FloConnect[®] Environmentally Distinctive Burner

OIL BURN CONTROL AND MONITORING WHILE QUANTIFYING AND REPORTING CARBON EMISSIONS OUTPUT

OVERVIEW

The FloConnect[®] surface automation platform is a revolutionary technology that provides significant advancements to the well test oil burner market. It enables more accurate reporting of carbon emissions to support both environmentally conscious and real-time operational decision-making.

As part of the FloConnect platform, the award-winning Environmentally Distinctive Burner (EDB) is a fully automated system for monitoring well conditions at the burner head in real time. Intelligent controls are displayed via a portable remotecontrol touch screen interface for human intervention to verify expected and address unexpected conditions—without compromising burner performance, efficiency, or well test data collection.

Through extensive testing and qualification, witnessed by a recognized certification authority, the EDB has met or exceeded efficiency and emission design standards, based on the U.S. Code of Federal Regulations and Environmental Protection Administration (EPA) Standards. Superior performance results are shown below.

APPLICATIONS

- » Exploration and appraisal well testing
- » Cleanup and flow back
- » Extended well testing

Performance Characteristics

Fallout Efficiency	99.99952%	Based on Fallout Target Testing
Combustion Efficiency (Carbon converted into CO ₂)	99.4%*	Reference EPA-600/2-83-052
Destruction Efficiency (Carbon Converted into CO ₂ + CO)	99.5%*	Reference EPA-600/2-83-052
Carbon Dioxide Emissions	41 Ib. CO ₂ /MMBtu*	Reference EPA-453/R-11-002 & AP 42

*Exceeds EPA references

Industry's first adaptive burner technology specifically designed for the reporting of emissions data, and winner of the Hart's Meritorious HSE Award for Engineering Innovation.





Burner Management System

- » Programmable logic controller (PLC) to help ensure safe startup of flowing operations
- » Remote operating and monitoring system
- » Logic applied to help ensure safe startup of flowing operations
- » Burner shutdown in 0.3 seconds (remote shutdown of the complete burner or by individual nozzle)
- » Remote nozzle operation with touch screen display to open/ close all nozzles, which displays real-time status
- » Burner head rotation operated via the remote operator interface (+/-30°)
- » Dual-ignition system (primary and secondary) in accordance with API-537
- Ignition system operations remote operator interface to ignite with pilot flame detection (displays real-time status)

- » Real-time oil and air manifold pressure monitoring
- » Visual alarm system
- » Flame footprint that mitigates heat radiation back to the rig
- » CO₂ emissions for the complete well test that can be calculated based on accumulated oil flow
- » Burner head heat shielding
- » Overlapping spray patterns to help ensure reliable cross-lighting of burner nozzles

Constant Air Bleed Path (Per Nozzle)

- » Nozzle cooling
- » Burn off residue no drip or spill

Combustion Air for Pneumatic System

- » Nozzle that opens only when compressors are active
- » Accumulator tank that enables nozzle shutdown if air compressors fail

Total Nozzles Used	Oil Flow Rate (BOPD)	Total Burner Air Flow Rate (SCFM / MBOPD)
1	500 to 1,200	1,020
2	1,000 to 2,400	1,630
3	1,500 to 3,600	2,140
4	2,000 to 4,800	2,600
5	2,500 to 6,000	3,020
6	3,000 to 7,200	3,415
7	3,500 to 8,400	3,790
8	4,000 to 9,600	4,145
9	4,500 to 10,800	4,490
10	5,000 to 12,000	4,800

* Actual requirements to be defined via the Halliburton Design of Service (DoS) process.

Air Requirements*

Equipment Specifications

Part Number	102248238
Capacity, bbl/d (m3/d)	12,000 (1,900)
Working Pressure, psi (bar)	1,440 (99.3)
WorkingTemperature, °F (°C)	-20 to 250 (-29 to 121)
Service	H ₂ S
Manufacturing Codes	ASME B31.3 NACE MR-01-75 ATEX (Control System)
Efficiency and Emission Design Standards (**)	EPA-600/2-83-052 40 CFR Part 2, Section 301 42 U.S.C. 7411 EPA-453/R-11-002 AP-42 Guideline
Number of Nozzles	10
Safety Devices and Features	Non-Return Valves on Air and Oil Lines Pilot Flame Detection Nozzles Open Only When Air Compressors are Active Nozzle Cooling System
Ignition System	Qty. 2 Stackmatch 2-Jet V-Flame Hot Rod
Water Curtain	Not Included
Maximum Required Air Flow Rate, SCFM/MBOPD	285 to 400
Maximum Operating Water Cut (Stable Condition)	30%
Burner Rotation	+/-30° Off Center
Burner Head / Nozzle Shutdown	0.3 Seconds
Standard Turndown Capacity	40:01
Skid Weight, Ib. (kg)	1,498 (680)
Dimensions (L \times W \times H), ft.	4 × 3.4 × 5.8
Pilot Gas Requirement	Propane @ 25 psig (8 SCFH per Hot Rod)
Flame Jet Gas Requirement	Propane @ 20 psig (550 SCFH per Hot Rod)
Equipment Condition Monitoring (ECM)	High-Low Oil Pressure High-Low Air Pressure

Notes

» These ratings are guidelines only. Contact your local Halliburton surface well testing (SWT) representative for more information.

- » Halliburton Testing and Subsea has developed purchasing specifications to ensure that SWT equipment used by Halliburton meets or exceeds recognized international specifications and industry codes (where/as applicable).
- » Refer to the equipment databook for individual equipment specifications and codes.
- » Actual job requirements should be reviewed as part of the Halliburton DoS process.
- » Different configurations are available upon request.
- » Based on U.S. Code of Federal Regulations and EPA Standards (**).

ABOUT FLOCONNECT® SURFACE AUTOMATION PLATFORM

Halliburton is assisting oil and gas operators to embrace emissions solutions via process automation and digitalization technologies. The FloConnect surface automation platform supports emissions reduction and increases sustainability, safety, and efficiency. This platform provides key insights that help drive companies to optimize their well testing, while increasing environmental awareness through emissions monitoring and abatement.



For more information, contact your local Halliburton representative or visit us on the web at www.halliburton.com

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