

Acme Coke
11236 S. Torrence Ave.
Chicago IL 60617



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COG Detector Specification
Dated: 1973

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INTEROFFICE
CORRESPONDENCE

Copies to:

Date: June 15, 1973

J. L. Bitner

To: J. T. Seaman
From: R. F. Draus
Subject: COKE OVEN GAS DETECTOR - COKE PLANT
Reference:

RAW
If these instructions
are satisfactory will
you take the necessary steps
to institute?
J.

As requested by Jim Bitner, enclosed are two copies of a procedure the Coke Plant Guard is to follow if any of the lights are actuated on the coke oven gas detector annunciator, for your review and comments.



R. F. Draus

RFD/dc

Encls.

Gas measuring devices have been installed in two locations in the coke plant sanitary sewer system to determine the concentrations of flammable gases which are normally present in the sewers. One of these devices is located at the west side of the light oil building in the leg of the sewer which accepts water, from which condensate wash oil is mechanically separated. The other device is located in the main leg of the sewer which accepts the water separated from the weak liquor system and the light oil separated water. The exact location of this device is at the northeast corner of the old boiler house.

At each of the locations is installed an identical exhaust fan (Buffalo Forge Company Model E) with an exhaust capacity of 612 cubic feet / min. equipped with a vent stack to the atmosphere.

At each of these locations is also installed an MSA model K-501 gas detector system which consists of a sample conditioning unit and a diffusion head which contains the gas detecting sensor. A sample of gas is drawn from the vent stack by a vacuum pump which passes the sample through a drier to the diffuser head. The diffuser head passes the gas concentration to an indicating meter calibrated for 0 to 100% of the lower explosive limit of 1.3% Benzene. The adjustable alarm point on this meter was factory set at 20% of the lower explosive limit. These meters are located on the second floor of the main substation. Also installed at the meter location is a Leeds & Northrup Speedomax H2 strip recorder for permanent record of concentration readings.

In the coke plant gate house is located a 6 window solid state annunciator with audible alarm and silence pushbutton. Two of the windows are for indication of high concentration at each of the sensing locations. Another two windows are for indication of vent fan failure at each of the locations. The other two windows are spare.

If future requirements dictate the necessity, continuous treatment of the water will be provided, such as a steam stripping unit.

COKE OVEN GAS DETECTOR

If either of the light oil or boiler house panel lights are actuated on the annunciator, guard is to take the following action:

- 1) Whenever Coke Plant Maintenance Foreman is in the Plant, contact him so Instrument Personnel can check cause of alarm.
- 2) If Coke Plant Maintenance Foreman is not available, contact Oven Foreman to determine if he can help in locating Instrument Personnel in the plant.
- 3) If no Instrument Personnel are available, notify Maintenance Foreman as soon as he comes into the Plant.
- 4) If light oil light goes on first and boiler house light goes on shortly after, immediately contact Roger Nagan or Bob Rankin in the Plant or at home.
- 5) Log Book is to be kept on top of annunciator and instrument Personnel are to log the cause of any alarm.

INTEROFFICE
CORRESPONDENCE

RAN 2/2/76
TD

Copies to:

Date: **January 27, 1976**

To: **J. T. Seaman**

J. L. Bitner

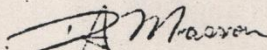
From: **D. A. Masson**

Subject: **EC-75-2150**
Coke Oven Gas Detection System

Reference:

The above subject E.R. calls for a cost estimate to install a gas detection system at the Chicago Coke Plant similar to the system being installed at the Toledo Plant. The attached scope of work and sketches will define the proposed system, which will cost an estimated \$226,700 to install.

After reviewing the attached scope of work, sketches, and cost estimate, please notify me of any questions and comments that you have. If desired, a meeting will be set up to discuss the proposed system.



D. A. Masson

DAM/vip
Attachments

Design Basis:

A. Bacharach four (4) channel monitor and sensing head are to be used

1. 26 heads located in basement of _____ battery
2. 25 heads located in basement of _____ battery
3. 4 heads located in control room
4. 2 heads located at COG Preheaters
5. 2 heads located at input to combustion air systems
- 6.

B. Monitors to be mounted in oven foreman's office

1. 4 racks of 4 monitors each - total of 64 points
- 2.

C. Detection of gas in oven basement

1. monitor initiates alarm at 10% LEL

- a. 1 alarm located at oven foreman's office
- b. 1 alarm located at control room

2. monitor initiates automatic sequence at 40% LEL

- a. sounds alarms at locations listed under 'C'
- b. closes motor operated COG shut-off valve for appropriate battery
- c. initiates steam purge of COG line

1. Purge must be at a rate necessary to displace the COG in the main at the normal firing rate of 4650 SCFM to assure complete gas displacement.

2. Purge to be timed for one minute at the 4650 SCFM rate which is equivalent to _____ volume displacements of the piping in the control room and _____ ft of main in the basement. (\approx _____ ft³)

DATE 11-3-75

DR. D.A.M

APP.

CHARGE SYMBOLS

INTERLAKE, INC.

LOCATION CHICAGO COKE

SKETCH NO.

DESCRIPTION Coke Oven Battery GAS
Detection System

- C. 2. C.3. Continue purge as necessary at a reduced rate of 200 SCFM
 4. After the reversing valve is in the neutral position, an additional 2 changes (_____ ft³) are made on the COG line, this gas is discharged through a vent valve at the end of the gas main.

