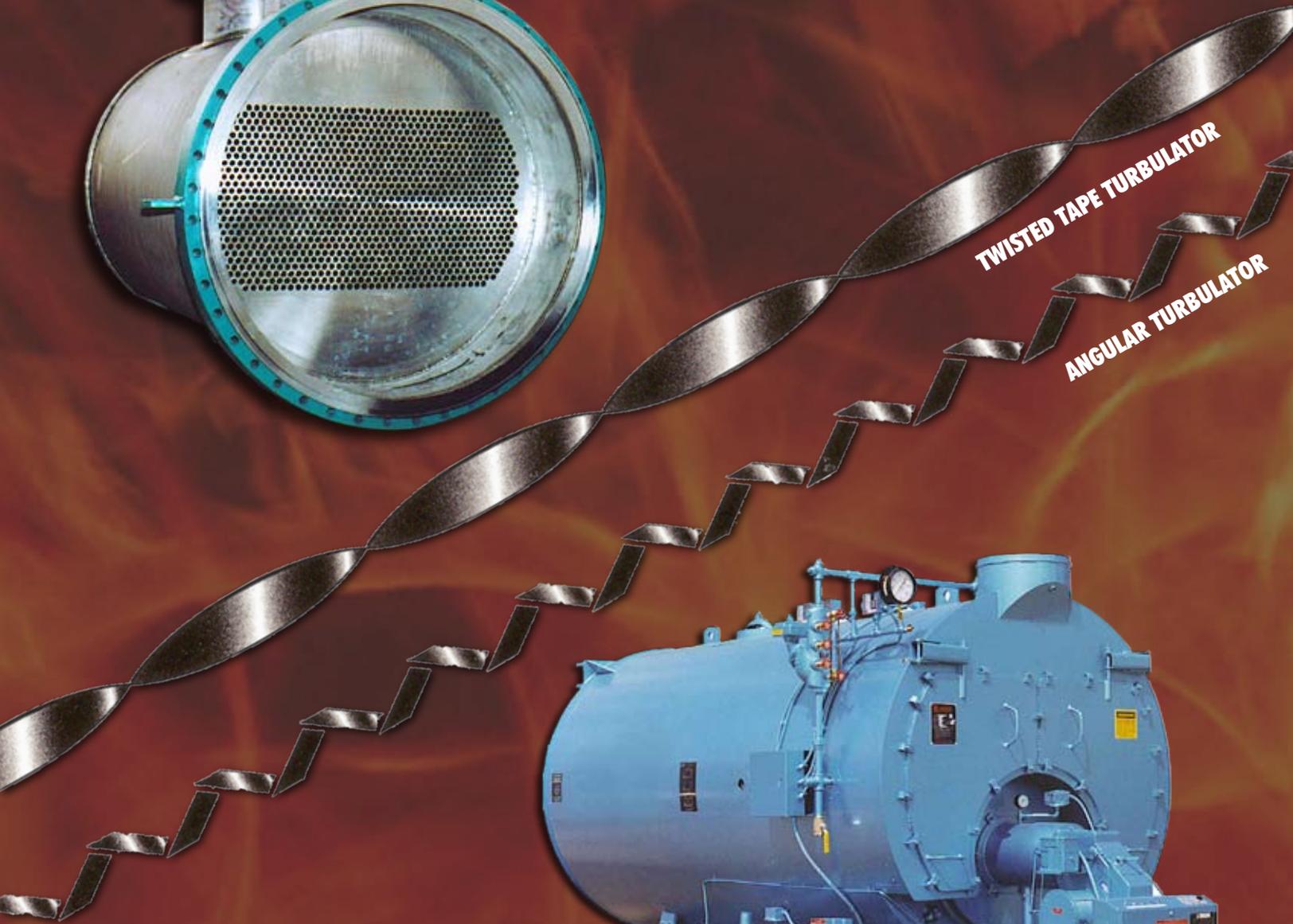


OUR BUSINESS IS IMPROVING HEAT TRANSFER EFFICIENCY AT THE LEAST COST



TWISTED TAPE TURBULATOR

ANGULAR TURBULATOR



BROCK TURBULATORS

manufactured by

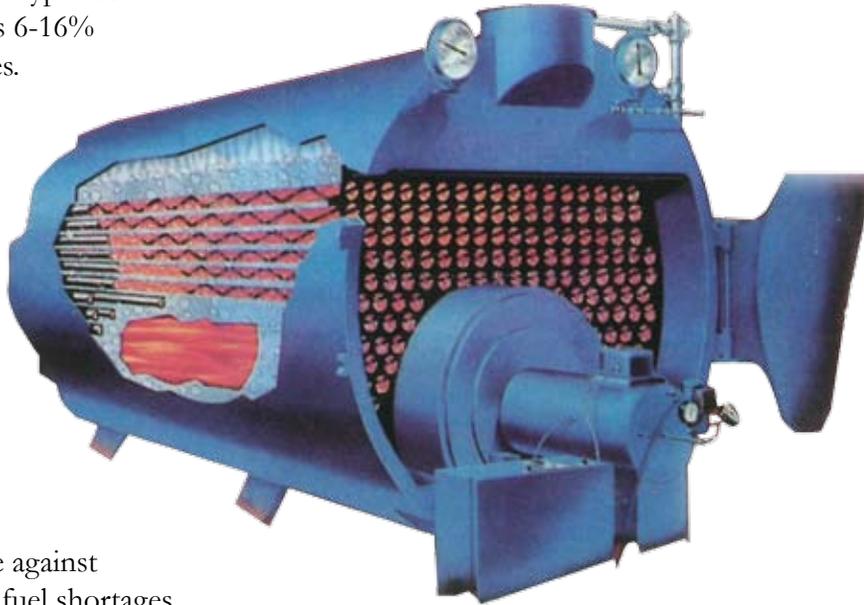
FUEL EFFICIENCY, LLC

BROCK TURBULATORS REDUCE BOILER OPERATING COSTS

✓ Significantly reduce fuel consumption in most types of boilers – As much as 6-16% savings in many cases.

✓ Increase boiler capacity by producing more heat without increasing fuel consumption.

✓ Provide insurance against rising fuel costs and fuel shortages.



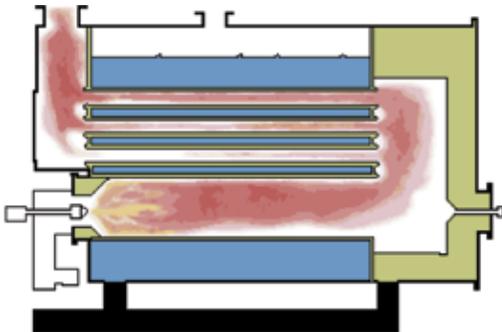
✓ Improve heat transfer efficiency by providing the same heat using less fuel.

✓ Reduce soot accumulations and decrease boiler maintenance.

✓ Extend boiler life.

