KOOGLER & ASSOCIATES
ENVIRONMENTAL SERVICES
4014 NW THIRTEENTH STREET
GAINESVILLE, FLORIDA 32609
352/377-5822 • FAX/377-7158

KA 263-94-04

October 23, 1997

Mr. Jeff Brown
Office of General Counsel
Florida Department of
Environmental Protection
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Subject: Rinker Materials Corporation
Dade County, Florida
FDEP File No. 0250014-002-AC

Dear Mr. Brown:

On behalf of our client, Rinker Materials Corporation, we would like to withdraw the request, submitted to your office on September 26, 1997, for an extension of time to comment on the subject permit.

If you have any questions, please do not hesitate to contact me.

Very truly yours,

KOOGLER & ASSOCIATES

John B. Koogler, Ph.D., P. E.

JBK:wa

c: Mr. Clair Fancy, FDEP
Mr. Mike Vardeman, Rinker
Mr. Jake Varn, Steel Hector & Davis

cc: D. Heron

STEEL HECTOR & DAVIS

Teresa

Steel Hector & Davis LLP
215 South Monroe, Suite 601
Tallahassee, Florida 32301-1804
904.222.2300
904.222.8410 Fax

Jacob D. Varn

Claire Howard 10/6

October 1, 1997

Mr. Howard Rhodes
Director
Division of Air Resource Management
Florida Department of Environmental Protection
MS-5505
2600 Blair Stone Road
Tallahassee, FL 32399-2400

RECEIVED
OCT 03 1997
DIVISION OF AIR
RESOURCES MANAGEMENT

RE: RINKER MATERIALS CORPORATION
OGC CASE NO. 96-1751
CONSENT ORDER

Dear Howard:

On behalf of Rinker Materials Corporation ("Rinker") and pursuant to paragraph 12(a) of the referenced Consent Order, we are writing this letter to advise the Department that Rinker intends to convert its Miami cement mill to dry process technology. Paragraph 12(a), as amended, requires Rinker to notify the Department in writing of its intent no later than one year and thirty days after the date on which the Consent Order was rendered, which was September 5, 1996.

As you are aware, in an effort to make the required improvements at the Miami cement mill at an early date, Rinker has taken steps to make these improvements earlier than required by the Consent Order. Rinker filed its application for a construction permit with the Department in December of 1996 for a dry process technology. Since filing its application, Rinker has also entered various contracts for the design and construction of the dry process technology to be utilized at the Miami cement mill. With these contracts and DEP's final air

construction permit, dated September 11, 1997, Rinker in reliance on DEP's actions is moving forward with its efforts to have the new process technology for this existing source completed and in operation as provided by the terms and conditions of the final air construction permit and as required by the terms and conditions of the Consent Order.

We appreciate the Department's cooperation and assistance in processing this permit application. We sincerely believe that the addition of the dry process technology at this plant is beneficial to Rinker as well as the environment. We shall continue to keep the Department advised as our progress in completing these improvements.

Should you have any questions or care to discuss this matter, please call.

Sincerely,

Jacob D. Varn

JDV/dww
cc: Perry Odom, Esquire, General Counsel
Claire Fancy
Jim Pennington

TAL/22136-1

KOOGLER & ASSOCIATES
ENVIRONMENTAL SERVICES
4014 NW THIRTEENTH STREET
GAINESVILLE, FLORIDA 32609
352/377-5822 ▪ FAX/377-7158

KA 263-97-05

September 26, 1997

RECEIVED
SEP 30 1997
BUREAU OF
AIR REGULATION

Mr. Clair H. Fancy
Florida Department of
Environmental Protection
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Subject: Rinker Materials Corporation
Dade County
DEP File No. 0250014-002-AC
Comments on Construction Permit

Dear Mr. Fancy:

We have received and reviewed the referenced construction permit issued to Rinker Materials Corporation (Rinker) for the modernization of their portland cement plant in Miami, Dade County, Florida. We appreciate the cooperation and efforts expended by you and your staff in preparing and issuing the permit and in working through various regulatory matters associated with the project. We do, however, have a few administrative comments regarding the permit; none of which will change the intent of the permit, the way the plant is operated or emission limits for the plant. These comments, referencing the page and section of the referenced construction permit, are presented below.

Page 6 of 17, Section B.5.(1).c.

This condition states that fuels fired to the kiln and pre-calciner shall included:

> "Combustion of non-hazardous solid waste, oil filters, booms and rags from spill cleanup, generated on site ...." [Emphasis added]

Throughout the permitting process, it has been the intention of Rinker to include as fuels, non-hazardous solid waste, oil filters, booms and rags from spill cleanup generated both on-site and off-site. It has never been the intention of Rinker to have these materials limited to on-site generated materials. Therefore, it is requested that this paragraph be reworded as follows:

"Combustion of non-hazardous solid waste, oil filters, booms and rags from spill cleanup. This non-hazardous solid waste material shall be used as a supplemental fuel, not as a start-up fuel."

Page 7 of 17, Section B.5.(4)

This condition requires that the gases exiting the kiln be maintained at an outlet temperature of at least 1750°F (during steady-state operating conditions and be achieved within six hours of kiln start up). It is doubtful that the temperature at the exit of the kiln will reach 1750°F during normal operations. Rinker is of the opinion that this condition is unnecessary and would further point out that similar conditions have not been imposed on other cement plants in Florida which are permitted to burn tire derived fuel. Therefore, Rinker requests that the final sentence of Section B.5.(4) be deleted.

Page 7 of 17, Section B.5.(5)

This condition limits the total halogens in on-specification used oil to 1,000 ppm, maximum. Rinker requests the option of having a total halogen concentration in the on-specification used oil of up to 4,000 ppm. The 4,000 ppm limit is authorized by 40 CFR 279.10(b)(1)(ii) if Rinker can demonstrate that the used oil does not contain halogens in excess of 1,000 ppm as a result of the mixture of a hazardous waste. Increasing the total halogens limit of the on-specification used oil fuel should pose no problem as Rinker is authorized to burn off-specification used oil with a higher halogen content anyway.

Page 9 of 17, Section B.11

The last paragraph of this condition requires the use of F factors for calculating mass emission rates of sulfur dioxide and nitrogen oxides from CEM data. The use of a F factor for calculating emission from a portland cement plant is not appropriate as the F factor calculation procedure presumes that all carbon in the stack gas is a result of carbon in the fuel. In portland cement plants, a significant fraction of carbon in the stack gas (as carbon dioxide) is present as a result of the calcining of limestone.

The calculation of mass emission rates based on CEM data will incorporate data generated by a continuous stack gas flow monitor. As a result, the use of a F factor, even if appropriate, will not be necessary. As a result, the last paragraph of Section B.11 should be deleted.

KOOGLER & ASSOCIATES

Page 14 of 17, Section B.30

The scrap tires will be received in enclosed vans and stored in these vans until they are fed into the tire feeding mechanism of the cement plant. There is no opportunity for the tires to be exposed to rain during storage and to accumulate rainwater. As a result, the requirement to spray the tires with insecticide is unnecessary. Furthermore, the introduction of an insecticide onto the tires will introduce an undesirable constituent into the process.

It should be noted that this condition was considered and deleted from a permit for another cement plant recently permitted in Florida for the reasons cited above.

Page 15 of 17, Section B.36

This condition should read:

> "The Permittee shall manage used oil and used oil filters generated or received at the facility ...."

This comment parallels the previous comment related to the fact that Rinker will receive used oil in used oil filters from off-site sources as well as on-site sources.

These comments and requested permit changes, as stated previously, are administrative in nature and will have no effect on the operation of the plant or emissions from the plant. We appreciate your consideration of these requests and will provide further information to support our requests if necessary. I have also enclosed a copy of a Request for an Extension of Time to comment on the subject permit to allow your review of our comments.

Very truly yours,

KOOGLER & ASSOCIATES

John B. Koogler, Ph.D., P.E.

JBK:wa
Enc.

c: Mr. Mike Vardeman
Mr. Jake Varn
CC: Teresa Heron, BAR
Dade
SED

EPA
NPS

KOOGLER & ASSOCIATES

KOOGLER & ASSOCIATES
ENVIRONMENTAL SERVICES
4014 NW THIRTEENTH STREET
GAINESVILLE, FLORIDA 32609
352/377-5822 ▪ FAX/377-7158

KA 263-97-05

September 26, 1997

VIA FAX AND MAIL

Mr. William Congden, Esq.
Office of General Counsel
Florida Department of
Environmental Protection
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Subject: Motion for Extension of Time
Rinker Materials Corporation
Dade County, Florida
FDEP File No 0250014-002-AC

Dear Mr. Congden:

Attached is a request for an extension of time to comment on the subject air construction permit in accordance with Rule 62-103.070, F.A.C.

If you have any questions concerning this request, please do not hesitate to contact me.

Very truly yours,

KOOGLER & ASSOCIATES

John B. Koogler, Ph.D., P.E.

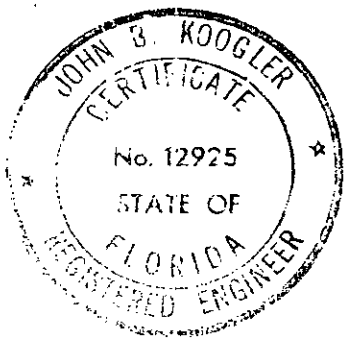
JBK:wa
Enc.

c: Mr. Clair Fancy, FDEP, Tallahassee
Mr. Mike Vardeman, Rinker Materials Corporation
Mr. Jake Varn, Steel Hector & Davis

CC: Teresa Heron, BAR

CERTIFICATE OF SERVICE

I hereby certify that a copy of the foregoing has been furnished to Mr. William Congden, Office of the General Counsel, and Mr. Clair Fancy, Florida Department of Environmental Protection, Twin Towers Office Building, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400; Mr. Mike Vardeman, Rinker Materials Corporation, 1200 N.W. 137th Ave., Miami, Florida 33182; and Mr. Jake Varn, Steel Hector & Davis, 215 South Monroe Street, Suite 601, Tallahassee, Florida 32301, by FAX and by U.S. Mail this 26th day of September 1997.



John B. Koogler, Ph.D., P.E.
Florida Registration No. 12925

KOOGLER & ASSOCIATES

STEEL HECTOR DAVIS

Steel Hector & Davis LLP
215 South Monroe, Suite 601
Tallahassee, Florida 32301-1804
904.222.2300
904.222.8410 Fax

Jacob D. Varn

MEMORANDUM

TO: Clair Fancy

FROM: Jake Varn _ JAKE

DATE: September 9, 1997

RE: DRAFT LETTER
RINKER MATERIALS CORPORATION
MIAMI CEMENT MILL

We have reviewed the language approved by Ms. Comer in the second paragraph of the proposed letter. Set out below is the language approved by Ms. Comer with one minor clarification (the new language is underlined). If this revision is acceptable, please finalize the permit and letter. Please let us know when the permit is ready and we will send someone to pick it up.

New proposed second paragraph:

"Please note the inclusion of new permit Condition No. 11, which provides: 'This permit does not constitute a maximum available control technology (MACT) determination.' While this facility does not have a MACT determination, the facility will be subject to EPA - promulgated MACT standards under §112(d) and to applicable compliance deadlines, if any, established in such EPA - promulgated MACT standards."

Again, we appreciate your assistance in this matter. If you have any questions, please call.

