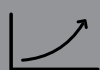




Improving life through heat transfer solutions

CASE STUDY



Turndown increased
from **2.5:1** to **20:1**



140-tonne reduction
in CO₂



30% reduction in
gas consumption



75% reduction in
NO_x emissions



Just one realistic option was presented when Truck Tyre Specialists needed to find a replacement for its ageing and inefficient horizontal steam boiler, Fulton's VSRT!

TRUCK TYRE SPECIALISTS NEEDED TO FIND A REPLACEMENT FOR ITS AGEING AND INEFFICIENT HORIZONTAL STEAM BOILER, ONE THAT COULD COPE WITH CURRENT AND FUTURE DEMANDS WHILST ENSURING ITS NET ZERO COMMITMENTS WEREN'T COMPROMISED. THERE WAS JUST ONE REALISTIC OPTION!

TRUCK TYRE SPECIALISTS

A PATTERN EMERGES AS VSRT INSTALLATION SHOWS SIGNIFICANT SAVINGS IN EMISSIONS AND GAS CONSUMPTION

Established in 1974, Truck Tyre Specialists has a reputation for providing premium bead-to-bead (hot cure) and procure (cold cure) remould tyres with over 100 tread patterns to suit all relevant commercial vehicle operations. Its products are manufactured using the highest-grade rubber compounds available and have a proven track record of improving mileage, traction and fuel efficiency, equalling and even outperforming tyres from established brands.

With a five-yearly NDT inspection due on its ageing horizontal steam boiler within 18 months, and given past experiences, there was a very real prospect of it requiring major coded pressure vessel repairs again. Truck Tyre therefore needed to find a replacement solution that could cope with current and future demands, while ensuring its Net Zero commitments – already established thanks to existing recycling procedures, upgrades to facility insulation and the installation of roof-mounted PV panels – weren't compromised.

So having discussed the requirements and researched the options with its existing steam solutions specialist, the tyre manufacturer was presented with just one realistic option, VSRT vertical steam boilers from Fulton!

Steam is used throughout Truck Tyre's facility – including steam and waste

steam via heat exchangers for domestic hot water and space heating for the facility's offices and factory – but plays a crucial role in the vulcanisation process when moulded rubber that is extruded onto the tyre structure is placed in high-pressure curing presses or autoclaves, with steam introduced at a controlled temperature and pressure, and serving several critical functions during the process.

Firstly, steam is an excellent heat transfer medium. It transfers heat efficiently to the rubber components, causing the necessary chemical reactions for vulcanisation to occur. The heat and pressure help the sulphur atoms in the rubber chains form crosslinks, which strengthen the material. Secondly, many vulcanisation accelerators work more effectively at elevated temperatures, with heat from the steam therefore accelerating the chemical reactions between the rubber and curing agents, reducing the curing time and improving the overall process efficiency.

Finally, steam ensures uniform heating throughout the company's curing chambers and autoclaves, preventing hotspots or temperature variations that could lead to uneven vulcanisation.

In a typical five-day work week, the boiler is operational for 12 hours per day, giving Truck Tyre the ability to produce over 30,000 tyres annually using its 28 commercial presses and autoclaves. Its maximum requirement for steam peaks at approximately 1,800kg/h and the original horizontal boiler would achieve this. However, during breakdowns, regular servicing, five-yearly NDT inspections and maintenance periods, the boiler and processes using steam were all shut down. It was therefore recommended that the new system should allow for duty assist within the specification.

Two VSRT-60 steam boilers were subsequently specified, each with a rated output of 960kg/h, easily coping with demand and affording the company the ability to reduce, not completely stop, throughput during planned shutdowns.

"In the 12 months prior to the installation of the two VSRT steam boilers, we were using up to 213,000kWh of gas per month during high throughput periods. However, in the six months since Fulton's VSRTs were commissioned, we're now using around 155,000kWh."
Dan Collins, Truck Tyre Specialists.

"A VSRT installation has once again resulted in significant savings for the end user. With turndown increasing from 2.5:1 to 20:1 for the installation, Truck Tyre has reported a reduction in gas consumption of nearly 30% and over 140 tonnes per year of CO₂ emissions reduced, savings that can be credited towards its Net Zero goals. Additionally, based on historical data, there has been a reduction in NOx emissions in excess of 75%. These alone are truly impressive, but let's not forget savings achieved from the reduction in water usage, chemical dosing, annual inspection, five-yearly NDTs and of course process downtime haven't been factored in, making overall financial savings compared to the original horizontal boiler installation even more impressive!" Carl Knight, Fulton Limited.

In summary, as Carl Knight explains, Fulton's VSRT can deliver steam (at up to two tonnes per hour from single boiler) while helping with both the financial and environmental challenges that are at the forefront of mind for many decision makers.

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Carl Knight, Managing Director, Fulton Limited





ABOUT THE VSRT

Applications using steam, like those at Truck Tyre, have revolutionised over the years, yet the same cannot be said for steam boilers themselves. That was until, in 2018, Fulton launched the VSRT vertical steam boiler.

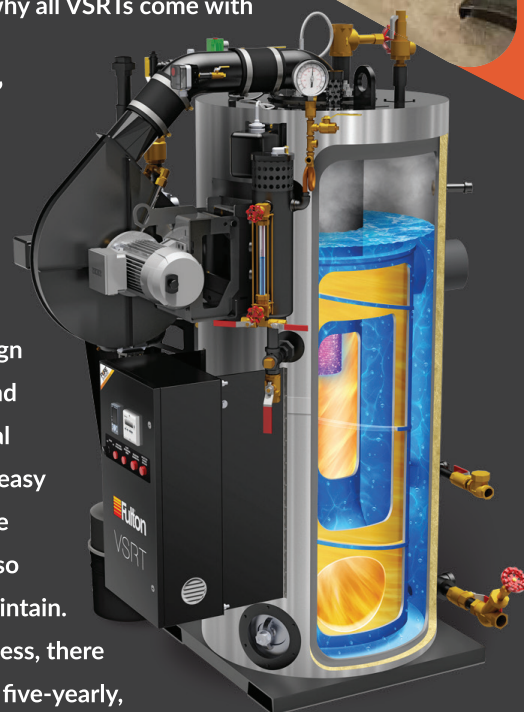
Claimed to be the most radical change to vertical steam boiler design since it first pioneered the vertical tubeless boiler in 1949, Fulton's VSRT has rocked the steam boiler market since its launch to become class-leading and a symbol of efficiency, with many users benefitting from excellent savings in gas and water consumption and reductions in CO₂ and NO_x emissions.

At launch, the seven-model VSRT range was available with outputs from 160 to 960 kg/h, but with demand increasing for an energy efficient boiler with larger outputs, Fulton has now expanded the range and introduced two new, re-designed VSRTs with outputs of 1,565 and 1,956 kg/h.

Thanks to its unique design, the VSRT's patented spiral-rib heat exchanger virtually eliminates thermal stress, so Fulton has therefore created a longer-lasting boiler that

not only improves boiler efficiency but one that the company believes will beat the competition in every category of durability. This is why all VSRTs come with the assurance of a 10-year 'unparalleled' warranty on the pressure vessel.

Additionally, with features including a vertical tubeless design with no refractory, and thanks to its industrial control platform and easy access to the pressure vessel, the VSRT is also extremely easy to maintain. As the design is tubeless, there is no requirement for five-yearly, NDTs, which contributes to reduced lifecycle costs when compared to standard horizontal boilers.



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