

(BOILERS) Emulsification Fuel Preparation (EFP)

Retrofit Systems & Benefits

"Discount Provider of USA, Inc." provides retrofit economizer systems for commercial and industrial furnace, boiler, and power plant applications that increase fuel efficiency and reduce fine particulate matter (PM), NO_x, and Sulfur emissions. Our proprietary technology and know-how harness known principles of fluid dynamics to lower the viscosity and increase the reactive surface area of liquid fuels through emulsification.

Our Emulsification Fuel Preparation (EFP) Systems create super-refined and consistent molecular dispersions of liquid fuels and enable highly stable water-in-oil admixtures. The resulting emulsified fuels burn more cleanly and efficiently than commonly available fuel grades—a fact that has been proven and widely known for years in the oil and gas industry. This process of emulsified fuel preparation may be performed on-stream within the circulation lines that deliver fuel directly to boilers and furnaces or within a storage tank preparation process.

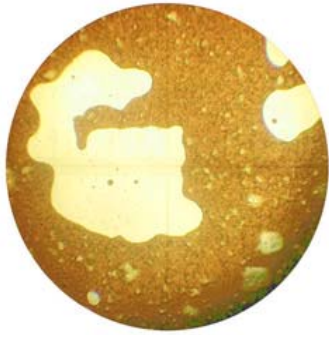


Our devices and technologies have been proven in both prototype laboratory tests as well as real-world pilot locations outside the U.S. The following benefits have been measured and observed in our currently installed base of sites:

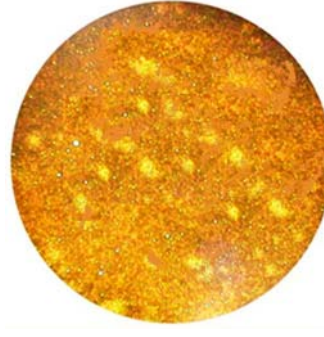
Economic Benefits	Environmental Benefits
• up to 30% fuel savings • low cost, low impact retrofitting • reduced burner maintenance	• reduces CO₂ and NO_x emissions by 30-50% • significantly reduces Sulfur emissions • enables waste water recycling

Fuel Preparation Technology

All hydrocarbon fuels (e.g., crude oil, biofuels, etc.) are a heterogeneous mix of molecular compounds. Our systems and devices provide in-line fuel preparation that efficiently reduces the individual size of molecules within liquid fuels creating a consistent, homogeneous microscopic dispersion of the chemical compounds within the fluid. The result is a highly stable emulsified fuel with lower viscosity and greater reactive surface area throughout that burns more cleanly and efficiently.



Original heating oil with water admixture



Heating Oil after in-line Dispersion Processing Fuel Preparation

For example, in the burning of heavy oil (#4 and #6 oils) in heating furnaces and steam-generating power plants, finer emulsions provide more efficient combustion at lower temperatures, reduce unburned carbon and NOx emissions, and enable highly stable water-in-oil emulsions that are proven to burn more cleanly and efficiently. Our fuel preparation systems provide fine emulsifications that remain stable for long periods of time without the use of chemical additives, surfactants or binders for water-in-oil mixes.



Boiler-house exhaust on regular mazut (low grade heating oil)



Same boiler-house exhaust on water/mazut (low grade heating oil) mixture after emulsion processing

Additional details and specifications available upon request.

Contacts: Director of "Discount Provider of USA, Inc." : Boris Nikitine

Phone: +1.212.203.6781 **Voice/Fax:** +1.718.504.7814 **E-mail:** Info@DiscountProvider.us

Websites: <http://businessmultiware.com/DiscountProvider> [En/frame.asp?page=Projects](http://businessmultiware.com/DiscountProvider/En/frame.asp?page=Projects)

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