TAL/21914-1

STEEL HECTOR & DAVIS

Steel Hector & Davis LLP
215 South Monroe, Suite 601
Tallahassee, Florida 32301-1804
904.222.2300
904.222.8410 Fax

September 5, 1997

Mr. Howard Rhodes
Director,
Division of Air Resources
Department of Environmental Protection
MS 5505
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Re: Extension of Time for Rinker Materials Corporation
Compliance with Paragraph 12(a) of Consent Order No. 96-1751.

Dear Mr. Rhodes:

Rinker Materials Corporation hereby requests a 30-day extension of time to comply with Paragraph 12(a) of Consent Order 96-1751. The signing of this letter by the Department of Environmental Protection, Division of Air Resources, constitutes the Department's agreement to the requested extension of time, and complies with the requirements of Paragraph 19 of the Consent Order.

Sincerely,

Cathy M. Sellers
Attorney for Rinker Materials Corporation

On behalf of the Department of Environmental Protection, Division of Air Resources, I hereby agree to the 30-day extension of time for Rinker Materials Corporation to comply with Paragraph 12(a) of Consent Order No. 96-1751.

Howard Rhodes
Director, Division of Air Resources
Department of Environmental Protection

c: Scott Benyon
Michael Vardeman
Jacob D. Varn, Esq.

8/29/97

	NAME	REPRESENTING	PHONE
✱	JIM PENNINGTON	FDEP/DARM	850/921-9515
✱	Michael VARDEMAN	RINKER	305-229-2955
✱	Jake Varn	STEELE, HECTOR & DAVIS	(850) 222-2300
✱	Chris Thornton	FDEP/OGC	850 921-9652
✱	Jeanne Elias	"	" 921-9647
✱	Scott BENYON	RINKER	561-820-8344
✱	Clair Fancy	PEP	850 488 1344

PERMITTING ONLY

Teresa Heron	FDEP/DARM	904/488-1344
JOHN KOGER	RINKER	352/377-5822
Al Linero	FDEP/DARM	850/488-1344
Lennon Anderson	FDEP/DARM	850/488-1344
CINDY PHILLIPS	FDEP/DARM	850/921-9534

★ COMPLIANCE & PERMITTING

AIR CONSTRUCTION PERMIT 0250014-002-AC

SECTION I. FACILITY INFORMATION

SUBSECTION A. FACILITY DESCRIPTION

The existing facility consists of a quarry, two wet-process cement kilns and clinker coolers, associated equipment, a soil treatment facility and a concrete batch plant This permit is for construction of a single dry-process kiln with preheater, precalciner and clinker cooler, capable of producing approximately 1,200,000 tons per year (TPY) of clinker, that will replace the existing kilns and coolers having a total capacity of 650,000 TPY. Substantial improvements and upgrades in fuel and materials handling will also be made.

EMISSION UNITS

This permit addresses the following emission units:

EMISSIONS UNIT NO.	SYSTEM	EMISSIONS UNITS DESCRIPTION
ARMS No. 016	Raw Materials Processed	Material Handling (Fugitive) Handling and Storage (Fugitive)
ARMS No. 017	Raw Mill System	Raw Materials Handling
ARMS No. 018	Kiln System	Raw Mill, Dry Process Kiln with Preheater (PH) Precalciner (PC), and Clinker Cooler: Main stack
ARMS No. 019	Finish Mill System	Clinker Cement Handling and Storage
ARMS No. 020	Coal Mill System	Coal Mill, Fuel Bin Coal Handling and Storage (Fugitive)

SUBSECTION B. REGULATORY CLASSIFICATION

The Rinker Materials Corporation (RMC) Miami Cement Plant is a "Major Source of Air Pollution or Title V Source," and a "Major Facility" in accordance with the definitions in **Rule 62-210.200, F.A.C.** This industry is listed in Table 62-212.400-1 of Chapter 62-212, F.A.C., "Major Facility Categories." Therefore, stack and fugitive emissions of over 100 TPY of carbon monoxide, volatile organic compounds, sulfur dioxide, nitrogen oxides, or particulate matter characterize the installation as a major facility subject to applicability review for the requirements of **Rule 62-212.400, F.A.C.** As a cement plant, the facility is subject to 40 CFR Subpart F, New Source Performance Standards (NSPS) for Portland Cement Plants, incorporated by reference in **Rule 62-204.800, F.A.C.** Because aggregate emissions of Hazardous Air Pollutants (HAPS) are greater than 25 tons per year, the facility is subject to 40 CFR 63, Subpart B,

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
NOTICE OF PERMIT

DRAFT

In the Matter of an
Application for Permit

Mr. James S. Jenkins, III
Rinker Materials Corporation
1200 Northwest 137th Avenue
Miami, Florida 33182

DEP File No. 0250014-002-AC
Dade County

Enclosed is the Permit Number 0250014-002-AC to construct a 1,200,000 ton per year (clinker) dry process cement kiln with preheater, precalciner, clinker cooler, crusher, mills, storage and handling equipment, and ancillary equipment at Rinker Materials Corporation, Miami Cement Plant, 1200 Northwest 137th Avenue, Miami, Dade County. This permit is issued pursuant to Chapter 403, Florida Statutes. It does not constitute a determination of Maximum Achievable Control Technology pursuant to Rule 62-204.800(10)(d)2., F.A.C.

Any party to this order (permit) has the right to seek judicial review of the permit pursuant to Section 120.68, F.S., by the filing of a Notice of Appeal pursuant to Rule 9.110, Florida Rules of Appellate Procedure, with the Clerk of the Department in the Legal Office; and by filing a copy of the Notice of Appeal accompanied by the applicable filing fees with the appropriate District Court of Appeal. The Notice of Appeal must be filed within 30 (thirty) days from the date this Notice is filed with the Clerk of the Department.

Executed in Tallahassee, Florida.

C.H. Fancy, P.E., Chief
Bureau of Air Regulation

CERTIFICATE OF SERVICE

The undersigned duly designated deputy agency clerk hereby certifies that this NOTICE OF FINAL PERMIT (including the FINAL permit) was sent by certified mail (*) and copies were mailed by U.S. Mail before the close of business on _____ to the person(s) listed:

Mr. James S. Jenkins, III, RMC*
Mr. Brian Beals, EPA
Mr. John Bunyak, NPS
Mr. John Koogler, P.E.
Mr. Ewart L. Anderson, DERM
Mr. Isidore Goldman, SED

Clerk Stamp

FILING AND ACKNOWLEDGMENT FILED, on this date, pursuant to §120.52(7), Florida Statutes, with the designated Department Clerk, receipt of which is hereby acknowledged.

_____ _____
(Clerk) (Date)

SECTION II. EMISSION UNIT(S) GENERAL REQUIREMENTS

SUBSECTION A. ADMINISTRATIVE

A.1 Regulating Agencies: All documents related to applications for permits to operate, reports, tests, minor modifications and notifications shall be submitted to the Air Division of the Dade County Department of Environmental Resources Management (DERM), Suite 900, 33 Southwest Second Avenue, Miami, Florida 33130-1540 (phone number: 305/372-6925). All applications for permits to construct or modify an emission unit(s) *subject to the Prevention of Significant Deterioration or Nonattainment (NA) review requirements* should be submitted to the Bureau of Air Regulation (BAR), Florida Department of Environmental Protection (FDEP), 2600 Blairstone Road, Tallahassee, Florida 32399-2400 (phone number 850/488-1344).

A.2 General Conditions: The owner and operator is subject to and shall operate under the attached General Permit Conditions G.1 through G.15 listed in *Appendix GC* of this permit. General Permit Conditions are binding and enforceable pursuant to Chapter 403 of the Florida Statutes. **[Rule 62-4.160, F.A.C.]**

A.3 Emission Unit(s) Common Specific Conditions: The owner and operator is subject to and shall operate under the attached Emission Unit(s) Common Specific Conditions listed in *Appendix CSC* of this permit. The Emission Unit(s) Common Specific Conditions are binding and enforceable pursuant to Chapters 62-204 through 62-297 of the Florida Administrative Code.

A.4 Terminology: The terms used in this permit have specific meanings as defined in the corresponding chapters of the Florida Administrative Code.

A.5 Forms and Application Procedures: The permittee shall use the applicable forms listed in Rule 62-210.900, F.A.C. and follow the application procedures in Chapter 62-4, F.A.C. **[Rule 62-210.900, F.A.C.]**

A.6 Expiration: This air construction permit shall expire on May 30, 1999 **[Rule 62-210.300(1), F.A.C.].** The permittee may, for good cause, request that this construction permit be extended. Such a request shall be submitted to the Bureau of Air Regulation prior to 60 days before the expiration of the permit. However, the permittee shall promptly notify DERM of any delays in completion of the project which would affect the startup day by more than 90 days. **[Rule 62-4.090, F.A.C]**

A.7 Application for Title V Permit: An application for a Title V operating permit, pursuant to Chapter 62-213, F.A.C., must be submitted to Dade County DERM's Air Division. **[Chapter 62-213, F.A.C.]**

A.8 Application for MACT Determination An application for a determination of Maximum Achievable Control Technology, pursuant to 40 CFR 63, Subpart B, shall be submitted to the Department's Bureau of Air Regulation in Tallahassee by November 30, 1997. The requirements of the MACT determination shall be incorporated into the final project design and construction specifications.

KOOGLER & ASSOCIATES
ENVIRONMENTAL SERVICES
4014 NW THIRTEENTH STREET
GAINESVILLE, FLORIDA 32609
352/377-5822 ▪ FAX 377-7158

July 22, 1997

File Copy

Mr. Al Linero
Administrator, NSR Section
FDEP -- Division of Air Resources
2600 Blair Stone Road
Tallahassee, FL 32399-2400

SUBJECT: Rinker Materials Corporation -- Miami Cement Plant
FDEP File No. 0250014-002-AC
Engineering Report on Baghouses

Dear Mr. Linero:

Enclosed please find two copies of an Engineering Report containing preliminary information on the baghouses planned for use at the plant modernization project. This report was prepared per your request, and at the request of Teresa Heron.

Rinker respectfully requests that you expeditiously issue the air construction upon the close of the public comment period.

If further information is required, please do not hesitate to contact me at (352) 377-5822.

