



# CleanTeQ

## Aromatrix



 **ThermTeQ<sup>®</sup>**  
regenerative thermal oxidisers

Energy efficient air & odour solutions for  
municipal, mining, agriculture & industry.



# What Drives Us?

At Clean TeQ Aromatrix we passionately believe in creating a healthier more sustainable environment for our children, our children's children and the generations to come.



Our air treatment systems not only eliminate odour, toxins and particulate emissions, but do so using global best practises in energy efficiency and sustainability.

A Clean TeQ Aromatrix treatment facility will enable our customers to meet their targeted performance requirements whilst minimising environmental impacts.

Clean TeQ Aromatrix is a market leader in the biological treatment of air in Australia. For over 20 years we have successfully designed and delivered hundreds of air treatment systems across Australia and South East Asia.

Our broad product suite of biological, thermal and particulate-removal air treatment technologies allows us to select the best technology, or combination of technologies for almost any air pollution application.

## Our Clients include:

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**Water Authorities - Melbourne Water, Sydney Water and Water Corporation**

**Construction Companies - Thiess, Downer Tenix, and John Holland.**

**Manufacturers - IFF, Simplot, Ridley Feedstock, Clarke Energy and AB Mauri.**

# We Can Help

We form partnerships with our clients that survive and go beyond the life of the asset, striving to apply proven engineered technology to problems delivering solutions, outcomes and performance over the life of the equipment.

Our goal is to prove to the broader global community that through the application of smart engineering and the use of natural sustainable technology, that emissions and air pollution can be dealt with effectively and economically.

For over 20 years we've helped large corporations, public utilities and industry mitigate environmental risks by removing odours and pollutants from air.

## Our Services

### Consulting

- Air Quality & Impact Studies
- Air Treatment Studies
- Sewer Modelling
- Dispersion Modelling
- Field Sampling & Analysis



### Air Purification

 **OdourTeQ**<sup>®</sup>  
biological filters

 **ThermTeQ**<sup>®</sup>  
regenerative thermal oxidisers

 **CleanCarb**  
activated carbon filters

 **CleanStrip**  
strippers & degassers

 **Advanced Cyclone Systems**

### Service & Maintenance

- Filter Media Removal & Installation
- Media Analysis
- Filter Media Supply
- Preventative Maintenance Programs
- Nutrient Supply





# ThermTeQ<sup>®</sup> Regenerative Thermal Oxidisers

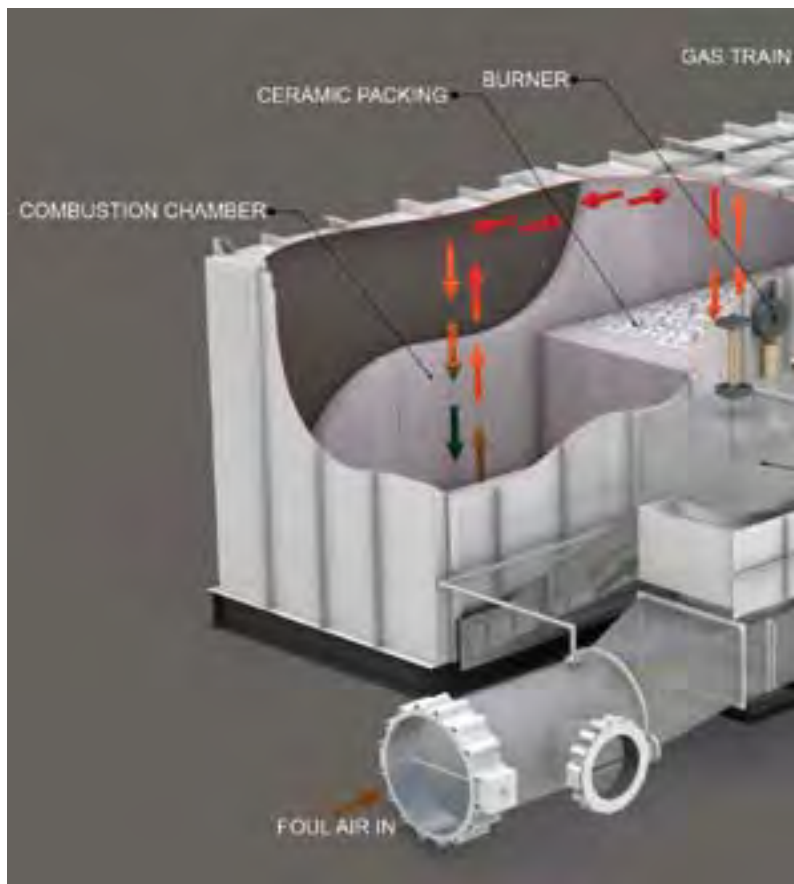
The ThermTeQ<sup>®</sup> range of regenerative thermal oxidisers (RTO's) is an affordable, energy efficient and reliable technology for control of Volatile Organic Compounds (VOC's).

