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Dust and Fumes from Gray Iron Cupolas—How Controlled in Los Angeles County

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The fundamental engineering problem of the control of air pollutants resolves itself into a need for a means of reducing the concentration of solid, liquid, and gaseous contaminants existing in the atmosphere. The obvious engineering solution to this is a reduction to a minimum, commensurate with the local air pollution problem of all contaminants discharged at known sources. The concept of reduction at the source must be considered as a basic engineering premise in the solution of air pollution problems. The engineering means to accomplish this are three-fold:

1. The installation of control equipment on a given process or equipment to remove the pollutants from the gas stream prior to its discharge to the atmosphere.
2. A process change to minimize pollutants from the process gas discharge.
3. A modification or redesign of equipment employed in a given process to minimize pollutants in the gases discharged to the atmosphere.

The first of these engineering approaches, that of the installation of control equipment, has been the one most widely applied to minimize the discharge of air contaminants to the atmosphere.

In the engineering evaluation necessary for the determination of proper types and designs of control equipment, the following four factors must be considered:

1. The physical and chemical characteristics of the pollutant involved.
2. The characteristics of the gaseous medium conveying the pollutants.
3. The physical and operational limitations of the types of control equipment contemplated.
4. The efficiency required for the control equipment.

The first two factors given above—the characteristics of the pollutant and the characteristics of the gaseous conveying medium—are fundamentally a function of the process equipment under consideration, in this case a cupola producing gray iron. The data in Table I are

TABLE I

DUST AND FUME DISCHARGE FROM GRAY IRON CUPOLAS

Test Number	1	2	3	4	5	6	7	8	9	10
CUPOLA DATA										
Inside Dia., Inches	26	30	30	37	48	48	48	54	60	63
Air, scfm.	1000	1400	1260	1950	4100	4050	3500	4500	4500	7500
Iron/Coke Ratio	8.33/1	10.8/1	8.55/1	6.66/1	9.8/1	9.16/1	8.1/1	6.4/1	9.16/1	10.1/1
Process Wt., lbs./hr.	4080	5856	8120	8380	17160	22500	9720	15730	18800	39100
STACK GAS DATA										
Volume—scfm.	3000	4200	4020	5520	14160	11400	8180	17700	21000	30500
Temperature—°F.	396	990	660	1400	463	300	1410	1046	445	213
CO_2 %				12.3			11.1			2.8
DUST AND FUME DATA										
Concentration—gr./scf.	1.07	1.45	1.02	1.32	0.74	1.81	1.09	1.15	1.44	0.413
Dust Emissions—lbs./hr.	27.6	52.4	35.7	62.4	89.8	177	76.3	174	260	108
Particle Size—Wt. %										
0-5 μ				17.2			18.1			23.6
5-10 μ				8.5			6.8			4.5
10-20 μ				10.1			12.8			4.8
20-44 μ				17.3			32.9			9.5
>44 μ				46.9			29.3			57.9
Proximate Analysis										
% Fixed Carbon				3.04	19.2			11.9		
% Volatile Material				6.70	6.6			6.8		
% Ash				90.26	74.2			81.3		

intended to indicate certain salient items relative to the characteristics of the dusts and fumes discharged from gray iron cupolas. First, it should be noted that the pollutants discharged from a gray iron cupola are predominantly solids since only 6.6 to 6.8% by weight are lost by volatilization at high temperatures. Further, the particle size breakdown on a weight basis indicates that 17 to 23% of the particles are in the 0-5 micron range and from 4.5 to 8.5% are in the 5-10 μ range. Thus, approximately 25% of the total weight discharged to the atmosphere is in the particle size range of 0-10 μ. Particle densities, although not presented in the table, range from specific gravities of 2.5 to 3.5. Since the particle sizes given were determined by sedimentation methods, there are distinct indications that the actual particle sizes are somewhat smaller than those presented.