Sincerely,

Steven C. Cullen, P.E.
Koogler & Associates

enclosures

copy to: Mike Vardeman -- CSR Rinker (w/o report)

D:\STEVE\RINKER\BAGHOUSE.DOC
K&A 263-94-04

Table 1-1
Allowable Opacity Limits (Minor Particulate Sources)
Rinker Materials Corporation

Description	Control	Grain Loading (gr/acf)	OPACITY	PM lb/hr	PM TPY	PM10 lb/hr	PM10 TPY
Emission Unit 016: Raw Material Processed							
Material Processing (Fugitive)	Reasonable Precautions		10	negligible			negligible
Crusher (Fugitive)	Reasonable Precautions		15	negligible			negligible
Paved and Unpaved Roads (Fugitive)	Reasonable Precautions		20		31.91		11.49
Emission Unit 017: Raw Mill System Raw Materials Handling							
Soil Bin	Baghouse	0.01	5	0.86	3.75	0.73	3.19
Transfer	Baghouse	0.01	5	0.60	2.63	0.51	2.23
Add Bin	Baghouse	0.01	5	1.71	7.51	1.46	6.38
Raw Meal Silo	Baghouse	0.01	5	1.10	4 81	0.93	4.08
Raw Meal Silo	Baghouse	0.01	5	1.37	6.01	1.17	5 11
Meal Transfer	Baghouse	0.01	5	1.37	6.01	1.17	5.11
Waste Soil	Baghouse	0.01	5	0.39	1 69	0.33	1.44
Waste Soil/Coal Transfer	Baghouse	0.01	5	0.60	2.63	0.51	2.23
Rail Transfer--Rail Cars	Baghouse	0.01	5	0.49	2.14	0.42	1.82
PM Transfer--Coal	Baghouse	0.01	5	0.49	2.14	0.42	1.82
PM Transfer--Gypsum	Baghouse	0.01	5	0.49	2.14	0.42	1.82
PM Feed Mill Transfer	Baghouse	0.01	5	0.49	2.14	0.42	1.82
PM Feed Mill Transfer	Baghouse	0.01	5	0 49	2.14	0.42	1.82
Coal Transfer	Baghouse	0.01	5	0.49	2.14	0.42	1.82
Coke/Coal Transfer	Baghouse	0.01	5	0.86	3.75	0.73	3.19
Soil Transfer	Baghouse	0.01	5	1.71	7.51	1.46	6.38
Emission Unit 018: Kiln System							
Raw Mill/Kiln/PH/PC/Cooler	Main Baghouse		10	44.00	192.72	37.40	163.81
Emission Unit 019: Finish Mill: Clinker and Cement Handling							
Clinker Storage Silo	Baghouse	0.01	5	0.39	1.73	0.34	1.47
Clinker Pan Conveyor	Baghouse	0.01	5	0.39	1.73	0.34	1.47
Clinker Retrofit Silo	Baghouse	0.01	5	0.39	1.73	0.34	1.47
Clinker Discharge Transfer	Baghouse	0.01	5	0.49	2.14	0.42	1.82
Clinker Discharge Transfer	Baghouse	0.01	5	0.49	2.14	0.42	1.82
Feed Bin	Baghouse	0.01	5	0.39	1.73	0.34	1.47
Additional Transfer	Baghouse	0.01	5	0.49	2.14	0.42	1.82
Gypsum Bin Transfer	Baghouse	0.01	5	0.49	2.14	0.42	1.82
Flyash Bin	Baghouse	0.01	5	0.60	2.63	0.51	2.23
Clinker Mill (Pulse Type)	Baghouse	0.01	5	2.31	10.14	1.97	8.62
Separator (Pulse Type)	Baghouse	0.01	5	6.17	27.03	5.25	22.98
Mill Return Conveyor	Baghouse	0.01	5	0.49	2.14	0.42	1.82
Silo Feed Conveyor	Baghouse	0.01	5	0.49	2.14	0.42	1.82
Emission Unit 020: Coal Mill System							
Coal Mill	Baghouse	0.01	5	1.80	7.88	1.53	6.70
Coal Handling and Storage	Fugitive		20				
Fuel Bin	Baghouse	0.01	5	0.49	2.14	0.42	1.82
TOTAL				73.38	351.21	62.48	284.71

TABLE OF CONTENTS

LISTING OF TABLES & ATTACHMENTS

ATTACHMENTS

GENERAL DISCUSSION

Theory of Operation

Fabric filters remove dust from a gas stream by passing the stream through a porous fabric. Dust particles form a more or less porous cake on the surface of the fabric. It is normally this cake that actually does the filtration.[1]

Cleaning Systems

The two most common baghouse designs are the reverse-air and pulse-jet types. These names describe the cleaning system used within the design[1]. Certain small baghouses, or nuisance dust collectors, are often of a third type, a shaker system.

Reverse-air baghouse operate by directing the gas stream into the inside of the bags, therefore the filter cake forms on the inside surface of the bags. The bags are cleaned periodically by reversing the flow of air, causing the filter cake to fall from the bags into a hopper below.[1] Typically, reverse-air baghouses are constructed with at least two compartments, to enable on-line cleaning.

Pulse-jet baghouses are designed to allow collection of the dust on the outside of the bags. The filter cake is periodically removed by a pulsed jet of compressed air into the bags.[1]

Shaker baghouses have one end of the bags attached to a fixed frame, and the other end is attached to a frame which can be vigorously shaken, usually by a motor-driven camshaft. During periods when the control device is not in collection mode, the bags are shaken and the filter cake falls into a hopper or into the storage structure (i.e., silo) being controlled.

Bag Cloth Description

The selection of fiber material and fabric construction is important to baghouse performance. The fiber material from which the fabric is made must have adequate strength characteristics at the maximum gas temperature expected and adequate chemical compatibility with both the gas stream and the collected dust.[1]

As experience with the use of baghouses has increased, their reliability has increased as a result of the availability of different fibers/fabrics and improvements in the design of bag fabrics and in cleaning techniques. These measures have extended bag life to an average of five years, or more in some cases. Table 1 lists the major fiber alternatives for gas filtration and gives some of the important properties of these fibers.[1]

TABLE 1: Bag Fabric Chart

Fabric	Maximum Temperature, °F	Acid Resistance	Alkali Resistance	Flexural & Abrasion Resistance
Cotton	180	Poor	Good	Very Good
Polypropylene	200	Excellent	Excellent	Very Good
Polyester	275	Good	Good	Very Good
Nomex	400	Poor to fair	Excellent	Excellent
Teflon	450	Excellent	Excellent	Fair
Fiberglass	500	Fair to good	Fair to good	Fair

Air-to-Cloth Ratio

Air-to-cloth ratio is a measure of the amount of the gas stream driven through the surface area of fabric in the baghouse, and is typically given in terms of the number of cubic feet per minute of gas (acfm) passing through 1 square foot of cloth.

$$\text{Air-to-Cloth Ratio} = [\text{acfm/cloth area } (ft^2)]$$

Typical ranges of air-to-cloth ratios, utilized for various particulate materials, are presented in Table 2.

TABLE 2: Typical Air-to-Cloth Ratio Ranges

Industry/Material Processed	Typical Air-to-Cloth Ratio Range
Cement	2.0 - 8.0
Clay	2.5 - 9.0
Coal	2.5 - 8.0
Fly Ash	2.5 - 5.0
Gypsum	2.0 - 10.0
Lime	2.5 - 10.0
Limestone	2.7 - 8.0
Rock Dust	3.0 - 9.0
Sand	2.5 - 10.0
Silica	2.5 - 7.0

Performance Characteristics

Well-designed and operated baghouses have been shown to be capable of reducing overall particulate emissions to less than 0.01 grains/dry standard cubic foot (dscf), and in a number of cases to as low as 0.001-0.005 gr/dscf.[1]

Use of Baghouses in the Portland Cement Manufacturing Industry

Raw Material Handling

Purchased and produced raw materials commonly utilize fabric filters to control particulate emissions from material storage buildings, enclosures, bins, and silos. Typical fabric filters are pulse-jet, reverse-air, or shaker types. Table 3 presents typical specifications for baghouses used in raw material handling.[1]

TABLE 3: Typical Specifications for Baghouses for Raw Material Handling

acfm	4500-25,000
Fabric type	Polyester
Temperature range, °F	ambient up to 275°
Air-to-Cloth Ratio	2.5 - 6.0
Inlet loading, gr/acf	5 - 40

Raw Milling, Pyroprocessing, and Clinker Cooler

Dust collecting devices in the raw mill and raw mix storage areas include fabric filters. Air pollution control equipment on the pyroprocessing system includes reverse-air baghouses. Typical control equipment for clinker coolers includes fabric filters. Table 4 presents typical specifications for baghouses used to control combined gas streams from raw milling, pyroprocessing, and clinker coolers.[1]

TABLE 4: Typical Specifications for Baghouses for Raw Milling, Pyroprocessing, and Clinker Coolers

acfm	50,000 - 300,000
Fabric type	Nomex, Fiberglass, Polyester
Temperature range, °F	180° - 500°
Air-to-Cloth Ratio	1.5 - 5.0
Inlet loading, gr/acf	4 - 18

Clinker & Cement Handling and Storage

Particulate emissions from mill vents, air separator vents, material handling systems, bins, and silos are typically controlled by fabric filters. Typical fabric filters are pulse-jet, reverse-air, or shaker types. Table 5 presents typical specifications for baghouses used to control emissions from clinker handling and storage, finish milling, and cement handling and storage.[1]

TABLE 5: Typical Specifications for Baghouses for Clinker & Cement Handling and Storage

acfm	2000 - 75,000
Fabric type	Polyester
Temperature range, °F	ambient to 275°
Air-to-Cloth Ratio	2.0 - 6.0
Inlet loading, gr/acf	5 - 300

Coal and Petroleum Coke Milling

Particulate emissions from crushing operations, transfer points, and storage silos/bins are typically controlled by fabric filters. Typical fabric filters are pulse-jet, reverse-air, or shaker types. Table 6 presents typical specifications for baghouses used to control emissions from coal/petcoke milling and handling.

TABLE 6: Typical Specifications for Baghouses for Coal & Petcoke Milling and Storage

acfm	3000 - 25,000
Fabric type	Polyester
Temperature range, °F	ambient to 275°
Air-to-Cloth Ratio	2.0 - 6.0
Inlet loading, gr/acf	5 - 40

Preliminary Design Specifications

TABLE 7: Proposed Baghouses

Item	E.U.	Operation	Emission Basis	Exit Flow Rate	Emissions Estimates PM		PM10	
				(acfm)	(lb/hr)	(tpy)	(lb/hr)	(tpy)
1	1	Soil Bin	0.01 gr/acf	10000	0.86	3.75	0.73	3.19
2	1	Transfer	0.01 gr/acf	7000	0.60	2.63	0.51	2.23
3	1	Add Bin	0.01 gr/acf	20000	1.71	7.51	1.46	6.38
4	1	Raw Meal Silo	0.01 gr/acf	12800	1.10	4.81	0.93	4.08
5	1	Raw Meal Silo	0.01 gr/acf	16000	1.37	6.01	1.17	5.11
6	2	Main Kiln/Cooler/Raw Mill	0.2 lb/ton	255000	44.00	192.72	37.40	163.81
7	1	Meal Transfer	0.01 gr/acf	16000	1.37	6.01	1.17	5.11
8	3	Clinker Storage Silo	0.01 gr/acf	4600	0.39	1.73	0.34	1.47
9	3	Clinker Pan Conveyer	0.01 gr/acf	4600	0.39	1.73	0.34	1.47
10	3	Clinker Retrofit Silo	0.01 gr/acf	4600	0.39	1.73	0.34	1.47
11	3	Clinker Discharge Transfer	0.01 gr/acf	5700	0.49	2.14	0.42	1.82
12	3	Clinker Discharge Transfer	0.01 gr/acf	5700	0.49	2.14	0.42	1.82
13	3	Feed Bin	0.01 gr/acf	4600	0.39	1.73	0.34	1.47
14	3	Additional Transfer	0.01 gr/acf	5700	0.49	2.14	0.42	1.82
15	3	Gypsum Bin Transfer	0.01 gr/acf	5700	0.49	2.14	0.42	1.82
16	3	Flyash Bin	0.01 gr/acf	7000	0.60	2.63	0.51	2.23
17	3	Clinker Mill (Pulse Type)	0.01 gr/acf	27000	2.31	10.14	1.97	8.62
18	3	Separator (Pulse Type)	0.01 gr/acf	72000	6.17	27.03	5.25	22.98
19	3	Mill Return Conveyer	0.01 gr/acf	5700	0.49	2.14	0.42	1.82
20	3	Silo Feed Conveyer	0.01 gr/acf	5700	0.49	2.14	0.42	1.82
21	1	Waste Soil	0.01 gr/acf	4500	0.39	1.69	0.33	1.44
22	1	Waste Soil/Coal Transfer	0.01 gr/acf	7000	0.60	2.63	0.51	2.23
23	1	Rail Transfer–rail cars	0.01 gr/acf	5700	0.49	2.14	0.42	1.82
24	1	PM Transfer–Coal	0.01 gr/acf	5700	0.49	2.14	0.42	1.82
25	1	PM Transfer–Gypsum	0.01 gr/acf	5700	0.49	2.14	0.42	1.82
26	1	PM Feed Mill Transfer	0.01 gr/acf	5700	0.49	2.14	0.42	1.82
27	1	PM Feed Mill Transfer	0.01 gr/acf	5700	0.49	2.14	0.42	1.82
28	1	Coal Transfer	0.01 gr/acf	5700	0.49	2.14	0.42	1.82
29	1	Coke/Coal Transfer	0.01 gr/acf	10000	0.86	3.75	0.73	3.19
30	1	Soil Transfer	0.01 gr/acf	20000	1.71	7.51	1.46	6.38
31	4	Coal Mill	0.01 gr/acf	21000	1.80	7.88	1.53	6.70
32	4	Fuel Bin	0.01 gr/acf	5700	0.49	2.14	0.42	1.82
			TOTAL	597800	73.4	321.4	62.4	273.2

