiesel, is chemically identical to fossil diesel. The differences can be found, for example, in lower emissions and cleaner burning than traditional biodiesel, with better cold-weather and storage properties.

Renewable Natural Gas

- **Feedstock:** RNG is produced by capturing methane from the decomposition of organic biomass — such as food waste, animal manure, wastewater treatment plants and landfills.
- **Method of Production:** Methane from biomass is captured and filtered for impurities, then undergoes a biochemical process, such as anaerobic digestion or thermochemical gasification, resulting in fuel that is comparable to fossil natural gas.

Comparative benefits of renewable fuels

Renewable Diesel

· Drop-in ready and can be blended with fossil diesel and biodiesel

· More efficient and complete combustion, and reduced build-up inside the engine-generator

· No degradation from water absorption or microbial growth during handling and storage

Renewable Natural Gas

· Drop-in ready and can be blended with fossil natural gas

· Fully compatible with the current U.S. pipeline infrastructure

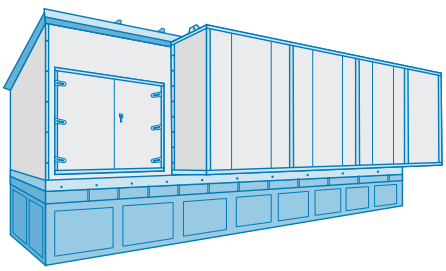
· Less potent emissions than methane released directly into the atmosphere

PowerBlock generation systems offer a drop-in solution for the seamless integration of renewable fuels

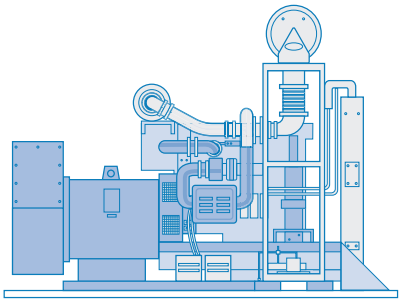
PowerBlock generation systems with diesel or natural gas-fired engines are fully equipped to transition to renewable fuels. No asset upgrades or modifications are necessary.

Renewable diesel meets the same ASTM D975 specification (a series of 13 tests diesel fuel must meet at the time of delivery) as fossil diesel, making it a drop-in fuel source for engines like the Volvo Tier 4 Final and Stage V. RNG is interchangeable with existing natural gas engines.

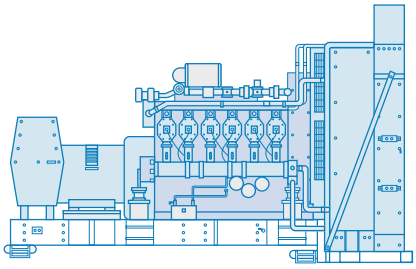
PowerBlock Generation System



Tier 4 Final Diesel Engine



Natural Gas Engine



Renewable fuels are a today and forward-thinking solution

The future of renewable fuels

As we move to implement sustainable solutions and tackle environmental challenges, the catalyst of change boils down to a simple thing — end users, businesses, cities, all those that have a need for fuel also must have climate plans in place. Investors are demanding Environmental, Social and Governance (ESG) plans, and employees expect their organizations to establish climate initiatives.

Although there is a continual effort to develop new technologies, it is also crucial to acknowledge the tools that exist now. Renewable fuels are not just a future solution, they are a today solution. There is no need to train employees on how to use, handle, or store these fuels. As a drop-in fuel, there is no need to change operations or invest in infrastructure.

Renewable fuels are becoming more accessible by the day. The import of renewable diesel rose 49% in 2019 to a record high of 17,000 barrels per day, according to the U.S. Energy Information Administration. Renewable fuels leave no space for vague commitments but create opportunity for sustainable actions to be taken now.

Drop-in fuel: how to adopt renewable fuels today

Although the RNG supply chain is not yet fully developed, renewable diesel is currently available in California, Oregon and other future-ready states with low-carbon fuel standards as a fossil fuel replacement. PowerSecure is now offering its California customers the option to switch to renewable diesel. PowerSecure provides clean and reliable power for everyday operation and during unanticipated grid outages. As organizations continue to evolve their energy strategies to prepare for the future, partnering with a solutions provider that readily adapts to fuel technology changes entering the marketplace is critical. Flexible, forward-facing technology solutions will be key to building the future of energy and achieving net zero goals for a brighter future.

To learn more about renewable fuels and how PowerSecure is helping customers prepare to be future ready, visit powersecure.com/renewable-fuel-ready.