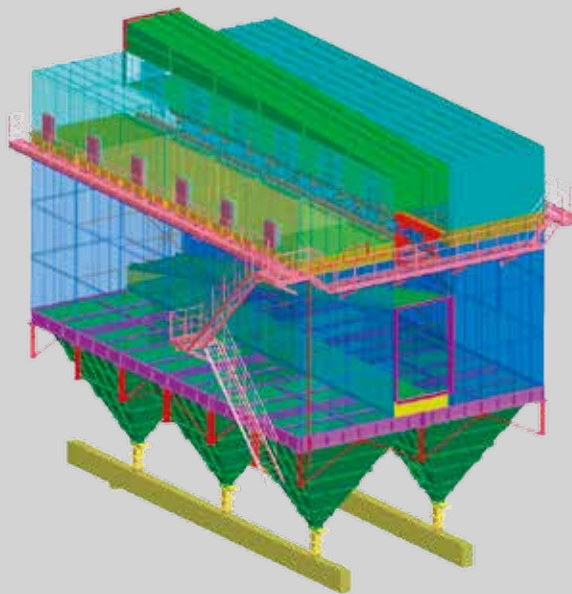




Sinoma

Sinoma International
Engineering Co., Ltd.

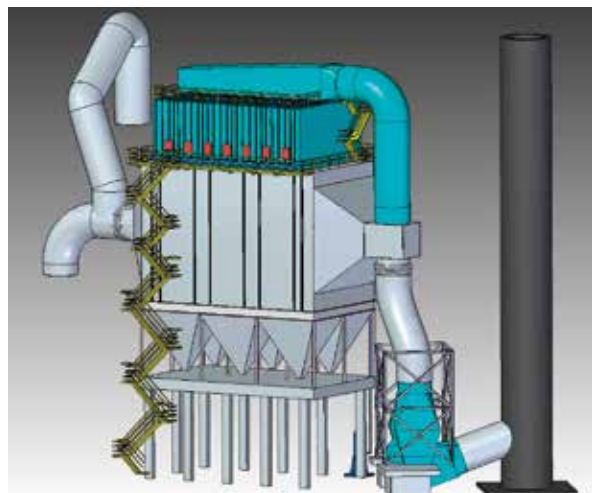
Conversion of ESP to Bag Filter



SINOMA TECHNOLOGY & EQUIPMENT GROUP CO., LTD.

1

PROCESS



Conversion of the system:

- 1) Modify ESP fan with a higher pressure.
- 2) Add fresh air valve on inlet duct to prevent bags from high temperature.
- 3) Add opacity monitor on outlet chimney to monitor the dust emission real-timely.
- 4) Add air compressor if needed.
- 5) Add air-air heat exchanger or water spraying system for cooler modification.

Conversion of the ESP:

- 1) Keep the casing and hoppers. Sometimes keep the inlet and the first electric field according calculation.
- 2) Take out the internal components of electric fields.
- 3) Install new pulse jet device inside and divide the space into several clean air plenums.
- 4) Install different gas-distribution devices between compartments and avoid high local velocity of gas and reduce the internal resistance of gas.
- 5) Install outlet duct.
- 6) Modify discharging device if needed.

Performance:

Dust emission	5 mg/Nm ³
Pressure loss	800 Pa
Bag Life	> 4 years
Air leakage	< 2.5% (walk-in structure)

2

TYPICAL

Conversion of ESP to bag filter for kiln of Tianrui Group Ruzhou Cement Co., Ltd. (5,000 t/d)

——Model Case for conversion of ESP with heavy dust-laden gas to hybrid filter



ESP technical data

ESP Size	I2 × 31/12.5/4 × 9/4 BS780 LURGI		
Gas volume	900,000 m ³ /h (120 °C)	Section area	315 m ²
Gas inlet temp.	Normal: 120 °C; Upset: 300 °C	Gas component	For kiln and raw mill
Inlet dust cont.	<=600 g/Nm ³	Outlet dust emission	<100 mg/Nm ³

Bag house technical data

Bag house Size	TDM-374/12	Quan. of compart.	12
Gas volume	900,000 m ³ /h (150 °C)	Bags/compartment	374
Gas inlet temp.	Norm.: 100–150 °C Upset: 240 °C	Bag size	Ø160x7,000
Inlet dust cont.	<=600 g/Nm ³	Total filtering Area	15,300 m ²
Outlet dust emission	<10 mg/Nm ³	Bag material	P84
Δ P between inlet and outlet flange	700 Pa (after 3 years' operation)	Quan. of pulse valve	264, Goyen Ca76mm
Actual bag life	6.5 years	Kiln standstill	12.5 days