1 of 32: Soil Bin Baghouse

Material processed	Thermally treated soil
acfm	10,000
Fabric type	Polyester
Temperature range, °F	ambient to 180°
Expected temperature	150°F
Air-to-Cloth Ratio	3.5 - 5.5
Cleaning	Pulse-Jet
Inlet loading, gr/acf	5 - 40
Outlet loading, gr/acf	0.01
Control efficiency	99.8% +
Performance Guarantee	P.E. Certification
Attached typical vendor information	Fuller 196TA8 [Attachment 1: Fuller TA Series]

2 of 32: Transfer Baghouse

Material processed	Raw materials
acfm	7000
Fabric type	Polyester
Temperature range, °F	ambient to 180°
Expected temperature	150°F
Air-to-Cloth Ratio	3.5 - 5.5
Cleaning	Pulse-Jet
Inlet loading, gr/acf	5 - 40
Outlet loading, gr/acf	0.01
Control efficiency	99.8% +
Performance Guarantee	P.E. Certification
Attached typical vendor information	Fuller 168TA8 [Attachment 1: Fuller TA Series]

3 of 32: Add Bin Baghouse

Material processed	Raw materials
acfm	20,000
Fabric type	Polyester
Temperature range, °F	ambient to 180°
Expected temperature	ambient
Air-to-Cloth Ratio	3.5 - 5.5
Cleaning	Pulse-Jet
Inlet loading, gr/acf	5 - 40
Outlet loading, gr/acf	0.01
Control efficiency	99.8% +
Performance Guarantee	P.E. Certification
Attached typical vendor information	Fuller 256TA12 [Attachment 1: Fuller TA Series]

4 of 32: Raw Meal Silo Baghouse

Material processed	Raw meal from raw mill
acfm	12,800
Fabric type	Polyester
Temperature range, °F	ambient to 180°
Expected temperature	180°F
Air-to-Cloth Ratio	3.5 - 5.5
Cleaning	Pulse-Jet
Inlet loading, gr/acf	4 - 18
Outlet loading, gr/acf	0.01
Control efficiency	99.8% +
Performance Guarantee	P.E. Certification
Attached typical vendor information	Fuller 196TA12 [Attachment 1: Fuller TA Series]

5 of 32: Raw Meal Silo Baghouse

Material processed	Raw meal from raw mill
acfm	16,000
Fabric type	Polyester
Temperature range, °F	ambient to 180°
Expected temperature	180°F
Air-to-Cloth Ratio	3.5 - 5.5
Cleaning	Pulse-Jet
Inlet loading, gr/acf	5 - 40
Outlet loading, gr/acf	0.01
Control efficiency	99.8% +
Performance Guarantee	P.E. Certification
Attached typical vendor information	Fuller 256TA12 [Attachment 1: Fuller TA Series]

6 of 32: Main Baghouse -- Kiln/Cooler/Raw Mill

Material processed	Raw meal/clinker
acfm	255,000
Fabric type	Fiberglass
Temperature range, °F	180° to 450°
Expected temperature	200°F
Air-to-Cloth Ratio	1.0 - 2.0
Cleaning	Reverse-Air
Inlet loading, gr/acf	4 - 40
Outlet loading, gr/acf	0.2 lb/ton feed = 44.0 lb/hr = 0.02 gr/acf
Control efficiency	99.5% +
Performance Guarantee	25 mg/Nm^3 = 0.012 gr/dscf
Attached typical vendor information	Attachment 2: Bidder's Data Sheets
Test data from similar facilities	Southdown, Brooksville, 11/96
	PM = 0.06 lb/ton feed, kiln #1
	PM = 0.05 lb/ton feed, kiln #2

The vendor selection process has, to date, identified four qualified vendors for this baghouse. The vendors are:

Brandt Filtration
Fuller-Kovako
Procedair Industries
Wheelabrator

The common parameters within each proposal are:

- Reverse-air cleaning
- Performance guarantee of 25 mg/Nm^3 = 0.012 gr/dscf
- Fiberglass bag material

The number of compartments by vendor is: Brandt = 8
Fuller = 10
Procedair = 10
Wheelabrator = 10

7 of 32: Meal Transfer Baghouse

Material processed	Raw meal
acfm	16,000
Fabric type	Polyester
Temperature range, °F	ambient to 180°
Expected temperature	180°F
Air-to-Cloth Ratio	3.5 - 5.5
Cleaning	Pulse-Jet
Inlet loading, gr/acf	4 - 18
Outlet loading, gr/acf	0.01 gr/acf
Control efficiency	99.8% +
Performance Guarantee	P.E. Certification
Attached typical vendor information	Fuller 196TA12 [Attachment 1: Fuller TA Series]

8 of 32: Clinker Storage Silo Baghouse

Material processed	Clinker
acfm	4600
Fabric type	Polyester
Temperature range, °F	180° - 250°
Expected temperature	200°F
Air-to-Cloth Ratio	3.5 - 5.5
Cleaning	Pulse-Jet
Inlet loading, gr/acf	4 - 18
Outlet loading, gr/acf	0.01 gr/acf
Control efficiency	99.8% +
Performance Guarantee	P.E. Certification
Attached typical vendor information	Fuller 100TA8 [Attachment 1: Fuller TA Series]

9 of 32: Clinker Pan Conveyor

Material processed	Clinker
acfm	4600
Fabric type	Polyester or Nomex
Temperature range, °F	180° - 250°
Expected temperature	200°F
Air-to-Cloth Ratio	3.5 - 5.5
Cleaning	Pulse-Jet
Inlet loading, gr/acf	4 - 18
Outlet loading, gr/acf	0.01 gr/acf
Control efficiency	99.8% +
Performance Guarantee	P.E. Certification
Attached typical vendor information	Fuller 100TA8 [Attachment 1: Fuller TA Series]

10 of 32: Clinker Retrofit Storage Silo Baghouse

Material processed	Clinker
acfm	4600
Fabric type	Polyester
Temperature range, °F	180° - 250°
Expected temperature	200°F
Air-to-Cloth Ratio	3.5 - 5.5
Cleaning	Pulse-Jet
Inlet loading, gr/acf	4 - 18
Outlet loading, gr/acf	0.01 gr/acf
Control efficiency	99.8% +
Performance Guarantee	P.E. Certification
Attached typical vendor information	Fuller 100TA8 [Attachment 1: Fuller TA Series]

11 of 32: Clinker Discharge Transfer Baghouse

Material processed	Clinker
acfm	5700
Fabric type	Polyester
Temperature range, °F	180° - 250°
Expected temperature	200°F
Air-to-Cloth Ratio	3.5 - 5.5
Cleaning	Pulse-Jet
Inlet loading, gr/acf	4 - 18
Outlet loading, gr/acf	0.01 gr/acf
Control efficiency	99.8% +
Performance Guarantee	P.E. Certification
Attached typical vendor information	Fuller 100TA10 [Attachment 1: Fuller TA Series]

12 of 32: Clinker Discharge Transfer Baghouse

Material processed	Clinker
acfm	5700
Fabric type	Polyester
Temperature range, °F	180° - 250°
Expected temperature	200°F
Air-to-Cloth Ratio	3.5 - 5.5
Cleaning	Pulse-Jet
Inlet loading, gr/acf	4 - 18
Outlet loading, gr/acf	0.01 gr/acf
Control efficiency	99.8% +
Performance Guarantee	P.E. Certification
Attached typical vendor information	Fuller 100TA10 [Attachment 1: Fuller TA Series]

13 of 32: Feed Bin Baghouse

Material processed	Clinker
acfm	4600
Fabric type	Polyester
Temperature range, °F	180° - 250°
Expected temperature	200°F
Air-to-Cloth Ratio	3.5 - 5.5
Cleaning	Pulse-Jet
Inlet loading, gr/acf	4 - 18
Outlet loading, gr/acf	0.01 gr/acf
Control efficiency	99.8% +
Performance Guarantee	P.E. Certification
Attached typical vendor information	Fuller 100TA8 [Attachment 1: Fuller TA Series]

14 of 32: Additional Transfer Baghouse

Material processed	Clinker
acfm	5700
Fabric type	Polyester
Temperature range, °F	ambient to 180°
Expected temperature	1500°F
Air-to-Cloth Ratio	3.5 - 5.5
Cleaning	Pulse-Jet
Inlet loading, gr/acf	4 - 18
Outlet loading, gr/acf	0.01 gr/acf
Control efficiency	99.8% +
Performance Guarantee	P.E. Certification
Attached typical vendor information	Fuller 100TA10 [Attachment 1: Fuller TA Series]

15 of 32: Gypsum Bin Transfer Baghouse

Material processed	Gypsum
acfm	5700
Fabric type	Polyester
Temperature range, °F	ambient to 180°
Expected temperature	ambient
Air-to-Cloth Ratio	3.5 - 5.5
Cleaning	Pulse-Jet
Inlet loading, gr/acf	4 - 18
Outlet loading, gr/acf	0.01 gr/acf
Control efficiency	99.8% +
Performance Guarantee	P.E. Certification
Attached typical vendor information	Fuller 100TA10 [Attachment 1: Fuller TA Series]

16 of 32: Fly Ash Bin Baghouse

Material processed	Fly ash
acfm	7000
Fabric type	Polyester
Temperature range, °F	ambient to 180°
Expected temperature	ambient
Air-to-Cloth Ratio	3.5 - 5.0
Cleaning	Pulse-Jet
Inlet loading, gr/acf	4 - 18
Outlet loading, gr/acf	0.01 gr/acf
Control efficiency	99.8% +
Performance Guarantee	P.E. Certification
Attached typical vendor information	Fuller 100TA12 [Attachment 1: Fuller TA Series]

17 of 32: Clinker Mill Baghouse

Material processed	Clinker/Gypsum/Limestone/Slag
acfm	27,000
Fabric type	Polyester
Temperature range, °F	180° - 250°
Expected temperature	220°F
Air-to-Cloth Ratio	3.5 - 5.5
Cleaning	Pulse-Jet
Inlet loading, gr/acf	4 - 18
Outlet loading, gr/acf	0.01 gr/acf
Control efficiency	99.8% +
Performance Guarantee	P.E. Certification
Attached typical vendor information	Attachment 3: Fuller 96-5-62882-10

