

BTEX Emissions Reduced By 99.9% in Pilot Project

Pilot Project Success

In a pilot project the first of its kind, Kenilworth Combustion and an Alberta based Oil and Gas Producer has successfully reduced BTEX emissions created by glycol dehydrators in gas processing by 99.9%. BTEX stands for a complex of toxic emissions, the most important of which is Benzene- a highly toxic substance emitted through the process of dehydrating natural gas, which has received substantial attention by the oil and gas production industry due to its harmful effects on humans and the environment.

Oil & Gas Industry Steps To Control BTEX Emissions

The Canadian Oil and Gas industry through a program developed by Environment Canada & CAPP (Canadian Association of Petrochemical Producers) has been proactively reducing BTEX emissions over the past 15 years. The joint government and industry panel set a goal of reducing total emissions generated by glycol dehydrators **by** 90% of 1995 levels, with 75% reduction in emissions already achieved. This pilot project has the potential to exceed the target and virtually eliminate BTEX emissions. Canada still has over 38,000 Glycol Dehydrators in use with BTEX emissions generated by the industry amounting to several hundred tonnes emitted into the atmosphere each year.

Kenilworth Combustion

Kenilworth is an Alberta based firm that has been developing combustion solutions for the Western Canadian Energy Industry since 1981. This pilot project adds BTEX emission reduction capabilities to a product line of CSA B-149.3 compliant natural draft burner systems (single and multi-pass capabilities) which already boast substantial improvements to thermal efficiency while reducing emissions of hazardous elements. The most notable is the reduction of NOx Emissions to as low as 15 PPM, CO Emissions to as low as 0-5 PPM and excess oxygen content down to as low as 3% with noise emissions ranging between 78-84 db achieved with Kenilworth products.



Emissions Results From Pilot Project

Component	Before (tonnes/yr)	After (tonnes/yr)	% Change
Methane	40.4498	0.0042	99.990%
Ethane	10.1656	0.0011	99.989%
Propane	7.6955	0.0008	99.990%
Isobutane	1.5865	0.0002	99.987%
N-Butane	2.9097	0.0003	99.990%
Isopentane	0.7746	0.0001	99.987%
N-Pentane	0.8515	0.0001	99.988%
N-Hexane	0.2786	<0.0001	99.964%
Cyclohexane	0.3673	<0.0001	99.973%
Other Hexanes	0.0133	<0.0001	99.248%
Heptanes	0.6713	0.0001	99.985%
Methylcyclohexane	0.2976	<0.0001	99.966%
2,2,4- Trimethylpentane	0.0108	<0.0001	99.074%
Benzene	2.2604	0.0002	99.991%
Toluene	2.0240	0.0002	99.990%
Ethylbenzene	0.2017	<0.0001	99.950%
Xylenes	0.2916	<0.0001	99.966%
C*+ Heavies	1.2206	0.0001	99.992%
Total Hydrocarbon Emissions	72.0704	0.0075	99.990%
Total VOC Emissions	21.4551	0.0022	99.990%
Total HAP Emissions	5.0670	0.0005	99.990%
Total BTEX Emissions	4.7776	0.0005	99.990%
Total Emissions	72.0704	0.0075	99.990%

Further Emissions Benefits

Emission testing was conducted by a major field analytics firm using 3 independent trials on the system under normal operating conditions. In addition to the major reduction in BTEX emissions, analytics report indicated the pilot project achieved emissions benefits beyond the BTEX reduction. While gases are normally vented to atmosphere in the gas drying process, these gasses are now being routed and utilized in the facilities process heating – **resulting in a net hydrocarbons emissions reduction of 72 tonnes per year!** The net payback of a BTEX Burner Upgrade (estimated based on process heating fuel savings) is an estimated 12-24 months. The payback of the project is made possible by Kenilworth Combustions Patented Low Pressure Burner and Flue Gas Recycle technology which enables the toxic gas to be routed to the facilities process heaters at low operating pressures and combusted at high efficiencies.

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