



TRIAD RUGGED EFFICIENCY PACKAGE FAQ's - Frequently Asked Questions

What is the TRE (Triad Rugged Efficiency) Package?

- The TRE combines our uniquely rugged steel boilers with a compact flue gas heat exchanger to create a highly efficient condensing package that can reach efficiencies of 92% or more. The TRE uses the return water, which can be as cold as the job requires, to extract energy from the flue gas discharged from the boiler that would usually be lost because it is typically vented up the stack. The colder the return water, the higher the efficiency of the package.

What is the TRE heat exchanger made of, how is it designed, and what makes it unique?

- All surfaces of the heat exchanger used in the TRE package that are in contact with flue gases or water are stainless steel and the entire unit is insulated and covered in a painted steel skin. It has many tubes very efficiently arranged which maximizes the amount of heating surface in the smallest package possible. The unit is designed to the specifications of ASME Section VIII and the boiler to ASME Section IV.

What is the heating square foot surface area?

- Both standard and custom TRE units are available. The amount of heating surface is optimized on a project-by-project requirement. But as an example, the standard 2000MBH package has at least 200% to 300% more heating surface than a typical condensing boiler!

Why is heating surface important? How is performance at non-condensing temperatures?

- The TRE package is conservatively designed to insure optimum performance ***across the entire firing range*** of the boiler and ***near maximum achievable efficiencies across the range of return water temperatures***. This is achieved due to the large amount of heating surface in this well-designed product. Most other condensing products have minimal heating surface, so to achieve decent efficiencies when the return water is say 120 or higher, the burner fan on those products has to be boosted to create a higher pressure drop.

Is the TRE expensive?

- The TRE package is incredibly cost effective! ***For example, a 2000MBH package can be up to 20% less expensive than a typical condensing boiler.*** If you choose to use one larger TRE heat exchanger with more than one boiler, then the package becomes even more cost effective.

How do I know how efficient it is? Do you guaranty the efficiencies?

- All TRE packages are guaranteed to achieve the stated efficiencies, which are easy to measure with basic combustion analyzers. The TRE design is based on an industry-standard approach to heat transfer, which involves a proven series of heat transfer equations.

Is this complicated to set up and operate? How does it compare with a typical condensing boiler?

- The TRE is a rugged stainless steel heat exchanger which has no moving parts making it simple to install and operate. A thermostatic bypass valve is included to protect the boiler from thermal shock or condensing. It is really quite simple!

How much space does it take up?

- The heat exchanger on the TRE is no wider than the boiler, and is tucked in behind it adding only about 2 extra feet. Or, you can use one larger heat exchanger with multiple boilers, depending on your need and the boiler room layout. Remember, we have 2 to 3 times the heating surface of our competition!

How do I control the system? What is the temperature of the boiler water?

- The TRE requires nothing different than the usual controls used on Triad boilers. An external sequencer to monitor loop temperature and incorporate an air-reset schedule should be used to maximize the system efficiency.

Can I use one TRE heat exchanger with several boilers, instead of one TRE heat exchanger per one boiler?

- Yes, significant cost savings can be achieved on multiple boiler projects by utilizing a single, larger TRE. Our custom-configurator can design and price any TRE in real-time.

How do I figure out what size TRE package to use?

- Go to Triad's website www.com.com where you can pick one of two very simple methods. (1) If you need ONE heat exchanger matched with ONE boiler simply choose it as an OPTION when using the Boiler Selection Tool (large Red button), just like you would pick any other option, such as a modulating burner. It is already properly sized!

- (2) If you need ONE heat exchanger handling MULTIPLE boilers, then use the TRE Custom Pricing (large Green button) found in the TRE product area. After inputting a few variables, the TRE Custom Pricing Program will quickly select an optimized TRE for your specific job.

Is there much piping?

- The only piping a TRE requires in addition to conventional primary/secondary piping is a simple thermostatic bypass valve between the supply and return. Drawings showing the simple piping setup are available.

Do I have to use stainless steel stack? What is the typical stack temperature?

- The stack will need to be Category IV, the same type that is used on any other condensing boiler. There is also about three feet of simple Category III flue going from the boiler vent collar to the heat exchanger. The optional factory skid mounting includes this piece.

Does the heat exchanger have to be located directly at the boiler exhaust?

- No! If the application permits, it is less expensive to install the TRE as close to the primary stack as is practical allowing for relatively inexpensive Cat III vent that is run from the boiler to the TRE, thereby minimizing the amount of expensive Cat IV flue that would be required.

Can I install the package in the field? Can I order it all skidded together?

- The TRE can be supplied either as a factory mounted skid or it can be field installed.

Is the TRE package repairable?

- The heat exchanger bundle in the heat exchanger is field replaceable. And if you simply bypass it, you can repair the heat exchanger and still have the boiler operate in a non-condensing mode.

Has the heat exchanger used in the TRE been in the field for long?

- The TRE package is based on field-proven technology that has been used in this industry for many decades. What is new here is an exceptionally well-designed heat exchanger matched with a uniquely rugged boiler that can last 30 years.