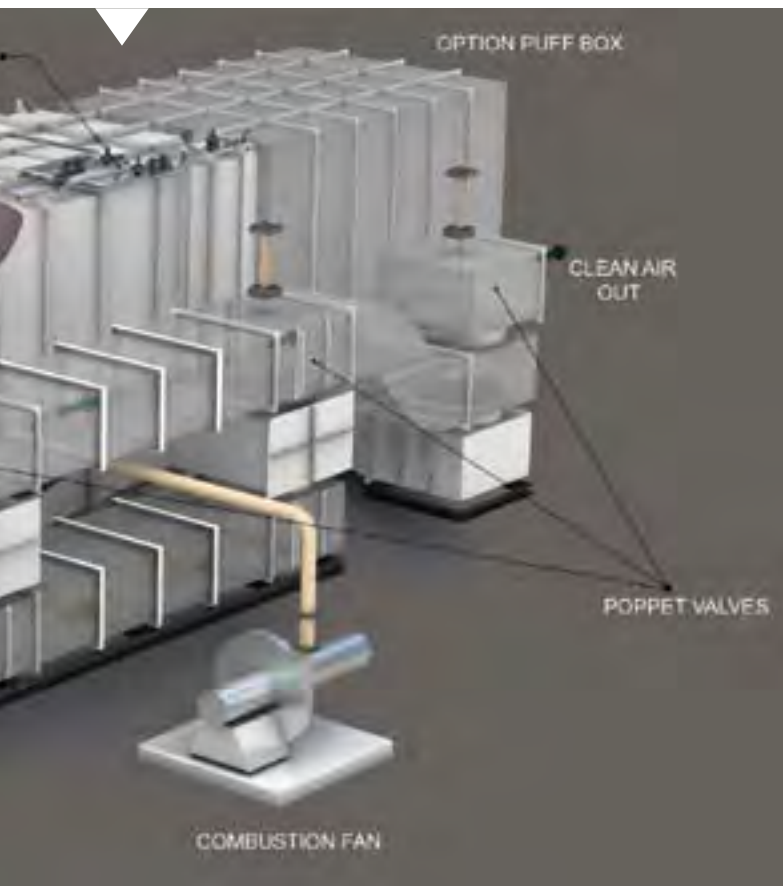
The ThermTeQ<sup>®</sup> air pollution control technology provides the most cost effective means of odour and VOC abatement and minimises environmental impact when compared to traditional after burner and burner fired RTO technology.

ThermTeQ<sup>®</sup> technology can be used to control emissions from industries such as food, manufacturing, chemical, solvent use and production as well as the fertiliser industry.

Standard Design Systems are available to treat air flows from as low as 1,800m<sup>3</sup>/h up to 120,000m<sup>3</sup>/h in a single process unit. Larger flows can also be treated through the duplication of the treatment train.

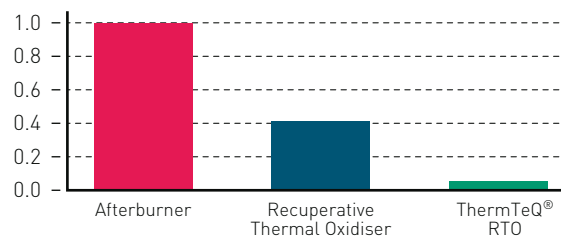
The dual chamber ThermTeQ<sup>®</sup> Regenerative Thermal Oxidiser includes a low pressure drop thermal efficient engineered ceramic media. It's low profile and forced draft modular design make for space saving for ground installations indoors, outdoors or even roof mounted.



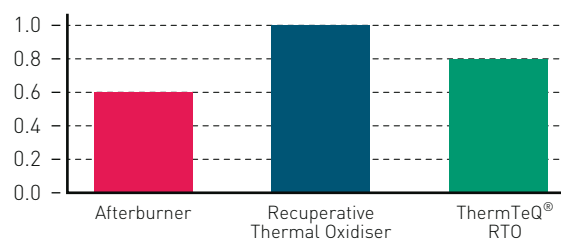


## ThermTeQ<sup>®</sup> benefits

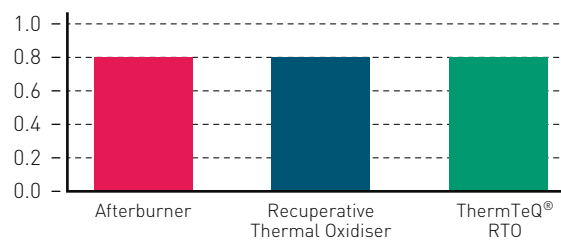
### Opex



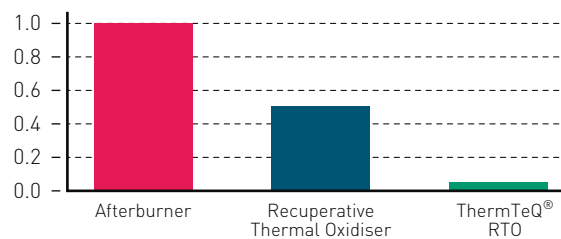
### Capex



### Performance



### Carbon Footprint



### Process Benefits

- Manufacturing
- Paint & solvent production
- Painting process
- Power generation
- Petro-chem
- Refineries
- Mining

