

Emulsified Fuels

An Overview

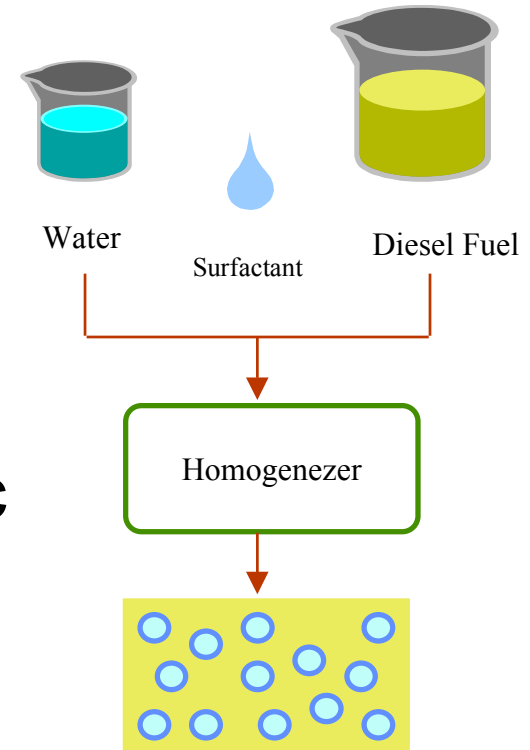
Alternative Fuel
The HydorFuel



What are Water - Emulsified Fuels?

- Adding water to diesel dates back to the early 1900's. There are hundreds of patents issued on water-diesel blends.

- Emulsified diesels are defined as emulsions of water in diesel.
- Typically made of 10-20% mass/mass water mixed with specific additives.



How do emulsified diesels work ? And with what results?

- Water in diesel yields the following effects:
 - Water vaporization increases fuel dispersion in the form of smaller droplets.
 - Contact surface between fuel and air is increased.
 - Combustion is more efficient.
- Net results:
 - Reduces combustion temperature peaks (lowers NO_x).
 - Particulate formation is reduced (lowers PM).

What are the benefits?

- Lower emissions:
 - Up to 25% NO_x reduction.
 - Up to 60% PM reduction.
 - Up to 80% smoke reduction.
 - Up to 5% CO₂ reduction.
- Better lubricity.
- Increased thermal efficiency.

Emulsified diesel is only emission-control fuel technology that simultaneously lowers both PM and NO_x.

Qualification of emissions reduction advantages.

- The magnitude of the emissions reductions advantage from emulsified diesels is a function of:
 - Engine type,
 - Operating conditions,
 - Properties of the baseline diesel fuel, and
 - Properties of the diesel fuel that is blended into the emulsion.

Emulsified fuel applications

- On-Road

- Public fleets.
- Mass transit fleets.
- Private fleets.
- Garbage collection fleets.

- Off-Road

- Marine engines.
- Locomotives.
- Power generation.
- Construction equipment.

- Other

Large institutional combined heat sites (apartment complexes, hospitals, universities, etc).

- Industrial boilers.



Q & A



THANK YOU