Further reference to Table I, which actually gives data from only a few of the tests conducted by the Los Angeles County Air Pollution Control District, shows that the solids discharged from gray iron cupolas vary in concentration from 0.413 gr./scf. (for a hot blast cupola) to 1.81 gr./scf. for a standard cupola. Expressed in terms of pounds discharged per ton of material processed (coke, iron, fluxes and alloying briquettes), this shows a loss of 5.9 lbs./ton of material for the hot blast cupola and a range of 8.8 to 27.7 lbs./ton for a standard cupola. Based on the average of all tests conducted, the average discharge of dusts and fumes from a gray iron cupola is 14.8 lbs./ton of material charged.

Chemical analyses of the inorganic portions of the dusts and fumes discharged, although not presented in the table, show silicon, iron, lead, zinc and calcium compounds present as major constituents with trace percentages of aluminum, manganese, magnesium, chromium, potassium, titanium, sodium, tin, copper, nickel, barium, strontium, zirconium, antimony, vanadium, bismuth and cobalt compounds. Silicon and iron compounds usually amount to about 60% of the total weight of the metallic compounds discharged.

The characteristics of the gaseous medium conveying the air contaminants from gray iron cupolas are also shown in Table I. Of major importance from a design standpoint is the temperature of the gas stream. While the table shows variations of from 200°F. to 1400°F., it should be noted that these temperatures were measured with cold air dilution ratios at the charging door of 2.3-4.7:1. With reduced dilution ratios to allow for the installation of properly designed equipment at a lower initial cost, cupola gas discharge temperatures necessarily jump to the range of 1500°F. to 2200°F. It should be noted that the gaseous discharge from cupolas is acidic when cooled and collected in the presence of moisture, due principally to the presence of sulfur compounds from the coke consumed.

The third and fourth major items, those of the physical and operational limitations and the efficiencies of control equipment contemplated, must be given equal consideration in any engineering evaluation. As previously presented, the particle size distribution, the particle density and the concentration of pollutants in cupola discharge obviously dictate the use of relatively high efficiency control equipment. Table II shows efficiencies obtained in pilot plant tests of standard, relatively well known control equipment. It is noteworthy that a high efficiency cyclone and a standard dynamic water scrubber show collection efficiencies of 22.5% and 38.2% respectively, far below that required for effective control. Intermediate efficiencies of plus 70% are shown for a venturi type scrubber and an impingement scrubber. The baghouse and electrical precipitator tests show efficiencies around 95% and are well within the engineering requirements of the Los Angeles County Air Pollution Control District. It should be noted that the efficiencies obtained on pilot baghouse and electrical precipitator installations have been duplicated or bettered in full scale installations.

As mentioned at the beginning of this paper, other engineering means may be available to control the discharge of air contaminants from gray iron foundry operations, such as modification or redesign of the process or equipment employed. This is best exemplified in the application of the small reverberatory type iron melting furnace. Even though this type of equipment is limited in melting capacity, the dust and fume discharge compares most favorably with a controlled cupola which has a collection efficiency of 96%. Economic considerations of the small job shop, therefore, have led to extensive use of this type of iron melting equipment.

In making an engineering evaluation necessary to design an effective control installation for a gray iron cupola, the problems of temperature control and gas conditioning are of primary importance. In considering the solution of these problems, the economic factors of increased gas volume versus operating temperatures must be evaluated. This phase of the problem has been solved through the employment of two fundamental engineering principles of cooling—first, through the use of radiation and convection columns and, second, through the use of evaporative coolers. Both systems allow a reduction in temperature without excessive increases in gas volumes to be handled by the control equipment.