18 of 32: Finish Mill Air Separator Baghouse

Material processed	Cement
acfm	72,000
Fabric type	Polyacrylic
Temperature range, °F	180° - 250°
Expected temperature	250°F
Air-to-Cloth Ratio	3.0 - 4.0
Cleaning	Pulse-Jet
Inlet loading, gr/acf	5 - 330
Outlet loading, gr/acf	0.01 gr/acf
Control efficiency	99.8% +
Performance Guarantee	25 mg/Nm^3 = 0.012 gr/dscf
Attached typical vendor information	Attachment 4: Bidder's Data Sheets

The vendor selection process has, to date, identified four qualified vendors for this baghouse. The vendors are:

Brandt Filtration
Fuller-Kovako
Procedair Industries
Wheelabrator

The common parameters within each proposal are:

- Pulse-jet cleaning
- Performance guarantee of 25 mg/Nm^3 = 0.012 gr/dscf
- Polyacrylic bag material
- One compartment

19 of 32: Mill Return Conveyor Baghouse

Material processed	Cement
acfm	5700
Fabric type	Polyester
Temperature range, °F	ambient to 180°
Expected temperature	180°
Air-to-Cloth Ratio	3.5 - 5.5
Cleaning	Pulse-Jet
Inlet loading, gr/acf	5 - 300
Outlet loading, gr/acf	0.01 gr/acf
Control efficiency	99.8% +
Performance Guarantee	P.E. Certification
Attached typical vendor information	Fuller 100TA10 [Attachment 1: Fuller TA Series]

20 of 32: Cement Silo Feed Conveyor Baghouse

Material processed	Cement
acfm	5700
Fabric type	Polyester
Temperature range, °F	ambient to 180°
Expected temperature	180°
Air-to-Cloth Ratio	3.5 - 5.5
Cleaning	Pulse-Jet
Inlet loading, gr/acf	5 - 40
Outlet loading, gr/acf	0.01 gr/acf
Control efficiency	99.8% +
Performance Guarantee	P.E. Certification
Attached typical vendor information	Fuller 100TA10 [Attachment 1: Fuller TA Series]

21 of 32: Waste Soil Baghouse

Material processed	Thermally treated soil
acfm	4500
Fabric type	Polyester
Temperature range, °F	ambient to 180°
Expected temperature	150°
Air-to-Cloth Ratio	3.5 - 5.5
Cleaning	Pulse-Jet
Inlet loading, gr/acf	5 - 40
Outlet loading, gr/acf	0.01 gr/acf
Control efficiency	99.8% +
Performance Guarantee	P.E. Certification
Attached typical vendor information	Fuller 80TA10 [Attachment 1: Fuller TA Series]

22 of 32: Waste Soil/Coal Transfer Baghouse

Material processed	Thermally treated soil/coal/petcoke
acfm	7000
Fabric type	Polyester
Temperature range, °F	ambient to 180°
Expected temperature	150°
Air-to-Cloth Ratio	3.5 - 5.5
Cleaning	Pulse-Jet
Inlet loading, gr/acf	5 - 40
Outlet loading, gr/acf	0.01 gr/acf
Control efficiency	99.8% +
Performance Guarantee	P.E. Certification
Attached typical vendor information	Fuller 100TA12 [Attachment 1: Fuller TA Series]

23 of 32: Rail Transfer/Railcars Baghouse

Material processed	Raw materials/coal/petcoke
acfm	5700
Fabric type	Polyester
Temperature range, °F	ambient to 180°
Expected temperature	ambient
Air-to-Cloth Ratio	3.5 - 5.5
Cleaning	Pulse-Jet
Inlet loading, gr/acf	5 - 300
Outlet loading, gr/acf	0.01 gr/acf
Control efficiency	99.8% +
Performance Guarantee	P.E. Certification
Attached typical vendor information	Fuller 100TA10 [Attachment 1: Fuller TA Series]

24 of 32: PM Transfer -- Coal Baghouse

Material processed	Coal/petcoke
acfm	5700
Fabric type	Polyester
Temperature range, °F	ambient to 180°
Expected temperature	ambient
Air-to-Cloth Ratio	3.5 - 5.5
Cleaning	Pulse-Jet
Inlet loading, gr/acf	5 - 40
Outlet loading, gr/acf	0.01 gr/acf
Control efficiency	99.8% +
Performance Guarantee	P.E. Certification
Attached typical vendor information	Fuller 100TA10 [Attachment 1: Fuller TA Series]

25 of 32: PM Transfer -- Gypsum Baghouse

Material processed	Gypsum
acfm	5700
Fabric type	Polyester
Temperature range, °F	ambient to 180°
Expected temperature	ambient
Air-to-Cloth Ratio	3.5 - 5.5
Cleaning	Pulse-Jet
Inlet loading, gr/acf	5 - 40
Outlet loading, gr/acf	0.01 gr/acf
Control efficiency	99.8% +
Performance Guarantee	P.E. Certification
Attached typical vendor information	Fuller 100TA10 [Attachment 1: Fuller TA Series]

26 of 32: PM Feed Mill Transfer Baghouse

Material processed	Cement
acfm	5700
Fabric type	Polyester
Temperature range, °F	180° to 250°
Expected temperature	200°
Air-to-Cloth Ratio	3.5 - 5.5
Cleaning	Pulse-Jet
Inlet loading, gr/acf	5 - 300
Outlet loading, gr/acf	0.01 gr/acf
Control efficiency	99.8% +
Performance Guarantee	P.E. Certification
Attached typical vendor information	Fuller 100TA10 [Attachment 1: Fuller TA Series]

27 of 32: PM Feed Mill Transfer Baghouse

Material processed	Cement
acfm	5700
Fabric type	Polyester
Temperature range, °F	180° to 250°
Expected temperature	200°
Air-to-Cloth Ratio	3.5 - 5.5
Cleaning	Pulse-Jet
Inlet loading, gr/acf	5 - 300
Outlet loading, gr/acf	0.01 gr/acf
Control efficiency	99.8% +
Performance Guarantee	P.E. Certification
Attached typical vendor information	Fuller 100TA10 [Attachment 1: Fuller TA Series]

28 of 32: Coal Transfer Baghouse

Material processed	Coal/petcoke
acfm	5700
Fabric type	Polyester
Temperature range, °F	ambient to 180°
Expected temperature	ambient
Air-to-Cloth Ratio	3.5 - 5.5
Cleaning	Pulse-Jet
Inlet loading, gr/acf	5 - 40
Outlet loading, gr/acf	0.01 gr/acf
Control efficiency	99.8% +
Performance Guarantee	P.E. Certification
Attached typical vendor information	Fuller 100TA10 [Attachment 1: Fuller TA Series]

29 of 32: Coal/Petcoke Transfer Baghouse

Material processed	Coal/petcoke
acfm	10,000
Fabric type	Polyester
Temperature range, °F	ambient to 180°
Expected temperature	ambient
Air-to-Cloth Ratio	3.5 - 5.5
Cleaning	Pulse-Jet
Inlet loading, gr/acf	5 - 300
Outlet loading, gr/acf	0.01 gr/acf
Control efficiency	99.8% +
Performance Guarantee	P.E. Certification
Attached typical vendor information	Fuller 144TA12 [Attachment 1: Fuller TA Series]

30 of 32: Soil Transfer Baghouse

Material processed	Thermally treated soil
acfm	20,000
Fabric type	Polyester
Temperature range, °F	ambient to 180°
Expected temperature	150°
Air-to-Cloth Ratio	3.5 - 5.5
Cleaning	Pulse-Jet
Inlet loading, gr/acf	5 - 40
Outlet loading, gr/acf	0.01 gr/acf
Control efficiency	99.8% +
Performance Guarantee	P.E. Certification
Attached typical vendor information	Fuller 304TA10 [Attachment 1: Fuller TA Series]

31 of 32: Coal Mill Baghouse

Material processed	Coal/petcoke
acfm	21,000
Fabric type	Polyacrylic
Temperature range, °F	ambient to 180°
Expected temperature	200°
Air-to-Cloth Ratio	3.5 - 4.5
Cleaning	Pulse-Jet
Inlet loading, gr/acf	5 - 250
Outlet loading, gr/acf	0.01 gr/acf
Control efficiency	99.8% +
Performance Guarantee	25 mg/Nm^3 = 0.012 gr/dscf
Attached typical vendor information	Attachment 5: Bidder's Data Sheets

The vendor selection process has, to date, identified three qualified vendors for this baghouse. The vendors are:

Brandt Filtration
Fuller-Kovako
Wheelabrator

The common parameters within each proposal are:

- Pulse-jet cleaning
- Performance guarantee of 25 mg/Nm^3 = 0.012 gr/dscf
- Polyacrylic bag material
- One compartment

32 of 32: Fuel Bin Baghouse

Material processed	Pulverized coal/petcoke
acfm	5700
Fabric type	Polyester
Temperature range, °F	ambient to 180°
Expected temperature	150°
Air-to-Cloth Ratio	3.5 - 5.5
Cleaning	Pulse-Jet
Inlet loading, gr/acf	5 - 40
Outlet loading, gr/acf	0.01 gr/acf
Control efficiency	99.8% +
Performance Guarantee	P.E. Certification
Attached typical vendor information	Fuller 100TA10 [Attachment 1: Fuller TA Series]

References

1. *Air Pollution Engineering Manual*, Air & Waste Management Association, 1992.
2. *AP-42, Fifth Edition*, USEPA, 1995.
3. File documents: Koogler & Associates Project Numbers 187-94-02, 263-94-04.
4. Documents by Fuller-Kovako.
5. Documents by Holderbank.

FULLER KOVAKO
A member of the F L Smidth-Fuller Engineering Group

17-93-21820 DATE 1 May 1994

EQUIPMENT TO BE FURNISHED BY FULLER-KOVAKO CORPORATION

Fuller-Kovako® Model "TA" Jet-Pulse collector designed for the following operating conditions and specifications:

SPECIFICATION FOR
FULLER-KOVAKO® MODEL "TA" SERIES SINGLE MODULE
TOP ACCESS JET-PULSE COLLECTOR

GENERAL

Jet-Pulse Dust Collector Model "TA" Series is a compact modular shop assembled unit with an automatic self-cleaning system that utilizes pulse jets of high pressure air to provide efficient, thorough cleaning with no internal moving parts. Top access, top bag removal design provides the ability to remove the snap-in/out filter bags from the clean side of the tubesheet through roof mounted, hinged and gasketed doors. Self-supporting cages with integral venturi nozzles allow for inspection and replacement without tools or clamping mechanisms.

DIMENSIONS

As shown on the attached reference Drawing 336-89-4-0194.

BAGS

Made from 5" diameter x 10'-0" long 14-16 oz./sq. yd. polyester needled scrim supported felt with snap-in bag collar. Maximum operating temperature for polyester is 275°F.

CAGES/VENTURIS

Fabricated in one piece, made of ten 11 ga. carbon steel wires, solid bottom cap, integral carbon steel venturi and protective bag collar.

PLENUM

Clean air plenum, fabricated from 12 gauge mild steel with sloped roof, welded construction, designed for 20" w.g. internal pressure. Hinged and gasketed roof access doors with perimeter roof railing. Exhaust outlet connection is shipped loose for field installation. One 6" dia. compressed air header with one 1-1/2" dia. blowtube per row of bags are included.

