

“If Econoburn Boilers are made here in North America, why are they more expensive than many boilers imported from Europe?....”

This is a question we hear often and it is a valid one. This white paper will directly compare the build integrity of an Econoburn EBW-150 and a representative imported boiler from Eastern Europe. This will serve to demonstrate the significant added value of Econoburn in terms of build quality, boiler longevity, and safety.

Although commercialization of wood gasification boilers began in Europe, the standards which set the bar for pressurized steel boiler construction (regardless of fuel type) were created in North America by the National Board of Boiler and Pressure Vessel inspectors. The National Board of Boiler and Pressure Vessel Inspectors was created in 1919 to promote greater safety to life and property through uniformity in the construction, installation, repair, maintenance, and inspection of pressure equipment.

The National Board membership oversees adherence to laws, rules, and regulations relating to boilers and pressure vessels. The National Board Members are the chief boiler inspectors representing most states and all provinces of North America, as well as many major cities in the United States. It also qualifies boiler manufacturing facilities for adherence to the building of boilers to ASME code.

ASME Section IV code, to abbreviate, mandates the use of specifically traced materials to be used in boiler construction, that accurate design calculations are created and implemented (Including steel plate thickness), and that the boiler undergo vigorous inspections up to the point of final pressure testing.

All Econoburn Boilers are built to ASME Section IV Standards!

The following pages are a pictorial that will provide visual evidence of the contrasts between American and European build integrity. Read on....

The boiler “Stays” are the welded pins which separate the outer water jacket from the inner water jacket and make a significant impact on the durability, and safety, of the pressure vessel.

Here is what the initial 3/4” ‘stay’ welds on and Econoburn look like as they are welded to the inner water jacket:



Notice here that the Econoburn has 18 stays per side vs. 8 for the representative European-built boiler:



You will also note the ‘bulging’ of the sides of the European boiler that occurred during factory pressure testing. In addition to the correct amount of ‘stays’ to hold the boiler together, Econoburn uses 1/4” SA-36 boiler plate. Conversion of the European-built 4mm yields just over 1/8” steel thickness.

Same comparison of the boiler rear sections. 12 stays on the Econoburn vs. 2 stays on the European-built boiler:



Note: The boiler rear section is where the vast majority of heat transfer takes place and has the greatest degree of stresses applied.

To summarize, the number of 'stays' and their location are paramount to the safety, longevity, and durability of any steel boiler regardless of fuel type.

	Econoburn 150	Comparable European Boiler
Back Stays	12	2
Side Stays	36	16
Top Stays	9	4
Bottom Stays	9	4
Front Stays	2	0
Total	<u>68</u>	26

The value of your Econoburn purchase should be more evident now. If not read on...

Let discuss weight for a moment.....

	Econoburn 150	Comparable European Boiler
Empty Weight	1860 lbs	1015 lbs

The boiler weight per comparable BTU output is a pretty clear indicator of build integrity. It not only includes the weight of thicker steel, but also takes into consideration the second most important element of the boiler; the refractory that is the integral component of the gasification process. Unlike competitors that use standard firebrick, Econoburn uses a unique blend of high alumina/high silica

castable refractory from Allied Mineral in Alliance Ohio that we blend, and bake, in-house to ensure the proper densities that will yield a long service life for your boiler.

Controls:

Each Econoburn Boiler is equipped with the latest in reliable controls technology made right here in North America by Control Resources in Massachusetts.

Safety Certification:

The question of proper safety certification is one that is often overlooked because we just assume every product we buy carries some sort of safety approvals. Ask the question and you will be surprised to learn that most imported boilers do not carry any safety certifications that are recognized in North America. Econoburn is proud to carry the Warnock-Hersey Safety Certification that tests to the following rigorous standards:

- UL 391-06 test standard for Solid Fuel and Combination Fuel Central & Supplementary Furnaces
- UL 726.06 test standard for Oil-Fired Boiler Assemblies
- CSA B366.1-M91 test standard for Solid Fuel Fired Central Heating Appliances

Standard Equipment:

The following equipment comes standard with each Econoburn and represents several key items needed to correctly install your boiler without the need to source these items separately, thus providing a greater value to you:

- Honeywell L4008A high limit aquatant and immersion well for secondary safety.
- Grundfos UP15-58 3 speed circulating pump
- Combination temperature/pressure gauge
- 30 lb. ASME pressure relief valve

Econoburn will not compromise your boilers safety, service life, or quality by using inferior materials, or taking shortcuts in the fabrication and finishing process. Econoburn Boilers are North American Engineered for North American Applications and we are proud to stand behind our robust product with the best, and most comprehensive, warranty's in the industry!

At the end of the day you get what you pay for and Econoburn is proud of its rich heritage with thousands of overwhelmingly satisfied customers throughout North America.