The first typical example employing radiation and convection cooling is that of the Alhambra Foundry, Alhambra, California (see Illustration 1). This foundry uses a standard 45 in. I.D. cupola, employing an iron-coke ratio of 8:1. The flue gas temperature discharge varies from 1875°F. to 2150°F. The high temperature discharge gases are conditioned effectively through the employment of 16 radiation and convection columns 42 in. in diameter and 42 ft. high, with an effective cooling area of 10,980 ft² The unique feature of this particular installation is the employment of a recirculating system, whereby approximately 50% of the gases which have passed through th

TABLE II

PILOT PLANT TESTS ON GRAY IRON CUPOLA CONTROL DEVICES AND OTHER GRAY IRON MELTING EQUIPMENT*

Equipment Tested	Inlet Gas Volume—scfm.	Outlet Gas Volume—scfm.	Inlet Dust Load—gr./scf.	Outlet Dust Load—gr./scf.	Efficiency %	Remarks
...ROLS FOR CUPOLAS**						
...e efficiency cyclone	330	384	1.225	0.826	22.5	
...onic water scrubber	1410	1760	1.06	0.522	38.2	Water added before control unit for cooling totalled 6 gpm.
...turi type scrubber	375	432	1.17	0.291	71.3	2 gpm. water introduced for cooling gas stream, 3.5 gpm. added at Venturi throat, cyclonic scrubber operated dry.
...anic—impingement scrubber	605	995	0.95	0.141	75.6	Water rate in excess of 10 gpm.
...ghouse—one silicone ...ated glass wool bag ..." dia. x 10' long	52.7	52.7	1.32	0.046	96.5	Avg. temp. 372°F. Avg. filter ratio 3.22:1
...aporative cooler and red-...d pipe elec. precipitator	1160	1330	1.263	0.0289	97.7	Water rate to cooler 22 gpm.; to precipitator 2 gpm.
...ER BASIC EQUIPMENT						
...atural gas-fired ...verberatory furnace	....	5160	....	0.00288	96.2***	Melting rate 546 lbs./hr.; gas consumption rate 4200 cfh.; melting clean scrap and pig iron.

* ...all cases, equipment was installed and operated according to the manufacturer's recommendations.
** ...e six control devices were tested on the same cupola.
*** ...is is not an actual control efficiency, but a per cent reduction when compared to average cupola loss.

...ng system are recirculated back to the inlet duct ...the cooling system. This effects a shock cooling of ...gases at this point to a temperature of approximately ... F., which allows the use of relatively inexpensive ... steel ductwork rather than the more expensive types ... steels. Further, such recirculation does not in-...se the size of the final control equipment, but neces-...tes increased duct sizes in the radiation and convec-... cooler. The over-all heat transfer coefficient for this ...em is 1.59 Btu. per hour per square foot per degree F.

CUPOLA DATA

..." I.D.	Iron:Coke Ratio, 8:1
...as Vol. 7980 scfm.	Flue Gas Temp. 1875-2150°F.
... Air, 3450 scfm.	Charging Rate, 20,200 lbs./hr.

GAS CONDITIONER DATA

...iation & Convection	Gas Vol. (Incl. Recirculation), 16,100 scfm.
... Area, 10,980 ft².	Size, 16 Cols. 42" Dia. x 42" H.
... Temp. Diff., 670°F.	Gas Temp. Inlet 1030°F.
... Coef.,	Gas Temp. Outlet, 404°F.
... ft²./hr./°F.	

BAGHOUSE DATA

...rtmented, Tubular	Collection Efficiency, 99+%
... Inlet, 13,100 cfm.	Tube Size, 11" Dia. x 180" Lg.
...835 ft².	Gas Temp. Inlet 404°F.
... Silicone Glass	Filter Ratio, 2.7:1
..., 90 Min.	Pressure Drop, 3" to 4" W. C.
... by Compartment)	Initial Cost of Controls, $45,000

and the gas discharge temperature from the cooler is 400°F.