- d. shut off power to reversing machine
 e. open stack draft dampen

D. Detection of gas in control room

1. Operation same as outlined in 'C' above with the additions as follows
 a. close valves and initiate purge for both batteries
 b. start emergency purge air fan for control room
 1. located at south end of control room (in alleyway)
 2. Automatically started at detection of 40% LEL by one or more control room sensors.
 3. air to be exhausted through vents in East wall of control room

E. Manual operations (after above auto sequence)

1. place reversing machine control in manual-neutral
 2. After gas indication returns to less than 10% LEL Turn control to 'sequence reset'
 a. stack draft control will return to auto control
 b. Reversing machine will move to neutral position
 3. COG vent valve(s) may be opened (remote control)
 4. Operate 'sequence start' which will release the ckts. for opening the main COG valve(s)
 5. Open COG fuel valve with key operated switch
 6. Manual shut down P.B will activate all automatic sequences outlined under steps 'C' & 'D' above

DESCRIPTION: Coke Oven Battery Gas Detection System	DATE 11-3-75	INTERLAKE, INC. LOCATION CHICAGO COKE
	DR. D.A.M.	
	APP.	SKETCH NO.
	CHARGE SYMBOLS	

PROJECT ESTIMATE SHEET

15-5283
 TITLE
 SUB ACCOUNT

COKE OVEN GAS DETECTION SYSTEM
 - SUMMARY -

PLANT Chicago Coke
 TYPE OF ESTIMATE Preliminary

DATE 1-16-76 PREPARED BY EPR /SK SHEET NO. 1 OF 17
 REVISION NO. REVISION DATE PROJECT NO. ECT5-2150
 PROJECT DRAWING'S Scope of Work by O.A.M. 11-3-75; Modified by T.C. 11-18-75; C-75-59X d 60X

ITEM	DESCRIPTION	QUANTITY		COST/CAPITAL		COST EXPENSE		TOTAL COST
		UNIT	TOTAL	UNIT	TOTAL	UNIT	TOTAL	
50	SITE PREPARATION							0
100	BUILDING MODIFICATIONS, INCL. CONCRETE WORK				4200			
300	PURCHASE GAS DETECTION EQUIPMENT				26,900			
350	INSTALL DETECTION MODULES & CONNECT WIRING				26,300			
400	PURCHASE EMERGENCY AIR HANDLING EQUIPMENT				9,500			
450	INSTALL " " "				3,000			
500	DUCTWORK				2800			
600	PIPING				12,500			
700	PURCHASE STARTERS & CONTROLS				35,500			
750	ELECTRICAL WORK, INCL. INSTALLATION OF CONTROL EQUIPT				43,200			
775	SPARES				4,700			
800	PAINTING				300			
850	TAXES				-			0
900	ENGINEERING				23,000			
950	CONTINGENCIES				24,600			
	TOTAL ESTIMATED COST (BEFORE ESCALATION)				216,500			0
975	ESCALATION (ASSUME PROJECT COMPLETE 3 RD QTR, '76)				10,200			
	TOTAL ESTIMATED COST (AFTER ESCALATION)				226,700			0

NOTE: Ductwork for Emergency Air Supply is based on tie-in to air intake duct for proposed Ventilation for Coke Oven Office Area (ECT5-2146).
 Reinforcement of the existing Alley Floor, if req'd. to support new Emcn. Air Handling Equipm't.

INTEROFFICE
CORRESPONDENCE

Copies to:

Date: April 5, 1976

J. L. Bitner
G. A. Chester
R. C. Rankin ✓
G. Shope

To: D. A. Masson
From: J. T. Seaman
Subject: EC-75-2150 - COKE OVEN GAS DETECTION SYSTEM
Reference: Your letter of 1/27/76

The plant has the following comments on the COG detection system:

- 1) We understand the Toledo installation cost about \$169,000 and the Chicago installation will cost more because of 20 additional detection heads and additional valves due to two batteries. Is this correct?
- 2) Look at what it would cost to install a nitrogen purge system. Provide details and capacity of the Toledo purge system.
- 3) Look at installing a motorized plug valve ahead of the bypass offtake.
- 4) Provide details of how you planned to motorize the valves.
- 5) Provide the balance of the calculations for the purge rates.
- 6) Provide remote control for the 4" vent valve in the control room and near the valve with header pressure indication. Check the sizing of this vent line.
- 7) Omit the detector heads in the foreman's room, foreman's toilet, and operators toilet. Add detector heads over each of the COG preheaders and in the area of the decarbonizing air blowers.
- 8) When you have accumulated the requested information, please arrange to meet with plant people to discuss the project. Make arrangements with J. L. Bitner.

ORIGINAL SIGNED
J. T. SEAMAN

J. T. Seaman

JTS:eb

Gas Detector System

4/19/77

Mossum, Hazella, Bitum, Noga, PER

Jin Kintz - STds.
Ken Leonard - Dec Air
Teller - Projects

1. Can purge be activated with loss of power
2. Can we manually close air operated 16" C.O. gas valves.
3. By-pass around each ~~8~~ 8" vent - by-pass around each air operated - steam purge solenoid.
4. Relocate air operated 16" valves to preclude involvement related equipment
5. Flame arresters - vents
6. Vent valves - air operated
7. Purge fan @ 10% LEL - 10,000 CFM fan
8. Price on maint. contract
9. Calibration procedure