FULLER. KOVAKO

A member of the F L Smidth-Fuller Engineering Group

17-93-21820 DATE 1 May 1994

EQUIPMENT TO BE FURNISHED BY FULLER-KOVAKO CORP. (continued)

PULSE VALVES

One 1-1/2" pulse valve with integral pilot solenoid valve per row of bags.

TUBESHEET

Fabricated from 3/16" plate mild steel with bag support holes spaced on 7" centerlines.

HOUSING

Fabricated from 12" gauge mild steel, welded construction, designed for 20" w.g. internal pressure.

TIMER

Automatic sequential controller that activates the solenoids, which controls the pulse valve for each bag row. Controls are provided to adjust the length of time between valves being energized and the length of time that the valve is energized. Solid state timer, 115v/1ph/60hz in NEMA 4 enclosure. Timer shipped loose for field mounting and wiring.

PAINT

External carbon steel surfaces will receive a single coat of standard primer on an SSPC-SP2 surface preparation.

PRESSURE GAGES

One Magnehelic pressure gage to register pressure differential across the tubesheet. The gage is furnished with 20'-0" of tubing and fittings for field mounting. One 0-160 psig pressure gauge on the compressed air header.

GASKETING

275°F standard temperature rating for gaskets. Higher temperature rated gaskets are available.

DATE 1 May 1994

EQUIPMENT TO BE FURNISHED BY FULLER-KOVAKO CORP. (continued)

ASSEMBLY

Plenum and housing, including hopper completely assembled with air header, pulse valves, solenoids, and blowtubes installed. Bags, cages, timer, Magnehelic gage, and any equipment offered as an add-on item are shipped separately for field installation.

Optional Equipment Adders:

HOPPER

Single pyramid type assembled to housing, fabricated from 10 gauge mild steel, welded construction, designed for 20" w.g. pressure and to support a material load of 65 lbs./cu.ft. bulk density at 2/3 hopper height. One 19" square hopper access bolted and gasketed. One welded inlet with diffuser shop installed.

STRUCTURAL SUPPORTS

Supports provide 4'-0" clearance under discharge of rotary lock (also available). Wide flange columns and angle bracing are designed to withstand 30 psf/100 mph windload.

LADDER/CAGE

One safety caged ladder to provide access to top of collector.

DISCHARGE DEVICE

One #150 rotary lock, complete with 1/2 HP drive and guard, designed for 400°F material temperature.

DISCHARGE DEVICE

One 7" fabricated, counterweighted, double tipping valve.

DISCHARGE DEVICE

One 10" fabricated counterweighted, double tipping valve.

EXPLOSION RELIEF DOOR

Sized for a 50:1 vent ratio. Each door is equipped with Brixon latches which have an adjustable pressure release setting.

FULLER KOVAKO

17-93-21820

DATE 1 May 1994

EQUIPMENT TO BE FURNISHED BY FULLER-KOVAKO (Continued)

DRAWING AND PRODUCTION SCHEDULE

General Arrangement for Approval	4 weeks after receipt of purchase order
Complete Shipment	18 weeks after return of approved drawings.

Note: Shipping date may be investigated for possible improvement at time of order placement.

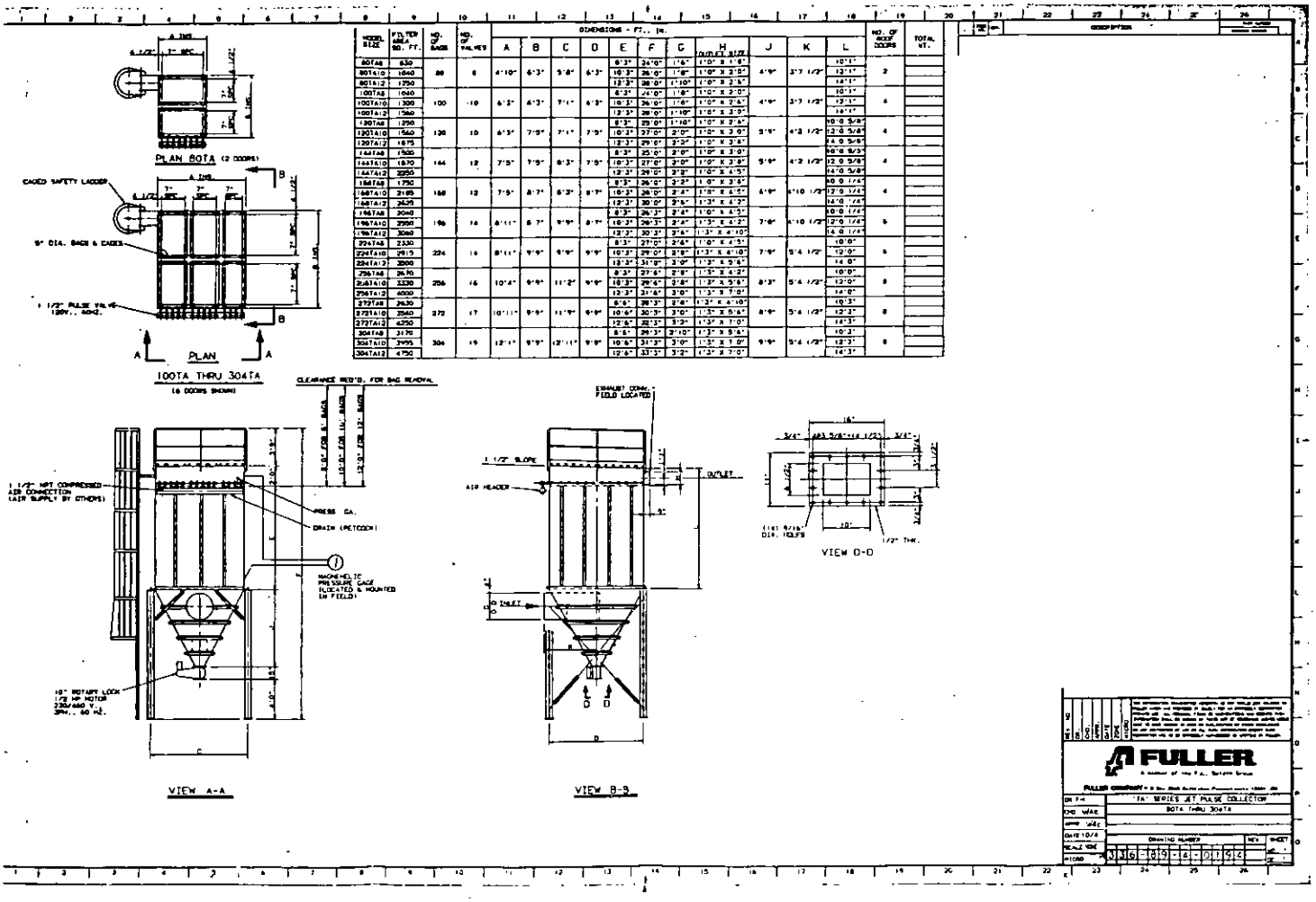
ENCLOSURES

Mode of Operation

Drawing No. 336-89-4-0194	General Arrangement Drawing for a Fuller-Kovako 'TA' series (80 to 304 bags)
Bulletin DCB-336	General Information Brochure on Fuller-Kovako Jet-Pulse dust collectors

RESERVATION

Any deviation from these specifications and/or Fuller-Kovako's General Arrangement drawings may result in additional engineering and delivery schedule delays.



MODEL SIZE	FILTER AREA SQ. FT.	QTY. BAGS	NO. OF VALVES	DIMENSIONS - FT., IN. A	B	C	D	E	F	G	H OUTLET SIZE	J	K	L	NO. OF DOOR DOORS	TOTAL WT.
80TA8	630	80	8	4'-10"	6'-3"	5'-8"	6'-3"	8'-3"	24'-0"	1'-6"	1'-0" X 1'-9"	4'-9"	3'-7 1/2"	10'-1"	2	
80TA10	1040							10'-3"	26'-0"	1'-8"	1'-0" X 2'-5"			12'-1"		
80TA12	1750							12'-3"	28'-0"	1'-10"	1'-0" X 2'-6"			14'-1"		
100TA8	1040	100	10	6'-3"	6'-3"	7'-1"	6'-3"	8'-3"	24'-0"	1'-8"	1'-0" X 2'-0"	4'-9"	3'-7 1/2"	10'-1"	4	
100TA10	1300							10'-3"	26'-0"	1'-6"	1'-0" X 2'-6"			12'-1"		
100TA12	1560							12'-3"	28'-0"	1'-10"	1'-0" X 2'-0"			14'-1"		
120TA8	1250	120	10	6'-3"	7'-9"	7'-1"	7'-9"	8'-3"	25'-0"	1'-10"	1'-0" X 2'-6"	5'-9"	4'-2 1/2"	10'-0 5/8"	4	
120TA10	1560							10'-3"	27'-0"	2'-0"	1'-0" X 3'-0"			12'-0 5/8"		
120TA12	1875							12'-3"	29'-0"	2'-2"	1'-0" X 3'-6"			14'-0 5/8"		
144TA8	1500	144	12	7'-5"	7'-9"	8'-3"	7'-9"	8'-3"	25'-0"	2'-0"	1'-0" X 3'-0"	5'-9"	4'-2 1/2"	10'-0 5/8"	4	
144TA10	1870							10'-3"	27'-0"	2'-2"	1'-0" X 3'-6"			12'-0 5/8"		
144TA12	2250							12'-3"	29'-0"	2'-3"	1'-0" X 4'-5"			14'-0 5/8"		
168TA8	1750	168	12	7'-5"	8'-7"	8'-3"	8'-7"	8'-3"	26'-0"	2'-2"	1'-0" X 3'-6"	6'-9"	4'-10 1/2"	10'-0 1/4"	4	
168TA10	2185							10'-3"	28'-0"	2'-4"	1'-0" X 4'-5"			12'-0 1/4"		
168TA12	2625							12'-3"	30'-0"	2'-5"	1'-3" X 4'-3"			14'-0 1/4"		
196TA8	2040	196	14	8'-11"	8'-7"	9'-9"	8'-7"	8'-3"	26'-3"	2'-6"	1'-0" X 4'-5"	7'-9"	4'-10 1/2"	10'-0 1/4"	5	
196TA10	2550							10'-3"	28'-3"	2'-4"	1'-3" X 4'-3"			12'-0 1/4"		
196TA12	3060							12'-3"	30'-3"	2'-6"	1'-3" X 4'-10"			14'-0 1/4"		
224TA8	2330	224	16	8'11"	9'-9"	9'-9"	9'-9"	8'-3"	27'-0"	2'-6"	1'-0" X 4'-5"	7'-9"	5'-4 1/2"	10'-0"	5	
224TA10	2915							10'-3"	29'-0"	2'-8"	1'-3" X 4'-10"			12'-0"		
224TA12	3500							12'-3"	31'-0"	3'-0"	1'-3" X 5'-6"			14'-0"		
256TA8	2670	256	16	10'-4"	9'-9"	11'-2"	9'-9"	8'-3"	27'-6"	2'-8"	1'-3" X 4'-2"	8'-3"	5'-4 1/2"	10'-0"	8	
256TA10	3330							10'-3"	29'-6"	2'-8"	1'-3" X 5'-6"			12'-0"		
256TA12	4000							12'-3"	31'-6"	3'-0"	1'-3" X 7'-0"			14'-0"		
272TA8	2630	272	17	10'-11"	9'-9"	11'-9"	9'-9"	8'-6"	28'-3"	2'-8"	1'-3" X 4'-10"	8'-9"	5'-4 1/2"	10'-3"	8	
272TA10	3540							10'-6"	30'-3"	3'-0"	1'-3" X 5'-6"			12'-3"		
272TA12	4250							12'-6"	32'-3"	3'-2"	1'-3" X 7'-0"			14'-3"		
304TA8	3170	304	19	12'-1"	9'-9"	12'-11"	9'-9"	8'-6"	29'-3"	2'-10"	1'-3" X 5'-6"	9'-9"	5'-4 1/2"	10'-3"	9	
304TA10	3955							10'-6"	31'-3"	3'-0"	1'-3" X 7'-0"			12'-3"		
304TA12	4750							12'-6"	33'-3"	3'-2"	1'-3" X 7'-0"			14'-3"		