The baghouse utilized in this system handles 13,100 ft³. at 400°F. gas temperature. It is of the tubular type having four separate compartments with 112 silicone treated glass wool bags 11 in. diameter and 180 in. long, giving a total filter area of 4,835 ft². Based on an inlet gas volume of 400°F., the filter ratio of this equipment is 2.7:1 and the pressure drop ranges from 3 to 4 in. water column. The shaking cycle employed in this equip-

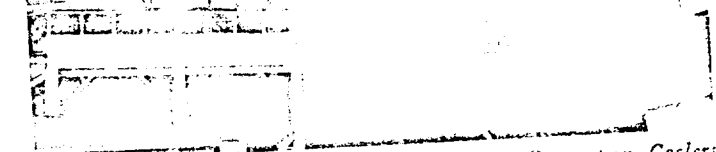

Illustration 1. Cupola Controlled by Radiation-Convection Coolers and Baghouse at Alhambra Foundry, Alhambra, California.

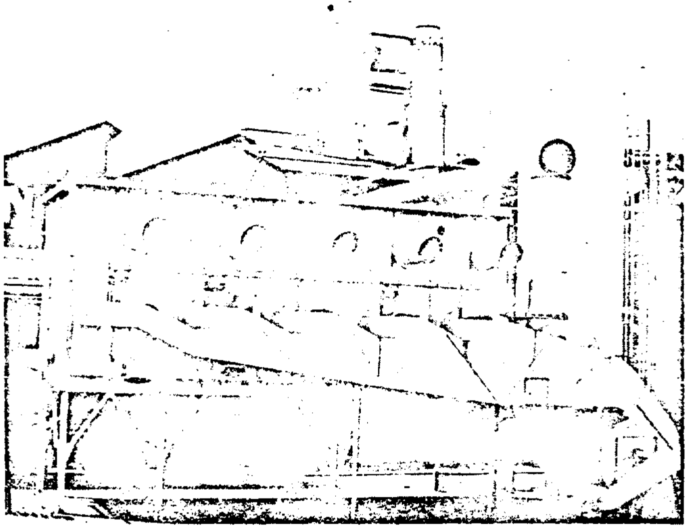

Illustration 2. Cupola Controlled by Evaporative Coolers and Baghouse at Lincoln Foundry, Vernon, California.

ment is manual, with each compartment being dampered from the gas flow during the shaking operation. Under normal operating conditions shaking is required about once every 90 minutes. The over-all efficiency of this equipment under normal operating conditions is in excess of 99%.

The second example covers the employment of a baghouse as a control unit, utilizing evaporative coolers as a means of cooling and conditioning the gases. Equipment based on these design principles is in operation at the Lincoln Foundry, Vernon, California (see Illustration 2). This company operates a 54 in. I.D. cupola, using an iron-coke ratio of 5.3:1. The cupola gas discharge is 7,400 scfm. at a gas temperature varying between 1580°F. to 1790°F. The gases are conditioned through a two-stage evaporative cooler employing 29 gallons per minute of water at 120 psi. in the primary cooler and five gallons per minute of water at 120 psi. in the secondary cooler. This results in a temperature decrease in the primary from 1600°F. to 450°F., with a further reduction in the secondary of from 425°F. to 270°F.

CUPOLA DATA →

Size, 56" I.D.	Flue Gas Temp. 1300-1600°F.
Flue Gas Vol. 19,430 scfm.	Iron:Coke Ratio, 10:1
Tuyere Air, 4600 scfm.	Charging Rate, 21,500-32,500 lbs./hr.

GAS CONDITIONER DATA

Type, Evaporative Cooler	Size, 9' Dia. 44' L.
Volume, 1910 ft³.	Water Rate, 20 gpm.
Gas Temp. Inlet, 1200-1500°F.	Gas Temp. Outlet, 300°F.
Outlet Gas Vol., 33,000 cfm. @ 300°F.	

