



Catalytic Methane Abatement System



Methane escaping into the atmosphere is a significant greenhouse gas source throughout North America. Regulations and environmental concerns are requiring the capture and elimination of these gases.

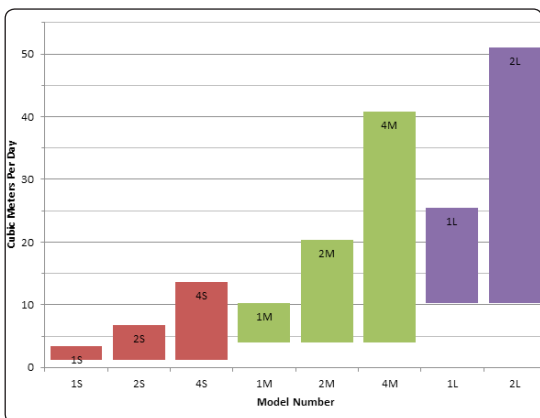
The Patented ETTER Catalytic Methane Abatement System (CMAS), is provided for Methane Abatement, addressing what is commonly found at wellheads on oil and gas wells.

These methane emissions occur as a result of the loss of integrity between casing strings and are called surface casing vent flows in some jurisdictions. Methane that has built up in the annuli between casing strings can be captured, and processed through an array of Catalytic Oxidizers, which will convert the Methane to environmentally friendlier CO₂ and water vapor. The System can also be used to oxidize methane emitted as solution gas from oil production and emissions from natural gas pneumatic controls.

The System operates at low gas supply pressure, and once operational, can operate indefinitely without any on-site electrical power. The design is scalable, in order to address the specific available Methane flow rates of each well or drilling site.

The CMAS are available with 3 sizes, in single, double, and 4-pack configurations. The Oxidizers are FM approved for Class I, Division I installations, and the housing are provided as complete "Plug-and-Play" assemblies. All of the necessary gas valving and control equipment is pre-assembled. The electric preheat cable is provided.

The Catalytic Oxidizers use a platinum based catalyst that, once initially heated, processes the methane in a flameless conversion to CO₂ and water vapor. Startup requires power from either a land based power connection, or a portable generator. The housing is designed to eliminate the effects of rain and snow, while reducing the effects of wind. The units are designed for outdoor installation.



U.S. Patent #10,150,081
Canadian Patent Pending



MODEL NUMBER

Oxidizers:
Qty Oxidizers:
Max Output:
Min BTU's:
Fuel Type:
Min Gas Pressure:
Max Gas Pressure:
Startup Voltage:
Startup Wattage:
Startup Type
Startup Temp. Minimum
Installation

| CMAS-1S | |
|--|-------------------------|
| 6x24, Class I Div I Rated | |
| 1 | |
| 5,000 BTU/Hr. | 3.4 m ³ /Day |
| 2,000 BTU/Hr. | 1.4 m ³ /Day |
| Natural Gas | |
| 7" WC | 17 mbar |
| 14"WC | 35 mbar |
| 12VDC, 120/240VAC - 1Ph - 60Hz | |
| 240 W | |
| Manual BASO Valve | |
| -20F | -30C |
| To be installed above snow line, and reduce wind as much as possible | |

| CMAS-2S | |
|--|-------------------------|
| 6x24, Class I Div I Rated | |
| 2 | |
| 10,000 BTU/Hr. | 6.8 m ³ /Day |
| 4,000 BTU/Hr. | 2.8 m ³ /Day |
| Natural Gas | |
| 7" WC | 17 mbar |
| 14"WC | 35 mbar |
| 12VDC, 120/240VAC - 1Ph - 60Hz | |
| 240 W per Heater | |
| Manual BASO Valve | |
| -20F | -30C |
| To be installed above snow line, and reduce wind as much as possible | |

| CMAS-4S | |
|--|--------------------------|
| 6x24, Class I Div I Rated | |
| 4 | |
| 20,000 BTU/Hr. | 13.6 m ³ /Day |
| 8,000 BTU/Hr. | 5.6 m ³ /Day |
| Natural Gas | |
| 7" WC | 17 mbar |
| 14"WC | 35 mbar |
| 12VDC, 120/240VAC - 1Ph - 60Hz | |
| 240 W per Heater | |
| Manual BASO Valve | |
| -20F | -30C |
| To be installed above snow line, and reduce wind as much as possible | |

