

WTE INTRODUCTION

INNOVATION AND ENTREPRENEURSHIP

WTE was founded by a group of experienced entrepreneurs with a multidisciplinary technical background. Since its establishment, the company has been committed to the development and application of new technologies, and cooperating with manufacturers and technical experts in various industrial fields. The business scope of WTE includes R&D and manufacturing of equipment with focus on efficiency and environment, engineering and turnkey solutions.

Superflox™ flameless combustion is one of WTE's patented technologies, which combines the Flameless Oxidation process with steam generation and proprietary gas management systems.

SUPERFLOX™ ADVANTAGES

PROFIT, SAFETY, ENVIRONMENT

-  Burns low heat value gases without added natural gas
-  Reduces operational costs
-  Reduces CO2 emissions and eliminates thermal NOx emissions
-  Creates new revenue streams through carbon credits and offsets
-  Generates energy from steam produced in the process
-  Significantly smaller footprint than other similar installations (e.g. Regenerative Thermal Oxidizer)
-  Flexible and inherently safe operations



TURNING GREEN INITIATIVES INTO PROFIT

SUPERFLOX™ IS BASED ON GERMAN TECHNOLOGY THAT HELPS INDUSTRIAL PLAYERS REDUCE OPERATIONAL COSTS AND INTRODUCE NEW STREAMS OF REVENUE, WHILE ELIMINATING THE NEGATIVE ENVIRONMENTAL IMPACT OF WASTE GAS COMBUSTION.

SUPERFLOX™

**FROM WASTE AND COST
TO ENERGY AND PROFIT**

WTE USA

708 Main Street
Houston, TX 77002
+1 (281) 796 3369
nfo@wte-us.com
www.wte-us.com

BACKGROUND

IN SEARCH OF MORE EFFICIENT COMBUSTION TECHNOLOGY

Superflox™ is a proprietary technology, based on the well-established concept of Flameless Oxidation, discovered in Germany by Dr. Joachim Wüning in 1989.

A typical waste gas combustion process is associated with an number of inefficiencies:

- High temperature combustion zone, resulting in formation of thermal NOx;
- Constant insertion of high-calorific gas (e.g. natural gas) is required to maintain the minimum heat content of the waste gas treated;
- Incomplete combustion resulting in formation of contaminants such as CO, SOx and particle matter (PM).

In search for more efficient combustion technology, the phenomenon of flameless oxidation was observed in 1989. Under a certain set of conditions, full combustion of the fuel gas occurred while no flame was visible. It was also discovered in the process that the level of thermal NOx emissions remained close to zero.

This discovery was the beginning of the Flameless Oxidation (FLOX) technology as a highly efficient and low-emission alternative to the conventional flame-based combustion technologies.



Traditional Combustion with Flame Front



Flameless Pressurized Combustion



SUPERFLOX™ MAIN FEATURES



Can process gas with heat value as low as 1.5 MJ/m³

- No additional high value gas is required to support oxidation;
- Reduced amount of gas burned leads to reduction of CO₂ emissions.



Highly efficient combustion equals minimal pollutant emissions

- Homogeneous gas composition conditions throughout the furnace.
- Very low residence time of gas in furnace (> 0.5s)



No formation of thermal NOx

- Combustion chamber temperature is kept under 2000° F, well below the temperature of NOx formation



Easily Scalable

- The system is easily scalable and can be built to efficiently process waste gas flows from from 5,000 Nm³/hr to 300,000 Nm³/hr.
- The system can be easily turned up to 120% capacity, and turned down to 40%.



Intrinsically safe process

- Oxygen level in combustion chamber between 3% and 10% (outside explosive compositions)
- Separate introduction of fuel gas and combustion air into the combustion chamber under highly turbulent conditions (intensive mixing)

INDUSTRIAL APPLICATION

LOW CALORIFIC WASTE GAS IS OUR SPECIALTY



Oil & Gas Production



Ethanol Production



Petroleum Refining

CH₃OH

Methanol Production



Petrochemical Plants



Carbon Black Production



Terminals & Pipelines



Landfills & Mine Methane

A TYPICAL SUPERFLOX™ PROJECT



Processes 340,000 Nm³ of waste gas per hour



Produces 150 tons of steam per hour, or 1.2 million tons per year



Leads to CO₂ reduction of 856,000 tons per year*

** Includes a) reduction of 265 Kton CO₂ through elimination of need for additional natural gas for burning of waste gas, and b) reduction of 591 Ktons of CO₂ from replacement of natural gas for steam production.*

856,000



tons of CO₂e reduced



greenhouse gas emissions from

185,000

greenhouse gas emissions avoided by

500 MW

carbon sequestered by

14 Million



passenger vehicles driven in one year

or



or 185 wind turbines running for a year

or



tree seedlings grown for 10 years