ELECTRICAL PRECIPITATOR DATA

Type, Perforated Plate	Size, 13 Duct 8¾"x17'6"x18'0"
Gas Volume Inlet, 33,000 cfm.	Gas Temp. Inlet, 300°F.
Electrode Length, 5450 ft.	Rectification, Mechanical Half Wave
Gas Velocity, 3.32 fps.	Retention Time, 5.42 sec.
Outlet Dust Loss, 0.044 gr./scf. Moisture, Flue Gas, 14%	Electrode Length/Gas Vol. (cfs.), 9.9:1
Collection Efficiency, 94%	Initial Cost of Controls, $120,000

← CUPOLA DATA

Size, 54" I.D.	Charging Rate, 15,800 lbs./hr.
Flue Gas Vol. 7400 scfm.	Iron:Coke Ratio, 5.3:1
Tuyere Air, 4200 scfm.	Flue Gas Temp. 1580-1790°F.

GAS CONDITIONER DATA

Type, Two Stage Evaporative Cooler	Size Primary, 6½' Dia. 32' Lg
Volume Primary, 1065 ft³.	Secondary, 8' Dia. 20' Lg.
Secondary, 1010 ft³.	Water Rate Primary, 29 gpm.
Gas Temp. Primary, Inlet 1600°F.	Secondary, 5 gpm.
Primary Outlet, 450°F.	Gas Temp. Secondary, Inlet 425°F.
Outlet Gas Vol. 16,900 cfm. @ 270° F.	Secondary, Outlet 270°F.

BAGHOUSE DATA

Type, Compartmented, Tubular	Collection Efficiency, 99+%
Gas Volume Inlet, 16,900 cfm.	Tube Size, 5" Dia. x 112" Lg.
Filter Area, 7320 ft².	Gas Temp. Inlet, 270°F.
Filter Media, Preshrunk Orlon	Filter Ratio, 2.3:1
Shaking Cycle, 15 Min. (Automatic Control by Comp'ts)	Pressure Drop, 6" to 8" W.C.
	Initial Cost of Controls, $30,000

The baghouse, designed to handle the 16,900 cfm. of gases at 270°F. discharged from the conditioner unit, is of the tubular type with five compartments. It uses 600 pre-shrunk Orlon tubes 5 in. in diameter and 112 in. long, giving a total filter area of 7,320 ft². On the basis of the baghouse inlet gas conditions as given, the filter ratio of this equipment is 2.3:1 and the pressure drop is from 6 in. to 8 in. water column. The shaking in this unit is automatic time controlled on 15 minute cycles. The gas flow is shut off automatically in the individual compartments during the shaking cycle. The overall efficiency of this equipment under normal operating conditions is in excess of 99%.

A third type of high efficiency cupola control employed in the Los Angeles area is the electrical precipitator. This is illustrated by operations at the American Brake Shoe Company, Pomona, California (see Illustration 3). The cupolas used by this company are lined to 56 in. I.D. and operate with an iron-coke ratio of 10:1. The flue gas discharge is 19,430 scfm. with a temperature varying from 1300°F. to 1600°F. The gases are conditioned through the use of an evaporative cooler operating on a water rate of 20 gpm., resulting in a temperature decrease

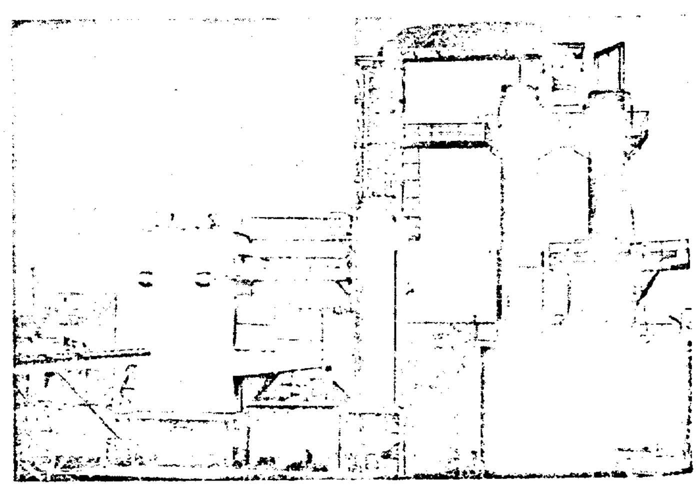

Illustration 3. Cupola Controlled by Evaporative Cooler and Electrical Precipitator at American Brake Shoe Co., Pomona, California.

