



# Burning Smarter and Cleaner

## A Quick Guide to Boiler Efficiency and New Fuel Options

Boilers are widely used by almost all segments of industry to produce hot water and steam by burning fuels such as natural gas, diesel oil, coal and wood products. Many Oregon companies rely on boilers to power their business. But older boilers, in particular, can be expensive to run, and emit pollutants that can cause health problems for workers and the surrounding community.

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**Biodiesel and other American-made fuels have an important role to play in strengthening our nation's energy security and economy.**

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Fortunately, there are several ways to simultaneously reduce costs and emissions. Simple practices like keeping a boiler in tune can save companies thousands of dollars, and switching to cleaner fuels can accomplish savings through reduced maintenance costs.

Below are some common questions and answers to help you reduce costs, use renewable energy and lower emissions.

### **Why do I need to keep my boiler tuned up?**

Keeping your boiler tuned up is a simple and inexpensive way to save money. OEC found that schools and many businesses in Oregon can together save well over \$1 million a year, while also reducing mercury emissions by 14 pounds a year, just by keeping their boilers in tune. For more details about this study, visit [www.oeconline.org](http://www.oeconline.org) and search for "boilers."

Like a car, boilers need to be tuned periodically. An out-of-tune boiler will use more fuel than necessary. Fortunately, boilers are relatively

### **Success Story:**

#### **Biodiesel in Warwick Public Schools**

In 2001, Warwick Public Schools began experimenting with different biodiesel blends in three boilers. A fourth continued to use regular heating oil, while the others received 10% 15% and 20% biodiesel blends. All boilers were tested for efficiency and fuel characteristics on a monthly basis.

After a year of testing, B20 was the clear winner. The fuel kept classrooms just as warm as regular heating oil and burned cleaner, with less visible smoke and NOx emissions coming out the stack. Better still, the fuel-wetted parts of the boiler using B20 were virtually spotless after a year of use.

According to Robert Cerio, facilities manager for the district, Warwick continued to use B20 in its boilers for several years. Because of reduced boiler cleaning costs, the district was able to offset the slightly higher fuel costs and save some money.

inexpensive to adjust. The money spent on keeping your boiler in tune is usually paid back in saved fuel costs in just a few months.

You can find out more about how to maintain your boiler most efficiently – including a handy checklist on how often to perform certain maintenance practices – at the U.S. Department of Energy website at <http://www.eere.energy.gov/femp>. Just search for "boilers maintenance."

### **Why should I use a cleaner-burning fuel in my boiler?**

Burning a lower-sulfur fuel such as ultra-low sulfur diesel (ULSD) or biodiesel can reduce maintenance costs and pollution levels. Higher sulfur fuels produce more pollution and create more fouling on the heat-transfer surfaces inside the furnace itself. Sulfur also contributes to the formation of nitrous oxides and particulate

matter, both of which have significant human health impacts, particularly for children.

Using a biodiesel blend has the additional benefit of reducing toxic emissions like benzene and formaldehyde. Biodiesel use also promotes a home-grown renewable fuel that supports American farmers and reduces global warming pollution.

### **Can I use biodiesel in my boiler?**

Yes. Biodiesel can be used as a fuel for boilers and other stationary equipment that burns diesel fuel. Home-grown renewable fuels such as biodiesel are rapidly gaining in popularity. Today, biodiesel is the fastest growing alternative fuel in America. Biodiesel is a renewable fuel produced primarily from vegetable oils, such as soybean and canola.

Biodiesel can be blended with regular diesel in any combination (20% biodiesel, 80% diesel, called "B20," is most common), or used in its pure form (B100). Pure biodiesel offers the greatest benefits, but a B20 blend can also improve equipment maintenance and air quality.

Switching to a B20 blend requires no modifications to your system, though your furnace should be given a tune-up before making the switch. Because biodiesel is a solvent, it will clean out your fuel system. This may cause some fuel filter clogging early on, but most users experience no difficulties.

Higher biodiesel blends and pure biodiesel (B100) may also be used in heating oil furnaces and boilers, but your system will require fine-tuning and perhaps some new components. Over time, B100 can degrade fuel-wetted parts containing natural rubber, so be sure to check with a professional to find out whether your boiler needs modifications before switching fuels.

### **Where can I buy biodiesel?**

Many diesel providers are already offering the alternatives . . . just ask your current supplier if

they can provide this option to you. For a list of distributors in Oregon offering biodiesel, visit the Columbia Willamette Clean Cities fuel locator at [www.cwcleancities.org/locator.php](http://www.cwcleancities.org/locator.php).

### **What about the new ultra-low sulfur diesel (ULSD) fuel?**

You can also reduce emissions and maintenance costs by using ultra-low sulfur diesel. Diesel fuel containing sulfur at levels of 15 ppm or less is classified as "ultra-low sulfur diesel" (ULSD). As of November 2006, the federal government is requiring all diesel fuel sold at the pump to be ULSD, so the fuel is easy to find.

ULSD will run in any piece of equipment designed for the ASTM D-975 diesel fuels. ULSD performs just like higher sulfur diesel.

### **How do the costs for these compare to regular diesel?**

With the price of petroleum heading upwards, alternatives like biodiesel are becoming more cost competitive. In fact, some days B20 is less expensive than petroleum diesel! Check with your fuel distributor.

### **The Bottom Line**

Choosing better fuels is becoming easier and more cost-effective than ever. Using ULSD or biodiesel blends will help your business save money in the long run through reduced maintenance costs, while also providing cleaner air for you, your workers and your community. Call your fuel provider today!

*For more information about biofuels in Oregon, visit [www.biofuels4oregon.org](http://www.biofuels4oregon.org). The National Biodiesel Board offers more on biodiesel heating oil blends at [www.nbb.org](http://www.nbb.org).*

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