BROCK TURBULATORS IMPROVE HEAT TRANSFER EFFICIENCY

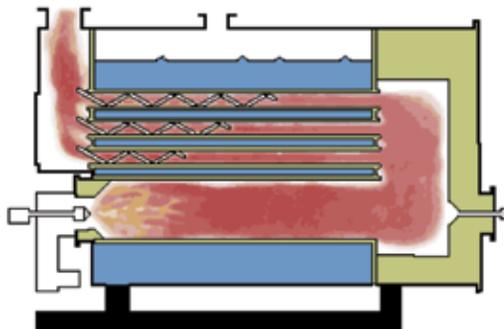
600°F



Boiler without BROCK TURBULATORS

Hot gases contract, lose contact with tube or flue walls, then slide along in a hot, inner core. Insulating cooler gases are in contact with tube walls. Hotter gases rise and flow mainly through the top tubes. Lower tubes become “lazy.” Excessive heat, lost up the stack, shows up as a high stack-gas temperature.

400°F



Boiler with BROCK TURBULATORS

BROCK TURBULATORS cause hot gases to scrub against tube walls transferring more of the heat to the surrounding water. Longer TURBULATORS installed in the top tubes cause all tubes from top to bottom to work equally hard. Lower stack temperatures prove the boiler is using the fuel more efficiently to make hot water or steam.

