

# QUADRA PUMPS

powered by innovation

## OVERVIEW

**QUADRATIC OPTIMIZER - CLEAN BURN TECHNOLOGY IS A FUEL HEATING SYSTEM THAT OPTIMIZE ENGINE PERFORMANCE, DURABILITY AND OVERALL EFFICIENCY. LOWER FUEL COSTS, EXTENDS SERVICE INTERVALS.**



## LONG TERM BENEFITS

### FUEL ECONOMY

#### Higher Energy Release:

Better atomization and more efficient combustion mean that more of the fuel's energy is converted into useful work, rather than being wasted as unburned fuel. This can improve fuel efficiency, reducing overall consumption.

#### Consistent Performance:

Heated fuel ensures that the engine operates efficiently even in colder conditions, where untreated diesel might gel or clog fuel injectors.

### IMPROVED COLD WEATHER PERFORMANCE

#### Preventing Fuel Gelling:

Diesel fuel can gel or solidify at low temperatures, especially if it contains paraffin wax. Heating the fuel prevents it from thickening, ensuring smooth flow through the fuel lines, filters, and injectors, and avoiding starting or operational issues.

#### Reduced Wear and Tear:

Cold starts can cause more engine wear due to poor fuel atomization and incomplete combustion. By heating the fuel, the engine experiences less strain during cold starts, prolonging its life.

### ENHANCED POWER AND PERFORMANCE

#### Smoother Engine Operation:

With improved combustion efficiency, the engine can deliver more consistent power with fewer misfires or incomplete burns. This results in smoother acceleration and overall better performance.

#### Optimized Fuel-Air Mixture:

Heated fuel ensures a better and more uniform mixture with air, which can contribute to increased engine power output.

### IMPROVED COMBUSTION EFFICIENCY

#### Enhanced Atomization:

Heating the diesel fuel reduces its viscosity, allowing it to atomize more effectively when injected into the combustion chamber. This finer spray promotes better mixing with air, leading to more complete combustion.

### REDUCED INJECTOR FOULING

#### Cleaner Burn:

Because heated fuel atomizes more effectively, it burns more completely, which reduces the carbon deposits and soot that can clog fuel injectors over time. This helps maintain injector performance and extends their service life.

### REDUCTION IN ENGINE KNOCKING

#### More Stable Combustion:

Diesel engines can suffer from knocking or detonation when combustion occurs unevenly or too rapidly. Preheating the fuel can help promote a more controlled and stable burn, reducing the likelihood of knocking and improving engine longevity.

## CONCLUSION

INCREASE EQUIPMENT LONGEVITY BY ADDING THE QUADRATIC OPTIMIZER. USING THIS FUEL HEATING TECHNOLOGY PRIOR TO INJECTION OFFERS SEVERAL KEY ADVANTAGES INCLUDING IMPROVED FUEL EFFICIENCY, DURABLE DURING COLD CLIMATES, REDUCED EMISSIONS, AND ENHANCED ENGINE RELIABILITY. THIS METHOD ENSURES THAT THE DIESEL REMAINS FLUID AND ATOMIZES PROPERLY, LEADING TO MORE COMPLETE COMBUSTION AND, ULTIMATELY, BETTER FUEL ECONOMY AND ENGINE PERFORMANCE.