# We Create Specific Solutions

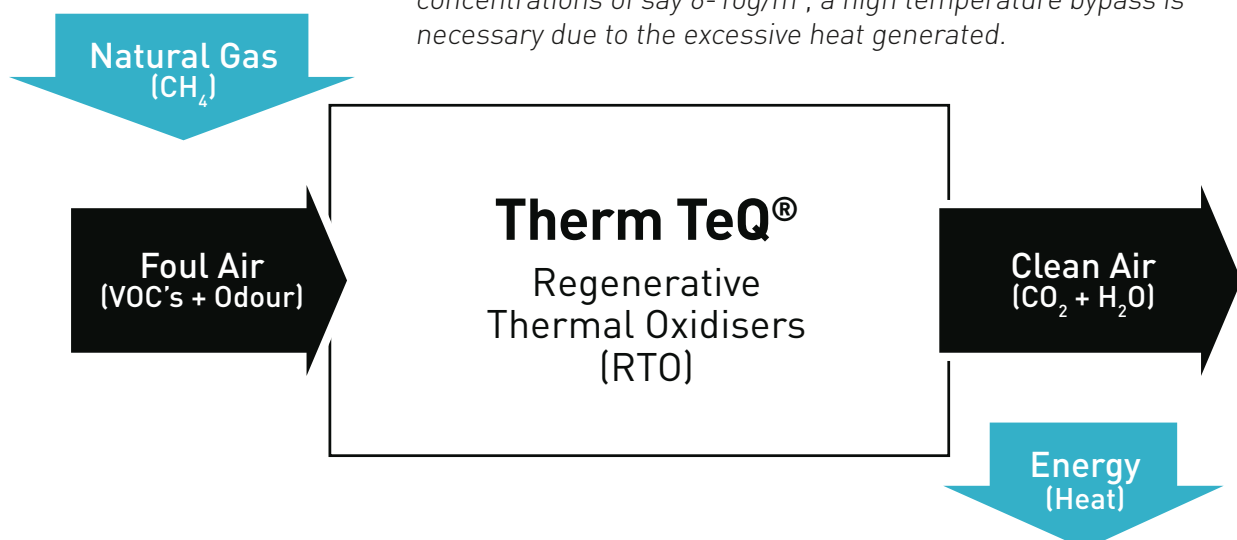
Clean TeQ Aromatrix provides ThermTeQ<sup>®</sup> Regenerative Thermal Oxidisers (RTO's) as an air pollution control technology.

ThermTeQ<sup>®</sup> RTO's are very versatile and thermal efficiency can reach 95%+, making the process self-sustaining. They are regularly used for abating solvent fumes, odours and more from a wide range of industries.

ThermTeQ<sup>®</sup> Regenerative Thermal Oxidizers are ideal in a range of low to high VOC concentrations up to 10 g/m<sup>3</sup> solvent. The VOC's are oxidised at high temperatures typically 800-850 °C for a period of 1 to 2 seconds where carbon molecules (VOC's) are bonded together with oxygen molecules prior to discharge to atmosphere.

The system achieves energy efficiency by storing heat in ceramic media as the process air enters and exits the combustion chamber. The direction of airflow reverses every 4 minutes by activating a series of valves to alternately store and regenerate the heat - the inlet air gets pre-heated and the outlet air gives up the heat. The result is a very efficient operation.