MODEL NUMBER

Oxidizers:
Qty Oxidizers:
Max Output:
Min BTU's:
Fuel Type:
Min Gas Pressure:
Max Gas Pressure:
Startup Voltage:
Startup Wattage:
Startup Type
Startup Temp. Minimum
Installation

| CMAS-1M | |
|--|--------------------------|
| 18x24, Class I Div I Rated | |
| 1 | |
| 15,000 BTU/Hr. | 10.2 m ³ /Day |
| 6,000 BTU/Hr. | 4.1 m ³ /Day |
| Natural Gas | |
| 7" WC | 17 mbar |
| 14"WC | 35 mbar |
| 120/240/480VAC - 1Ph - 60Hz | |
| 500 W | |
| Manual BASO Valve | |
| -20F | -30C |
| To be installed above snow line, and reduce wind as much as possible | |

| CMAS-2M | |
|--|--------------------------|
| 18x24, Class I Div I Rated | |
| 2 | |
| 30,000 BTU/Hr. | 20.4 m ³ /Day |
| 12,000 BTU/Hr. | 4.1 m ³ /Day |
| Natural Gas | |
| 7" WC | 17 mbar |
| 14"WC | 35 mbar |
| 120/240/480VAC - 1Ph - 60Hz | |
| 500 W per Heater | |
| Manual BASO Valve | |
| -20F | -30C |
| To be installed above snow line, and reduce wind as much as possible | |

| CMAS-4M | |
|--|--------------------------|
| 18x24, Class I Div I Rated | |
| 4 | |
| 60,000 BTU/Hr. | 40.8 m ³ /Day |
| 24,000 BTU/Hr. | 4.1 m ³ /Day |
| Natural Gas | |
| 7" WC | 17 mbar |
| 14"WC | 35 mbar |
| 120/240/480VAC - 1Ph - 60Hz | |
| 500 W per Heater | |
| Manual BASO Valve | |
| -20F | -30C |
| To be installed above snow line, and reduce wind as much as possible | |

MODEL NUMBER

Oxidizers:
Qty Oxidizers:
Max Output:
Min BTU's:
Fuel Type:
Min Gas Pressure:
Max Gas Pressure:
Startup Voltage:
Startup Wattage:
Startup Type
Startup Temp. Minimum
Installation

| CMAS-1L | |
|--|--------------------------|
| 18x60, Class I Div I Rated | |
| 1 | |
| 37,500 BTU/Hr. | 25.5 m ³ /Day |
| 15,000 BTU/Hr. | 10.2 m ³ /Day |
| Natural Gas | |
| 7" WC | 17 mbar |
| 14"WC | 35 mbar |
| 120/240/480VAC - 1Ph - 60Hz | |
| 2500 W | |
| Manual BASO Valve | |
| -20F | -30C |
| To be installed above snow line, and reduce wind as much as possible | |

| CMAS-2L | |
|--|--------------------------|
| 18x60, Class I Div I Rated | |
| 2 | |
| 75,000 BTU/Hr. | 51.0 m ³ /Day |
| 30,000 BTU/Hr. | 10.2 m ³ /Day |
| Natural Gas | |
| 7" WC | 17 mbar |
| 14"WC | 35 mbar |
| 120/240/480VAC - 1Ph - 60Hz | |
| 2500 W per Heater | |
| Manual BASO Valve | |
| -20F | -30C |
| To be installed above snow line, and reduce wind as much as possible | |