FULLER

FULLER COMPANY

TA SERIES JET PULSE COLLECTOR

80TA THRU 304TA

DRAWING NUMBER

SCALE NONE

Brandt

DATA SHEET	PROJECT: Rinker Materials Corp. NO: 9452
DEPARTMENT:	Clinker Manufacture
EQUIPMENT :	Baghouse - Kiln/Cooler/Roller Mill
EQUIP. NO:	

DESCRIPTION	HCL DATA	UNIT
Quantity	1	
Location	after kiln and raw mill exhaust	
<u>Baghouse data:</u>		
Make		
Model/Size		
Type	reverse air suction	
Gas handled	kiln/cooler/ raw mill exhaust gases	
Operating Conditions	Mill Off | Mill On	
Inlet gas volume	125 | 120	m3/s
Inlet gas temperature	220 | 90	deg. C
Dew point (approx.)	40 | 50	deg. C
Inlet dust load	30 | 85	g/m3
Static pressure at filter inlet	-50 | -50	mmWG
<u>Design Data:</u>		
Gas volume	120	m3/s
Gas temperature	90 - 220	deg. C
Dew point (approx.)	40 - 50	deg. C
Inlet dust load	30 - 85	g/m3
Static pressure across filter (flange-to-flange)	specify	mmWG
Air-to-cloth ratio*:		
- gross		m3/m2.min
- net	0.5 maximum	m3/m2.min
Design pressure of housing	minimum 500	mmWG
Maximum gas temperature allowed into the filter	specify	deg. C
Maximum outlet dust load (at filter exhaust)	25	mg/Nm3 dry
* incl. design reverse air vol.		

BIDDER'S NAME
Brandt Filtration

QUOTED DATE :08/29/96

BIDDER'S DATA

1
After kiln and raw mill exhaust

Brandt Filtration Group, Inc.
8-3W6W3-21
Reverse Air
Suction
Kiln/Cooler/Raw Mill

254,265 ACFM
428 degrees F

37:2 gr/CF
2" w.c.

254,265 ACFM
428 degrees F

37.2 gr/CF
6" w.c.

1.206:1 Ft^3 / Ft^2
1.63:1 Ft^3 / Ft^2
plus/minus 30" w.g.
450 degrees F

0.0109 gr/DSCF

DATE: Aug-96

DATA SHEET	PROJECT: Rinker Materials Corp. NO: 9452	BIDDER'S NAME Fuller -Kovako Corporation
DEPARTMENT:	Clinker Manufacture	
EQUIPMENT :	Baghouse - Kiln/Cooler/Roller Mill	
EQUIP. NO:		QUOTED DATE :04/24/97

DESCRIPTION	HCL DATA	UNIT	BIDDER'S DATA
Quantity	1		1
Location	after kiln and raw mill exhaust		
Baghouse data:			
Make			
Model/Size			FKC
Type	reverse air suction		10BHS240
Gas handled	kiln/cooler/ raw mill exhaust gases		
Operating Conditions	Mill Off | Mill On		
Inlet gas volume	160 | 125	m3/s	160 | 125
Inlet gas temperature	240 | 115	deg. C	240 | 115
Dew point (approx.)	40 | 50	deg. C	40 | 50
Inlet dust load	30 | 85	g/m3	30 | 85
Static pressure at filter inlet	-90 | -90	mmWG	-90 | -90
Design Data:			
Gas volume	160	m3/s	160 338,976 acfm
Gas temperature	240	deg. C	240
Dew point (approx.)	50	deg. C	50
Inlet dust load	85	g/m3	85
Static pressure across filter (flange-to-flange)	specify	mmWG	expect 178 average
Air-to-cloth ratio*:			
- gross		m3/m2.min	0.397 1.3 $ft^3/ft^2 \cdot min$
- net	0.5 maximum	m3/m2.min	0.497
Design pressure of housing	minimum 500	mmWG	+/- 508
Maximum gas temperature allowed into the filter	specify	deg. C	288
Maximum outlet dust load (at filter exhaust)	25	mg/Nm3 dr	25

* incl. design reverse air vol.

DATA SHEET	PROJECT: Rinker Materials Corp. NO: 9452	BIDDER'S NAME **PROCEDAIR INDUSTRIES**
DEPARTMENT:	Clinker Manufacture	
EQUIPMENT :	Baghouse - Kiln/Cooler/Roller Mill	
EQUIP. NO:		QUOTED DATE: Apr.25/97

DESCRIPTION	HCL DATA	UNIT	BIDDER'S DATA
Quantity	1		
Location	after kiln and raw mill exhaust		
<u>Baghouse data:</u>			
Make			PROCEDAIR
Model/Size			10-240
Type	reverse air suction		
Gas handled	kiln/cooler/ raw mill exhaust gases		
<u>Operating Conditions</u>	Mill Off | Mill On		
Inlet gas volume	160 | 125	m3/s	
Inlet gas temperature	240 | 115	deg. C	
Dew point (approx.)	40 | 50	deg. C	
Inlet dust load	30 | 85	g/m3	
Static pressure at filter inlet	-90 | -90	mmWG	
<u>Design Data:</u>			
Gas volume	160	m3/s	160
Gas temperature	240	deg. C	
Dew point (approx.)	50	deg. C	
Inlet dust load	85	g/m3	
Static pressure across filter (flange-to-flange)	specify	mmWG	178
Air-to-cloth ratio*:			
- gross		m3/min.m2	0.41 1.35 for
- net	0.5 maximum	m3/min.m2	0.51
Design pressure of housing	minimum 500	mmWG	500
Maximum gas temperature allowed into the filter	specify	deg. C	260
Maximum outlet dust load (at filter exhaust)	25	mg/Nm3 dr dry	25
* incl. design reverse air vol.			

DATA SHEET	PROJECT: Rinker Materials Corp. NO: 9452	BIDDER'S NAME WHEELABRATOR CANADA INC.
DEPARTMENT:	Clinker Manufacture	
EQUIPMENT :	Baghouse - Kiln/Cooler/Roller Mill	
EQUIP. NO:		QUOTED DATE : APRIL 21/97

DESCRIPTION	HCL DATA	UNIT	BIDDER'S DATA
Quantity	1		
Location	after kiln and raw mill exhaust		
Baghouse data:			WHEELABRATOR
Make			10-SIZE 1218 MODEL 42B
Model/Size			
Type	reverse air suction		
Gas handled	kiln/cooler/ raw mill exhaust gases		
Operating Conditions	Mill Off | Mill On		
Inlet gas volume	160 | 125	m3/s	
Inlet gas temperature	240 | 115	deg. C	
Dew point (approx.)	40 | 50	deg. C	
Inlet dust load	30 | 85	g/m3	
Static pressure at filter inlet	-90 | -90	mmWG	
Design Data:			
Gas volume	160	m3/s	
Gas temperature	240	deg. C	
Dew point (approx.)	50	deg. C	
Inlet dust load	85	g/m3	
Static pressure across filter (flange-to-flange)	specify	mmWG	150-180
Air-to-cloth ratio*:			
- gross		m3/m2.min	0.43 1.41 fpm
- net	0.5 maximum	m3/m2.min	0.52
Design pressure of housing	minimum 500	mmWG	± 500
Maximum gas temperature allowed into the filter	specify	deg. C	260
Maximum outlet dust load (at filter exhaust)	25	mg/Nm3 dry	25

* incl. design reverse air vol.

FULLER KOVAKO
A member of the F.L. Smidth-Fuller Engineering Group

17-93-21820

DATE 1 May 1994

EQUIPMENT TO BE FURNISHED BY FULLER-KOVAKO CORP.

SPECIFICATIONS FOR ONE (1) SINGLE ROW SERIES 96
PLENUM-PULSE® FABRIC FILTER DUST COLLECTOR
FOR CEMENT FINISH MILL

One (1) Fuller-Kovako ® Size 96-5-6282-10 Plenum-Pulse ® dust collector designed for the following operating conditions:

MODEL	96-5-62882-10
APPLICATION	Finish Mill
VOLUME	21,300 ACFM @ 220°F
MATERIAL	Cement
TOTAL CLOTH AREA - GROSS	6,282 ft^2
AIR TO CLOTH RATIO	4.23:1 Net

GENERAL: The dust collector is divided into 5 zones of 96 bags each. Each chamber is pulsed by two 2-1/2" pulse vales for cleaning. Each pulse valve is equipped with a hand operated isolation valve for on line maintenance. Each zone is served by one poppet valve to shut off the air flow during cleaning.

BAGS: 14 to 16 oz/yd^2 polyester needled scrim supported felt with mirror finish. Total cloth area per zone is 1675 ft^2. Bags are 5" ϕ by 10' long.

CAGES: One piece, made of 11 ga. steel wire.

POPPET & PLENUM CHAMBERS: 10 ga. all welded with adjustable hinged doors, including air cylinder operated poppet valves.

TUBESHEETS: 7 ga., all welded.

FULLER KOVAKO
A member of the F L Smidth-Fuller Engineering Group

17-93-21820 DATE 1 May 1994

EQUIPMENT TO BE FURNISHED BY FULLER-KOVAKO CORP.

HOUSING:	10 ga. all welded with external stiffeners.
MANIFOLDS:	Combination inlet and exhaust manifold assembled to poppet valve chambers including 7 ga. splitter plate between inlet and outlet. Inlet and outlet are flanged and located at opposite ends.
HOPPER:	Trough type 3/16" all welded with external stiffeners, including one hinged 18" x 20" C.I. access door.
	Hopper live load 90 lbs/ft^3 bulk density (2/3 hopper height).
HOPPER DISCHARGE	3/16" plate adapter, housing one 10" #2 open type airslide conveyor, including (2) manual butterfly shut-off valves.
	Airslides discharge through one 12" x 36" gravity operated double tipping valve.
STRUCTURAL	Supports for 1'-0" clearance underneath double tipping valve discharge. Wide-flanged columns, x-bracing, designed to withstand 30 PSF/100 MPH windloads.
ACCESSORIES:	Solid state timer, Model WQ in NEMA 4 enclosure designed for alternate pulsing, 115/1/60.
	Ladder with safety cage.
	1" ϕ bar handrail around perimeter of collector, including toe board.
	Magnehelic pressure gauge.
	One (1) air receiver and loose piping from receivers to pulse valves.

FULLER. KOVAKO
A member of the F L Smidth-Fuller Engineering Group

17-93-21820 DATE 1 May 1994

EQUIPMENT TO BE FURNISHED BY FULLER-KOVAKO CORP.

MISCELLANEOUS: 425°F temperature rating for seals and gaskets.

Single prime coat of Fuller-Kovako standard primer on external surfaces.

ASSEMBLY: Housing completely assembled.