*Solvent concentrations of 1-3 g/m<sup>3</sup> and above allow the RTO to operate without support fuel, using the energy within the solvent, i.e. auto-thermal or self-sustaining. At higher solvent concentrations of say 6-10g/m<sup>3</sup>, a high temperature bypass is necessary due to the excessive heat generated.*





# Case Studies



## Mitsubishi Motors Australia Limited South Australia

Regenerative Thermal oxidiser	RTO - 20.0
Flow Rate	32,000 m <sup>3</sup> /hr
Contaminant / Solvent load	Odour 8300 OU/m <sup>3</sup> TVOC 870mg/m <sup>3</sup>
Destruction efficiency achieved	>98%



## Australian Tube Mills Acacia Ridge Queensland

Regenerative Thermal oxidiser	RTO - 13.0
Flow Rate	22,500 m <sup>3</sup> /hr
Contaminant / Solvent load	TVOC 2100ppm
Destruction efficiency achieved	>99.5%



## Munters Albury Victoria

Regenerative Thermal oxidiser	RTO - 8.0
Flow Rate	16,500 m <sup>3</sup> /hr
Contaminant / Solvent load	Phenol 69mg/m <sup>3</sup> Methanol 38mg/m <sup>3</sup>
Destruction efficiency achieved	>98%



## Weir Minerals Artarmon NSW

Regenerative Thermal oxidiser	RTO - 6.0
Flow Rate	10,200 m <sup>3</sup> /hr
Contaminant / Solvent load	TVOC 334mg/m <sup>3</sup>
Destruction efficiency achieved	>99%

# Industries



## Food Production

Direct fired afterburners have traditionally provided a low CAPEX solution for food production and associated odours and emissions, however increasing energy costs are now driving change.

Clean TeQ Aromatrix's ThermTeQ® RTO Technology is a direct replacement for an Afterburner. A ThermTeQ® RTO uses only 5% of the fuel that an equivalent Afterburner will use, while achieving the same or better performance. The massive reduction in OPEX is achieved through retaining heat within the RTO, resulting in pay-back periods as short as 12 months.



## Manufacturing (Heavy Industry and Pharmaceuticals)

Manufacturing and pharmaceutical production continue to produce and emit air pollutants. An increasing awareness throughout the community and industry along with the development of stricter emission laws means that air pollution control is now a priority for all concerned. Clean TeQ Aromatrix's Odour TeQ® and Therm TeQ® products are highly suited to address these ongoing issues.



## VAM - Ventilation Air Methane

Methane is a powerful greenhouse gas and underground coal mines must ensure that methane released into the mine during coal extraction does not build to dangerous levels. This is accomplished in part through the use of ventilation systems that remove methane from the mine and release it to the atmosphere as VAM. The carbon tax impacts VAM as it has attracted a significant tax impost due to the 25 times multiple that methane has over its tCO<sub>2</sub>e (*tonnes of carbon dioxide equivalent*).

ThermTeQ® RTO's are viewed globally as the most viable present day technology available for the treatment of VAM and are capable of reducing the tax burden by converting almost 100% of the methane back to CO<sub>2</sub>. This can save miners millions of tax dollars each year\*, or generate Carbon Credits for trade on the Carbon Market.

*\*Tax burden is carbon price dependent*



## Petro-Chem

Odour TeQ® and Therm TeQ® technologies are well suited to treat many forms of air pollution generated as a by-product of the Petro-Chem industry. From toxins and solvents to simple odour applications Clean TeQ Aromatrix Air Treatment Solutions are well suited to any application.



# Capabilities

## Innovation

Clean TeQ Aromatrix is a world leader in biological and thermal emission abatement processes, drawing on over 30 years of experience in emission control plant design and operation. Clean TeQ Aromatrix has the in-house capability to design and deliver emission abatement plants for a range of industrial, municipal and mining applications.

Clean TeQ Aromatrix invests in research and development to ensure our processes remain at the forefront of technology. We work with major research institutions, such as CSIRO as development partners.



Conceptualise



Model



Pilot

## Services

Clean TeQ Aromatrix provides the following services:

- LSTK (lump sum turnkey) projects
- Greenfield and brownfield EPCM projects
- Trade-off studies
- Pre-feasibility studies
- Definitive feasibility studies
- Pilot scale design and construction
- Circuit optimisation
- Equipment assessment and selection
- Commissioning and post commissioning support
- Plant operation and maintenance



Design



Supply



Support

## Media

To complement our emission abatement process technologies, Clean TeQ Aromatrix has a range of application-specific media, drawing from over 30 years of development and processing of plants and applications. Our detailed knowledge with both organic and in-organic technologies provides unrivalled value for clients.



# Clients Include

**IFF**

International Flavors & Fragrances Inc.

**AB | MAURI**<sup>®</sup>

**ActewAGL** 

*for you*



**Melbourne  
Water**



**WATER**  
CORPORATION



**TRANSPACIFIC**

**John  
Holland**

**Simplot**  
AUSTRALIA



# Project Examples







# CleanTeQ

## Aromatrix

Clean TeQ Aromatrix Pty Ltd is an Australian private company, engineering innovative solutions to environmental challenges in air purification. The business was founded over 20 years ago and is majority owned by Australian Stock Exchange listed Clean TeQ Holdings (ASX: CLQ). We design, deliver and support best-fit solutions for odour, asset protection, toxic and VOC's and dust for mining, municipal and industrial customers.

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