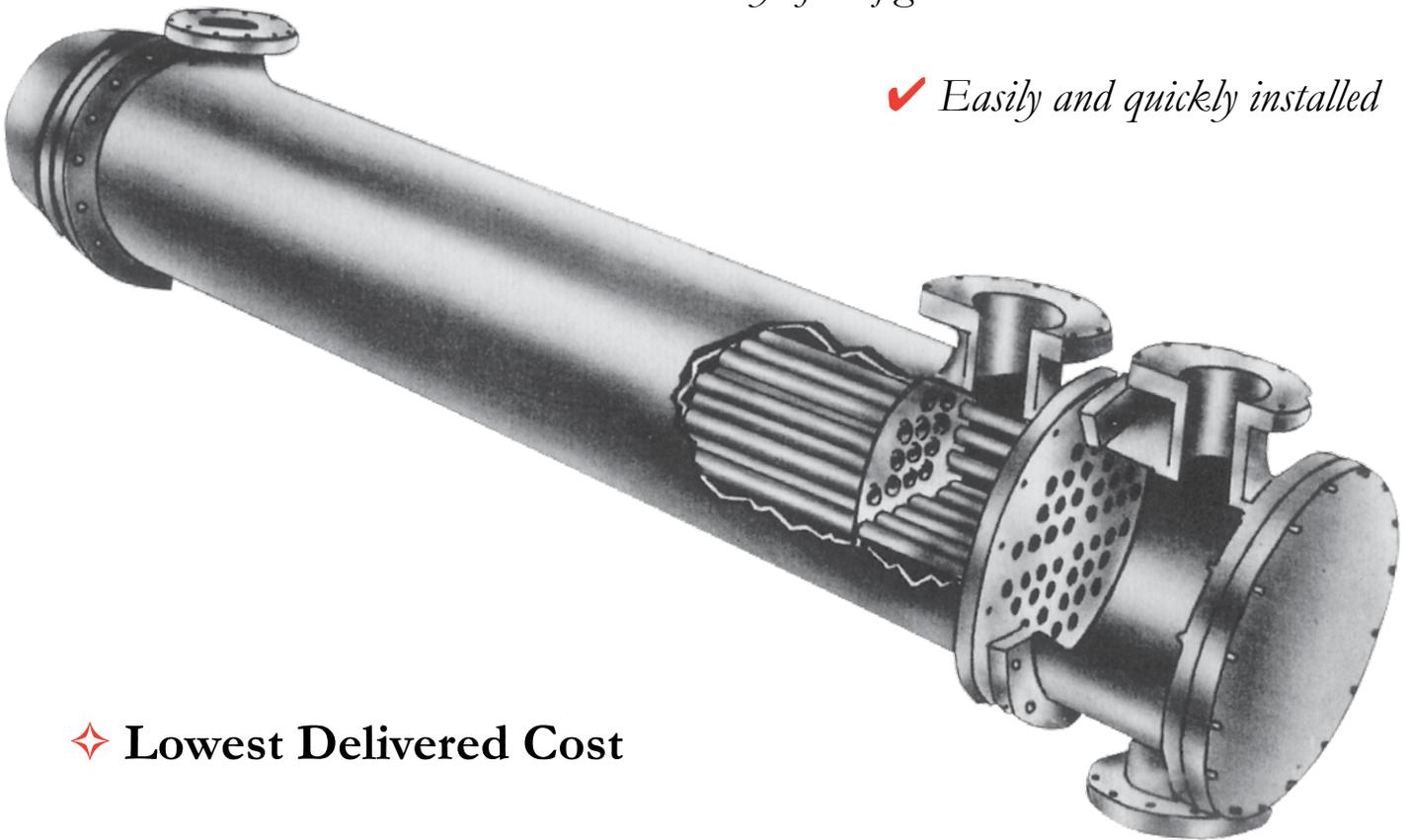
TURBULATORS FOR SHELL & TUBE HEAT EXCHANGERS

✓ *Custom-made to fit your application*

✓ *Available in any length to meet your requirements*

✓ *Variety of configurations available*

✓ *Easily and quickly installed*



✦ **Lowest Delivered Cost**

✦ **Send us your existing specifications or requirements**

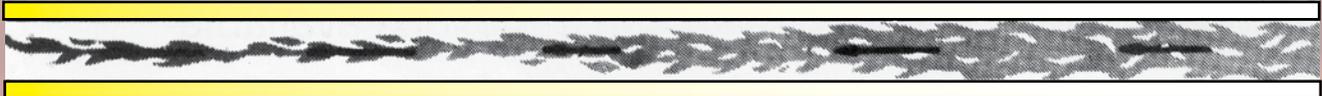
✦ **Free parts for testing – Call to see if you qualify**

Turbulators by Fuel Efficiency are proven to increase inside heat transfer coefficients and the overall efficiency in many types of heat exchange equipment.

Turbulators manufactured by Fuel Efficiency, LLC. are used in many types of heat exchange equipment, including:

- ✓ Firetube Boilers
- ✓ Shell & Tube Heat Exchangers
- ✓ Immersion Heaters
- ✓ Line Heaters
- ✓ Water Heaters
- ✓ Radiant Heaters
- ✓ Cast Iron Sectional Boilers
- ✓ Heat Recovery Units

How do turbulators work to increase heat transfer efficiency?



This diagram shows hot, turbulent gases entering a tube and quickly taking on the shape of the tube. The gases pass through the rest of the tube length in a non-turbulent laminar flow. As the gases surrender

their heat, they contract and form a hot core. The result is the formation of latent gases which act as a barrier between the hot gaseous core and the tube wall, greatly reducing heat transfer efficiency.



Brock turbulators break up the hot core and force the heat into intimate contact with the tube wall, creating a scrubbing action. The dead gases are swept away allowing a more intimate contact between the

hot gases and the tube wall. This results in more heat transfer through the tube wall and less wasted through the heating system.

Proven effective by independent ASME testing.

Fuel Efficiency, LLC also has other products available to reduce operating costs and increase operating efficiency:

- ✓ Automatic Tube Cleaning Systems for Firetube Boilers
 - ✓ UltraScale-Away Waterside Descaler
 - ✓ Ultraspray Fireside Cleaning Concentrate
 - ✓ Brock Stack Temperature Monitor / Alarm
- ✓ Gaskets for Waterside and Fireside Applications



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