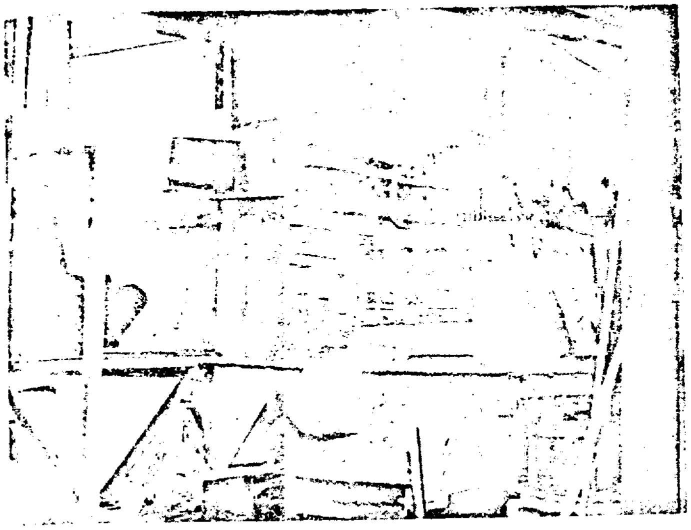

Illustration 4. Typical Example of Cupola Control by Process and Equipment Change—Gas Fired Reverberatory Furnace at Stanley Foundry, Huntington Park, California.

to 300°F. and a gas outlet volume of 33,000 cfm. Of the two cupolas, only one is used at any given time.

The precipitator controlling these cupolas is of the perforated plate collection electrode type, consisting of 13 ducts 8¾ in. wide, 17½ ft. high and 18 ft. long. The total discharge electrode length is 5,450 ft., with a gas velocity through the precipitator of 3.32 ft./sec., resulting in a retention time of 5.42 seconds. The equipment employs mechanical half-wave rectification on the electrical system and has a ratio of discharge electrode length to gas volume, expressed in cubic feet per second, of 9.9:1.

It should be noted that a unique situation exists relative to the employment of the precipitator as a control medium for gray iron cupolas in that high collection efficiencies can only be obtained through either the conditioning of the gases to a relatively low temperature containing high percentages of moisture or through maintaining the gas temperature at 600°F. or higher. The installation under discussion utilizes the former principle in that the gases are conditioned to an inlet temperature of 300°F., with a minimum moisture content of 14%, by volume.

The fourth example of equipment which is used to minimize dust and fume losses from gray iron melting operations is the gas-fired reverberatory type melting furnace. Replacement of cupolas with these relatively new furnaces is a typical example of minimizing air pollution by completely changing the basic equipment and process. One such installation is that at the Stanley Foundry, Huntington Park, California (see Illustration 4). The furnace shown is rated at 1,000 lbs. capacity and has a melting rate of 750 lbs./hr. Fuel consumption is 4,200 cfh. of natural gas. Pouring temperatures average about 2,700°F. Gas volume measured in the overhead stack is 12,270 cfm. at a temperature of 775°F. Dust and fume discharge is 0.00288 gr./scfm. When compared

←

REVERBERATORY FURNACE DATA

Rated Capacity, 1000 lbs.	Typical Charge, 300 lbs. Pig Iron, 500 lbs. Scrap Iron, 200 lbs. Foundry Returns, 2 lbs. Soda Ash
Fuel, Natural Gas	
Furnace Flue Gases, Calculated at 6100 cfm. @ 2850°F.	
Pouring Temp., 2700°F.	Melting Rate, 750 lbs./hr.
Fuel Rate, 4200 ft^3./hr.	