Conversion of ESP to bag filter for kiln of Dalian Onoda Cement Co., Ltd. (4,000 t/d)

—Case for conversion of ESP with heavy dust-laden gas to bag filter



Bag house technical data after conversion

Bag house Size	TDM-312/12	Quan. of compart.	12
Gas volume	720,000 m³/h (150 °C)	Bags/compartment	312
Gas inlet temp.	Norm.: 100–150 °C Upset: 240 °C	Bag size	Ø160x6,500
Inlet dust cont.	<=600 g/Nm³	Total filtering Area	3,895 m²
Δ P between inlet and outlet flange	1,600 Pa	Bag material	P84
Outlet dust emission	<10 mg/Nm³	Quan. of pulse valve	312, Goyen Ca76mm
Actual bag life	5 years	Kiln standstill	15 days

Conversion of ESP to bag filter for cooler of Qianye Cement 5,000 t/d

—Model case of ETB for cooler of new-type dry production line



Bag house technical data:

Bag house Size	TDM-204/12	Quan. of compart.	12
Gas volume	500,000 m³/h (150 °C)	Bags/compartment	204
Gas inlet temp.	Norm.: 120 °C Upset: 200 °C	Bag size	Ø160x7,000 mm
Inlet dust cont.	<= 50 g/Nm³	Total filtering Area	8,600 m²
Δ P between inlet and outlet flange	700 Pa (after 3 years' operation)	Bag material	Nomex
Outlet dust emission	< 10 mg/Nm³	Quan. of pulse valve	144, Goyen Ca76mm
Actual bag life	5.5 years	Kiln standstill	12 days
Method of cooling	Water spraying		

Conversion of ESP to bag filter for Kiln of Hailaer Mengxi Cement 2000t/d Production Line

—Model case of ETB for kiln in extreme cold area



ESP technical data:

ESP Size	28/12.5/3x10/.4 BS780 LURGI		
Gas volume	480,000 m³/h (120 °C)	Section area	142 m²
Gas inlet temp.	Normal: 120 °C; Upset: 300 °C	Gas component	For kiln and raw mill
Inlet dust cont.	<=80 g/Nm³	Outlet dust emission	<100 mg/Nm³

Bag house technical data:

Bag house Size	TDM-180/12	Quan. of compart.	12
Gas volume	480,000 m³/h (150 °C)	Bags/compartment	180
Gas inlet temp.	Norm.: 100~150 °C Upset: 260 °C	Bag size	Ø160x7,500 mm
Inlet dust cont.	<= 80 g/Nm³	Total filtering Area	8138m2
Δ P between inlet and outlet flange	800 Pa (after 3 years' operation)	Bag material	glassfibre@PTFE membrane
Outlet dust emission	<10mg/Nm³	Quan. of pulse valve	120,Goyen Ca76mm
Actual bag life	5 years	Kiln standstill	12 days

Conversion of ESP to bag filter for Kiln of Xiahe Anduo Cement 2500t/d Production Line

—Model case of ETB for kiln in high sea level area



ESP technical data:

ESP Size	CDPK-E173/4		
Gas volume	480,000 m³/h (100~130 °C)	Section area	173 m²
Gas inlet temp.	Normal: 120 °C; Upset: 300 °C	Gas component	For kiln and raw mill
Inlet dust cont.	<=80 g/Nm³	Outlet dust emission	<50 mg/Nm³

Bag house technical data:

Bag house Size	TDM-320/8	Quan. of compart.	8
Gas volume	570,000 m³/h(150 °C)	Bags/compartment	320
Gas inlet temp.	Norm.: 100~150 °C Upset: 260 °C	Bag size	Ø160x7,200 mm
Inlet dust cont.	<=80 g/Nm³	Total filtering Area	9,265 m2
Δ P between inlet and outlet flange	800 Pa (after 3 years' operation)	Bag material	glassfibre@PTFE membrane
Outlet dust emission	<10 mg/Nm³	Quan. of pulse valve	128, Goyen Ca76mm
Actual bag life	5 years	Kiln standstill	12 days

Conversion of ESP to bag filter for kiln and cooler of Kazakhstan Standard Cement LLP (2,500 t/d)

——Model oversea case of ETB retaining the original casing



Cooler bag filter technical data:

ESP Size	25/10/3 × 9/0.4 BS780 LURGI	Gas volume	
Bag house Size	TDM-280/2x3	Quantity of compart.	6
Gas volume	320,000 m³/h (150 °C)	Bags/compartment	280
Gas inlet temp.	Norm.: 130~150 °C Upset: 200 °C	Bag size	Ø160x6,500 mm
Inlet dust cont.	<=30 g/Nm³	Total filtering Area	5,489 m²
Δ P between inlet and outlet flange	800 Pa	Bag material	Nomex
Outlet dust emission	<10 mg/Nm³	Quantity of Pulse valve	108, Goyen Ca76mm

