

TRiLO™ TECHNOLOGY

A NEW GENERATION OF TAIL GAS THERMAL OXIDIZERS

Experts In Innovation

» Continuous innovation like TriLo Technology is a vital part of our ongoing success. That's why we invest heavily in facilities and experts. Our research and development test center is the largest and most advanced testing complex of its kind. This exclusive resource allows our expert team of engineers to push innovation, gain expertise and measure performance in an industrial-scale setting to better simulate real-world conditions.

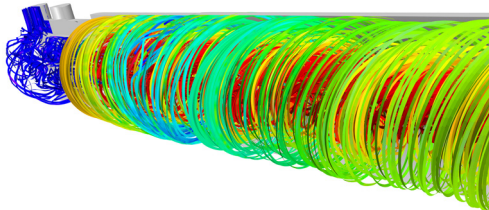
Reduce Fuel Costs By Up To 40%

John Zink Hamworthy Combustion pioneered TriLo Technology to create a new generation of tail gas thermal oxidizers that provide better performance and more efficient operation. Compared to conventional thermal oxidizer (TO) performance, a John Zink Hamworthy Combustion TO engineered with TriLo Technology delivers three important advantages:

- » **Lower Fuel and Power Consumption:** Operates efficiently, reducing fuel costs up to 40% without preheating the tail gas or combustion air.
- » **Lower Operating Temperature:** Meets emissions standards at the lowest known operating temperature in the market.
- » **Lower NO_x, CO and CO₂ Emissions:** Guaranteed lowest NO_x and CO emissions in the industry. Reduces carbon footprint by emitting less CO₂.

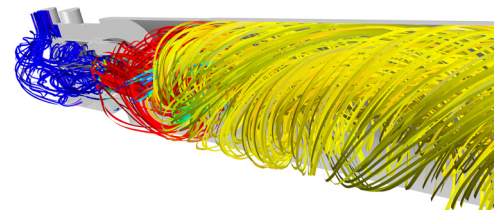
Ideal For New Installations, Ideal For Retrofits

As the most state-of-the-art technology on the market, our tail gas thermal oxidizers are the smart choice for new installations. But we can also apply our exclusive TriLo Technology to existing systems, boosting performance and increasing efficiency. Most retrofits can be completed during a normal turnaround shutdown.



Without TriLo Technology

» Temperature profile in conventional tail gas thermal oxidizer.

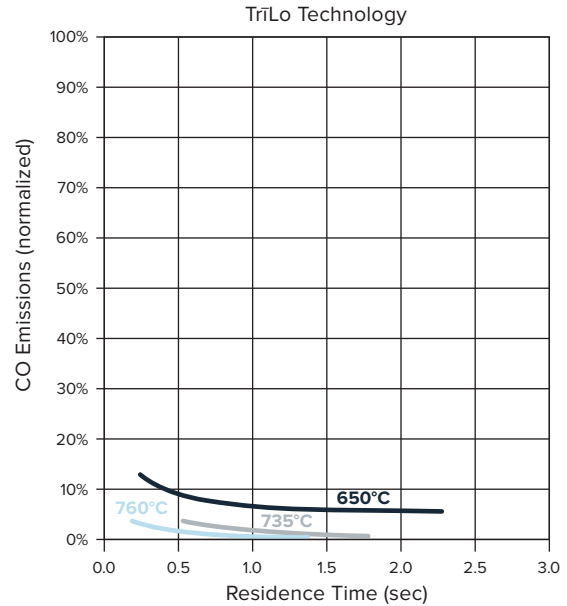
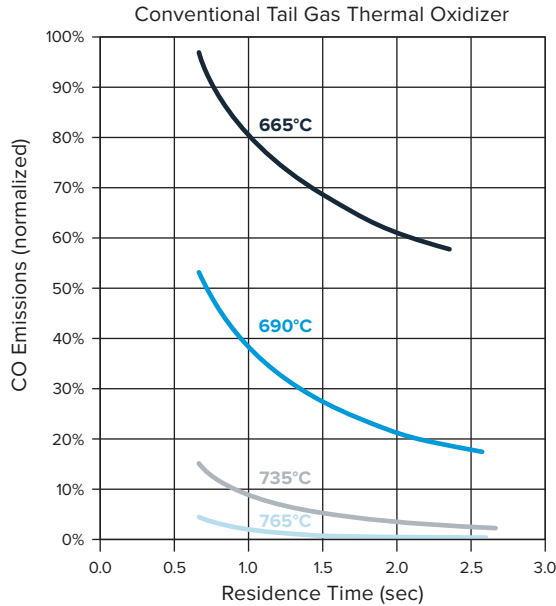


With TriLo Technology

» Optimized temperature profile with TriLo Technology.

PERFORMANCE BENEFITS

CO Emissions vs. Temperature and Residence Time



Proven In The Field

One of our recent installations features four tail gas thermal oxidizers designed to treat the tail gas of four SRUs with a capacity of 2,500 metric tons per day each. Designed with our exclusive TriLo Technology, the units can operate at a much lower temperature, providing substantial savings while still meeting emission regulations. Successfully operating at 1,200°F (650°C) versus the originally specified temperature of 1,500°F (816°C), the expected fuel savings are \$2.5MM per unit in the first year of operation (\$10MM USD net).

At A Glance

- » Successful Start-up of Four Complete Units
 - » Sulfur Plant Size: 2,500 MTPD for Each Unit
 - » Specified Temperature: 1,500°F (816°C)
 - » Actual Operating Temperature: 1,200°F (650°C)
 - » Reduced CO2 Emissions
 - » Other Emissions:
- | Specified at 1,500°F (816°C) | Actual at 1,200°F (650°C) |
|------------------------------|----------------------------------|
| • NOx: 100 ppm | • NOx: 25 ppm |
| • CO: 400 ppm | • CO: <200 ppm |
| • H ₂ S: 4 ppm | • H ₂ S: undetectable |

Koch Engineered Solutions (KES) is a global solutions provider that encompasses products, services, and expertise across a wide range of industries. KES companies design, manufacture and install process, pollution control, and sustainability solutions for industries and cities around the world. More information is available at KochEngineeredSolutions.com.