TEST DATA

Gas Volume at Hood, 5160 scfm.	Average Gas Temp., 775°F.
Dust Loss in grains/scf., 0.00278	Loss in lbs./hr., 0.13
Initial Cost of Equipment, $3,600	

to average cupola losses the discharge from such a reverberatory type furnace represents a reduction of more than 96%. This compares most favorably with collection efficiencies of a baghouse or an electrical precipitator.

Before a foundryman replaces his cupola with a reverberatory type furnace he must first condition himself and his employees to an entirely new method of operation. Whereas a cupola is usually in operation two to four hours a day, the reverberatory furnace must be in operation a much longer period of time to produce the same quantity of metal. Several smaller job shops in Los Angeles County have been operating these furnaces for the past two or three years. These foundrymen freely admit that this innovation has been a boon to the industry. The furnace shown in Illustration 4 has been in operation for six years.

In November 1953, the gray iron foundry control program in Los Angeles County was completed. Thirty-six baghouses, three electrical precipitators and twenty reverberatory type furnaces have been installed. These controls have resulted in a reduction of more than 95% of the contaminants formerly discharged to the atmosphere from gray iron melting operations. The means used to bring about this reduction provide no doubt of the effectiveness of the sound engineering approach that is set forth in the first pages of this treatise.

The authors are not recommending necessarily that other communities demand the same strict engineering standards nor do they advocate the use of similar air pollution control measures where the atmospheric sanitation problem is decidedly different. Each community must decide for itself the extent of control that is required to satisfy the existing conditions. It is the authors' belief, from long experience, that the control of air contaminants in Los Angeles County requires the utilization of the best engineering methods available.

DISCUSSION OF PAPER BY H. R. CRABAUGH, et al., ENTITLED "DUST AND FUMES FROM GRAY IRON CUPOLAS—HOW THEY ARE CONTROLLED IN LOS ANGELES COUNTY."

The authors are to be congratulated for their valuable contribution to our knowledge of foundry cupola fume control. Their paper is the first factual comparison of the basic types of cupola fume control installations in Los Angeles County. The foundry industry everywhere is indebted to these officials of the Los Angeles County Air Pollution Control District.

As I read this paper, it was only natural that I began to play around with the figures given on performance and costs of the three installations involving the use of dust and fume collectors in an attempt to reduce costs and gas volumes to some common basis. I came up with the comparative figures shown in the following table:

	Glass Bags Alhambra	Orlon Bags Lincoln	Precipitator Brake Shoe
Cost per scfm. tuyere	$13.04	$7.14	$26.09
Cost per inlet cfm. @ temp.	3.43	1.78	3.64
Cost per inlet cfm. @ 60°	5.72	2.50	5.35
Cost per lb./hr. charge	2.23	1.90	3.69—5.58
Inlet cfm. @ 60°	7860	11,999	22,440
Inlet cfm./lb./hr. charge	.65	1.07	1.02—1.53
Stack scfm./lb./hr. charge	.39	.47	.59— .90
Tuyere scfm./lb./hr. charge	.17	.26	.14— .21
Ratio, stack:tuyere vol.	2.3	1.8	4.2
gpm. water:tuyere scfm. x 1000		.09 (6.3)*	4.6
Efficiency, % by wgt.	99+%	99+%	94%

*Actually evaporated

The foundry operator is interested in two phases of the cupola fume control:

(a) How much does it cost?
(b) How will it perform?

The figures speak for themselves. The cost per scfm. of tuyere air is $13.04 for the Alhambra Foundry installation which utilizes glass bags and radiation-convection cooling; $7.14 for the Lincoln Foundry installation utilizing evaporative cooling and a continuous automatic baghouse with Orlon bags; and $26.09 for the Brake Shoe installation with its evaporative gas conditioning and electrostatic precipitator. The collection efficiencies were 99+% by weight for the Alhambra and Lincoln Foundry collectors as compared to 94% for the electrostatic precipitator at American Brake Shoe.