Kiln technical data:

ESP Size	33/12.5/3x10/0.4 BS930 LURGI	Gas volume	480,000 m³/h (max 300 °C)
Bag house Size	TDM-460/2x3	Quantity of compart.	6
Gas volume	480,000 m³/h (150 °C)	Bags/compartment	460
Gas inlet temp.	Norm.: 130~180 °C Upset: 250 °C	Bag size	Ø160x6,000 mm
Inlet dust cont.	<=30 g/Nm³	Total filtering Area	8,320 m²
Δ P between inlet and outlet flange	800 Pa	Bag material	glassfibre@PTFE membrane
Outlet dust emission	<10 mg/Nm³	Quantity of Pulse valve	120, Goyen Ca76mm

Conversion of bag filter to bag filter for kiln of Liantian Yaobai Cement Co., Ltd. (2,500 t/d)

——Model case for conversion of walk-on structure to walk-in structure



Problem	Broken bag; over emission standard
Proposal	Replace hole plate, deducting system; Replace walk-on structure with walk-in structure; Lengthen bag reducing filtering velocity
Date put into operation	2011.3
Emission	< 9mg/Nm³
Actual bag life	5 years

Bag house technical data:

New Bag house Size	TDM-180/2x7	Quan. of compart.	14
Gas volume	480,000 m³/h(150 °C)	Bags/compartment	180
Gas inlet temp.	Norm.: 100~150 °C Upset: 260 °C	Bag size	Ø160x6,500 mm
Inlet dust cont.	< 80 g/Nm³	Total filtering Area	8,233 m2
Δ P between inlet and outlet flange	800 Pa (after 3 years' operation)	Bag material	glassfibre@PTFE membrane
Outlet dust emission	< 10 mg/Nm³	Quan. of pulse valve	168, Goyen Ca76mm
Actual bag life	5 years	Kiln standstill	10 days

Conversion of bag filter to bag filter for kiln of Zanzhuang
Jinyu Cement Co., Ltd. (5,000 t/d)

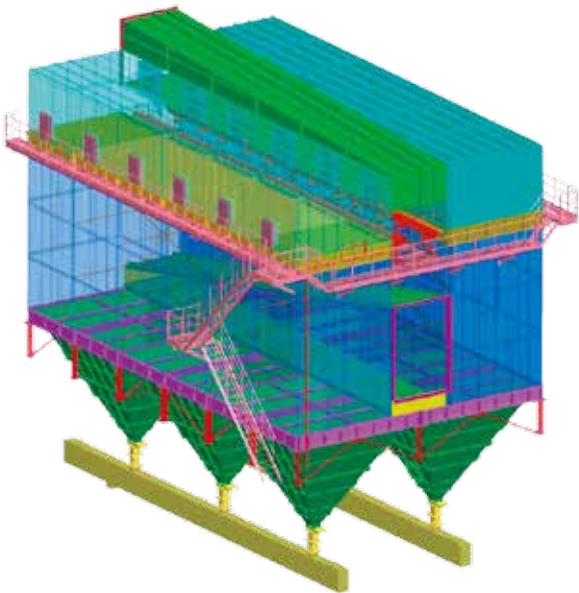
—Model case for conversion of air-reverse bag filter to pulse jet bag filter



Problem	Broken bag; over emission standard
Proposal	Replace hole plate, deducting system; Replace air-reverse structure with pulse jet structure
Date put into operation	2015.1
Emission	< 7.8 mg/Nm ³
Pressure loss	1300 Pa
Actual bag life	> 3 years without exchanging bags from 2015.1

Bag house technical data

Original Bag house Size	FGM192-36		
New Bag house Size	TDM-380/2x4	Quan. of compart.	8
Gas volume	680,000 m ³ /h(150 °C)	Bags/compartiment	380
Gas inlet temp.	Norm.: 100~150 °C Upset: 260 °C	Bag size	Ø160x7,500 mm
Inlet dust cont.	< 30 g/Nm ³	Total filtering Area	11,461 m ²
Δ P between inlet and outlet flange	800 Pa (after 3 years' operation)	Bag material	P84
Outlet dust emission	< 10 mg/Nm ³	Quan. of pulse valve	160, Goyen Ca76mm
Actual bag life	> 3 years	Kiln standstill	10 days



Conversion of ESP to Bag Filter



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