Hopper shipped assembled for field attachment.

Poppet valves, pulse valves, and air headers are pre-assembled and shipped in sub sections.

Bags and cages to be field installed.

Remaining items shipped knocked down for field assembly.

Brandt

DATA SHEET	PROJECT: Rinker Materials Corp. NO: 9452
DEPARTMENT:	Cement Manufacturing
EQUIPMENT :	Cement Mill and Separator Bagfilter
EQUIP. NO:	

DESCRIPTION	HCL DATA	UNIT
Quantity	1	
Location		
Baghouse data:		
Make		
Model/Size		
Type	pulse jet	
Gas handled	hot air with cement dust	
Operating Conditions		
Inlet gas volume	32	m3/s
Inlet gas temperature	100 - 120	deg. C
Dew point (approx.)	40 - 50	deg. C
Inlet dust load	750	g/m3
Static pressure at filter inlet	-550	mmWG
Design Data:		
Gas volume	34	m3/s
Gas temperature	120	deg. C
Dew point (approx.)	50	deg. C
Inlet dust load	750	g/m3
Static pressure across filter (flange-to-flange)		mmWG
Air-to-cloth ratio	max. 1.22	m3/min.m2
Design pressure of housing	min. -1000	mmWG
Maximum gas temperature allowed into the filter		deg. C
Maximum outlet dust load (at filter exhaust)	25	mg/Nm3 dry

BIDDER'S NAME
Brandt Filtration

QUOTED DATE :08/29/96

BIDDER'S DATA

One (1)

Brandt Filtration Group, Inc.
1755-12
Pulse Jet

Hot Air Cement Dust

67,802 ACFM
248 degrees F
120 degrees F
328 gr/Ft3
-21.65"

72,040 ACFM
248 degrees F
120 degrees F
328 gr/Ft.3
6" w.c.

3.99:1 Ft3/Ft2

40"
250 degrees F

25 mg/NN3 dry

DATE: Aug-96

DATA SHEET	PROJECT: Rinker Materials Corp. NO: 9452	BIDDER'S NAME Fuller-Kovako Corporation
DEPARTMENT:	Cement Manufacturing	
EQUIPMENT :	Cement Mill and Separator Bagfilter	
EQUIP. NO:		QUOTED DATE :04/24/97

DESCRIPTION	HCL DATA	UNIT	BIDDER'S DATA
Quantity	1		1
Location			after mill separator
Baghouse data:			
Make			FKC
Model/Size			1248S12
Type	pulse jet		yes
Gas handled	hot air with cement dust		
Operating Conditions			
Inlet gas volume	33	m3/s	33
Inlet gas temperature	95	deg. C	95
Dew point (approx.)	40	deg. C	40
Inlet dust load	750	g/m3	750
Static pressure at filter inlet	-500	mmWG	-500
Design Data:			
Gas volume	37	m3/s	37
Gas temperature	120	deg. C	120
Dew point (approx.)	40	deg. C	40
Inlet dust load	750	g/m3	750
Static pressure across filter (flange-to-flange)		mmWG	average 250
Air-to-cloth ratio	max. 1.22	m3/min.m2	1.22 4.0 fpm
Design pressure of housing	min. -1000	mmWG	min. -1000
Maximum gas temperature allowed into the filter		deg. C	135
Maximum outlet dust load (at filter exhaust)	25	mg/Nm3 dry	25

DATA SHEET	PROJECT: Rinker Materials Corp. NO: 9452	BIDDER'S NAME **PROCEDAIR INDUSTRIES**
DEPARTMENT:	Cement Manufacturing	
EQUIPMENT :	Cement Mill and Separator Bagfilter	
EQUIP. NO:		QUOTED DATE: Apr.25/97

DESCRIPTION	HCL DATA	UNIT	BIDDER'S DATA
Quantity	1		1
Location			
<u>Baghouse data:</u>			
Make			PROCEDAIR
Model/Size			SONAIR 1216-1040-19604
Type	pulse jet		
Gas handled	hot air with cement dust		
<u>Operating Conditions</u>			
Inlet gas volume	33	m3/s	
Inlet gas temperature	95	deg. C	
Dew point (approx.)	40	deg. C	
Inlet dust load	750	g/m3	
Static pressure at filter inlet	-500	mmWG	
<u>Design Data:</u>			
Gas volume	37	m3/s	
Gas temperature	120	deg. C	
Dew point (approx.)	40	deg. C	
Inlet dust load	750	g/m3	
Static pressure across filter (flange-to-flange)		mmWG	178
Air-to-cloth ratio	max. 1.22	m3/min.m2	1.22 4.0 fpm
Design pressure of housing	min. -1000	mmWG	-1,000
Maximum gas temperature allowed into the filter		deg. C	130
Maximum outlet dust load (at filter exhaust)	25	mg/Nm3 dry	25

DATA SHEET	PROJECT: Rinker Materials Corp. NO: 9452	BIDDER'S NAME
DEPARTMENT:	Cement Manufacturing	WHEELABRATOR CANADA INC.
EQUIPMENT :	Cement Mill and Separator Bagfilter	
EQUIP. NO:		QUOTED DATE : APRIL 17/97

DESCRIPTION	HCL DATA	UNIT	BIDDER'S DATA
Quantity	1		
Location			
<u>Baghouse data:</u>			
Make			WHEELABRATOR
Model/Size			6715TA MODEL 144
Type	pulse jet		
Gas handled	hot air with cement dust		
<u>Operating Conditions</u>			
Inlet gas volume	33	m3/s	
Inlet gas temperature	95	deg. C	
Dew point (approx.)	40	deg. C	
Inlet dust load	750	g/m3	
Static pressure at filter inlet	-500	mmWG	
<u>Design Data:</u>			
Gas volume	37	m3/s	
Gas temperature	120	deg. C	
Dew point (approx.)	40	deg. C	
Inlet dust load	750	g/m3	
Static pressure across filter (flange-to-flange)		mmWG	150-180
Air-to-cloth ratio	max. 1.22	m3/min.m2	1.21 4.0 fpm
Design pressure of housing	min. -1000	mmWG	-1000
Maximum gas temperature allowed into the filter		deg. C	120
Maximum outlet dust load (at filter exhaust)	25	mg/Nm3 dry	25

Brandt

DATA SHEET	PROJECT: Rinker Materials Corp. NO: 9452
DEPARTMENT:	Fuel Preparation
EQUIPMENT :	Coal Mill Vent Baghouse
EQUIP. NO:	

DESCRIPTION	HCL DATA	UNIT
Quantity	1	
Location	after coal mill	
Baghouse data:		
Make		
Model/Size		
Type	pulse jet on-line	
Gas handled	kiln gases with coal dust	
Operating Conditions:		
Inlet gas volume	8.6 / 9.5	m3/s
Inlet gas temperature	70 - 90	deg. C
Inlet dust load	540 - 500	g/m3
Static pressure at filter inlet	-580 to -600	mmWG
Design Data:		
Gas volume	9.5	m3/s
Gas temperature	90	deg. C
Inlet dust load	540	g/m3
Static pressure across filter (flange-to-flange)	specify	mmWG
Air-to-cloth ratio:		
- gross	not applicable	m3/m2.min
- net	1.22	m3/m2.min
Design pressure of housing (suction)	-1,200	mm WG
Maximum gas temperature allowed into the filter		deg. C
Maximum outlet dust load (at filter exhaust)	25	mg/Nm3 dry
Explosion Vents:		
Quantity per compartment		
Type	submit sketch	
Make		
Size	mm x mm	
Location	submit sketch	
Design vent ratio		

BIDDER'S NAME
Brandt Filtration

QUOTED DATE :08/29/96

BIDDER'S DATA

One (1)
After Coal Mill

Brandt Filtration Group
1625-12
Pulse Jet
On-Line
Coal Dust

20,127 ACFM
194 degree F
236.3 gr/Ft3
minus 23.6" w.g.

20,127 ACFM
194 degrees F
236.3 gr/Ft3
6"

3.83 Ft3/Ft2
minus 47"
250 degrees F

25 mg/NM3 dry

Six (6)
VSP-2ST
BS & B Safety System
See GA 1642-G3
160

DATE: Aug-96

DATA SHEET	PROJECT: Rinker Materials Corp. NO: 9452	BIDDER'S NAME Füller-Kovako Corporation
DEPARTMENT:	Fuel Preparation	
EQUIPMENT :	Coal Mill Vent Baghouse	
EQUIP. NO:		QUOTED DATE :04/24/97

DESCRIPTION	HCL DATA	UNIT	BIDDER'S DATA
Quantity	1		1
Location	after coal mill		
Baghouse data:			
Make			
Model/Size			FKC
Type	pulse jet		336C12
	on-line		yes
Gas handled	kiln gases with coal dust		yes
Operating Conditions:			
Inlet gas volume	8.6 / 9.5	m3/s	8.6 / 9.5
Inlet gas temperature	70 - 90	deg. C	70 - 90
Inlet dust load	450	g/m3	450
Static pressure at filter inlet	-580 to -640	mmWG	-580 to -640
Design Data:			
Gas volume	10	m3/s	10
Gas temperature	90	deg. C	90
Inlet dust load	500	g/m3	500
Static pressure across filter (flange-to-flange)	specify	mmWG	250
Air-to-cloth ratio:			
- gross	not applicable	m3/m2.min	
- net	1.22	m3/m2.min	1.23 4.0 fpm
Design pressure of housing (suction)	-1,200	mm WG	-1,200
Maximum gas temperature allowed into the filter		deg. C	135
Maximum outlet dust load (at filter exhaust)	25	mg/Nm3 dry	25
Explosion Vents:			
Quantity per compartment			9
Type	submit sketch		yes
Make			PSD
Size	mm x mm		610 x 1524
Location	submit sketch		yes
Design vent ratio			35:1

DATA SHEET	PROJECT: Rinker Materials Corp. NO: 9452	BIDDER'S NAME WHEELABRATOR CANADA INC.
DEPARTMENT:	Fuel Preparation	
EQUIPMENT :	Coal Mill Vent Baghouse	
EQUIP. NO:		QUOTED DATE : APRIL 17/97

DESCRIPTION	HCL DATA	UNIT	BIDDER'S DATA
Quantity	1		1
Location	after coal mill		
Baghouse data:			
Make			WHEELABRATOR
Model/Size			IBISTA MODEL 144
Type	pulse jet on-line		
Gas handled	kiln gases with coal dust		
Operating Conditions:			
Inlet gas volume	8.6 / 9.5	m3/s	
Inlet gas temperature	70 - 90	deg. C	
Inlet dust load	450	g/m3	
Static pressure at filter inlet	-580 to -640	mmWG	
Design Data:			
Gas volume	10	m3/s	
Gas temperature	90	deg. C	
Inlet dust load	500	g/m3	
Static pressure across filter (flange-to-flange)	specify	mmWG	150-180
Air-to-cloth ratio:			
- gross	not applicable	m3/m2.min	
- net	1.22	m3/m2.min	1.22 4.0 fpm
Design pressure of housing (suction)	-1,200	mm WG	-1200
Maximum gas temperature allowed into the filter		deg. C	120
Maximum outlet dust load (at filter exhaust)	25	mg/Nm3 dry	25
Explosion Vents:			
Quantity per compartment			6
Type	submit sketch		PANEL
Make			WHEELABRATOR
Size	mm x mm		457 x 1219
Location	submit sketch		HOUSING, DIRTY AIR SIDE
Design vent ratio			65:1