One significant difference in the operation of the cupola at the three plants is the high ratio of stack or flue gas volume to the tuyere air volume at the American Brake Shoe Foundry. It is possible that this can be accounted for by the high rate of charging of the Brake Shoe cupolas, but I suspect that there is excess air infiltration through the charge door. I wonder if the authors can offer any explanation for this discrepancy.

One point not mentioned is the necessity of secondary combustion prior to filtration of cupola gases. In plants not practicing hot blast heat exchange, it is customary to increase the height of the cupola stack above the charge door and restrict infiltration through the charge door to permit combustion of the carbon monoxide, oil vapors, and fine, carbonaceous particles. It has been definitely established that there is a change caused by secondary combustion in character of the solid material entrained in the gases. This effect may be that of agglomeration or flocculation of the particles, but, regardless of the physical or chemical changes to the suspended particles themselves, the efficiency of filtration is greatly improved and the dangers associated with handling a toxic and inflammable gas are eliminated.

One final point which deserves mention is that of filter bag life. I know, for example, that the Orlon filter bags at Lincoln Foundry are well into their third year of operation and are still in excellent condition. I do not know either the length of service or the present condition of the fiberglas bags at Alhambra Foundry. Since bag life is an important part of the overall operating cost of the system, I hope that the authors will be able to bring us up to date on the bag life experienced in the glass bag collectors.

R. T. PRING
American Wheelabrator & Equipment Corp.

This paper is, in our opinion, excellent regarding the highest degree of dust and fume control of emissions from gray iron cupolas.

The paper fully recognizes that the Los Angeles dust and fume control standards are among the highest in the country—with a justification because of the microclimate and other similar factors.

For other parts of the country, lower standards are in existence, primarily because the cost and bulk of such stringent control equipment is high compared to other plant investment. In these other areas, "spitting distance" nuisance is probably the most common basis of control standards and resulting control practices.

The paper does *not* discuss the combustion—completion problems of excessive smoke caused by wood-crib light off, oily scrap, and ordinary or high carbon coke, when adequate after-burning provisions have not been made for the gases above the charge.

Replacement of cupolas by reverberatory furnaces is apparently limited to those operations whose one-time pour is within the holding capacity of such a furnace.

BENJAMIN LINSKY
Chief Smoke Inspector, Detroit

(Continued from page 118)

Smoke Picture of Today

any coal burning smoke. I believe there should be a great campaign put on today to try and correct some of these air pollutants.

Incinerators are another problem. Anyone living close to apartments or private homes where they have incinerators will find a greasy dirt that accumulates on window sills, front porches, doors, etc. Railroad smoke never left this greasy condition.

I believe if every city could wash their streets at night, dust could be held to a minimum, and if cities could broadcast over radio and television and newsreels about the cleaner air week program, it would reach many more individuals, which would have a bearing on cleaning up the air. Cleaner Air Week did more for the railroads than any other program I know of, because it got everyone on his toes and accomplished great results. It also helped supervision out considerably.

It is a great pleasure to visit the model city of Columbus, Ohio. Those of you who visited this city prior to the present smoke regulation program will recall the smog that hung over the city most of the day due to coal smoke. It was impossible to see the sun shine or the sky. Today it is a pleasure to see such a beautiful city, the sun shining and the air clean.

It took a great deal of work and cooperation of all concerned to bring this about.

Cincinnati reduced the smoke violations by 91 per cent during the last seven years. Much credit for this excellent record goes to Mr. T. J. Wells, Supervisor of Locomotive Operation and his assistants; also to all supervision and the City Smoke Regulation Engineer for his cooperation. In January, 1954, there were no complaints and no violations, which is a splendid record.

There are any number of cities that have done a remarkable job of cleaning up. But, as I have said before, it takes work and cooperation from all concerned to bring this about. And when I say "all concerned" I mean everyone, because we all have to breathe air.