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Matthew J. Frank
Secretary, Wisconsin Department of Natural Resources
101 S. Webster Street . PO Box 7921
Madison, Wisconsin 53707-7921

Dear Secretary Frank:

Subject: Air Pollution Control Industry Comments on Proposed Mercury Control Rulemaking for Power Plants

The Institute of Clean Air Companies is the national trade association of more than one-hundred companies that supply air pollution control and monitoring technologies for electric power plants and other large industrial facilities across the United States. The industry deploys control technologies for emissions from the combustion of fossil fuels, such as flue gas desulfurization (FGD), selective catalytic reduction (SCR), fabric filters (FF), electrostatic precipitators (ESPs), and activated carbon injection (ACI) systems to control criteria pollutants (e.g. SO_2, NO_x, PM), air toxics (e.g. mercury), and greenhouse gases.

The air pollution control industry is actively installing mercury control equipment on coal-fired power plant boilers across the United States representing a range of boiler configurations, sizes, and coal-types. Reductions in mercury emissions from these installations can approach and exceed 90 percent depending on the fuel type and other conditions. The mercury reductions in the proposed Wisconsin regulations are well within the capabilities of the air pollution control industry to meet. The flexibility in the proposed regulations with regard to compliance timeframes for reductions and the alternative multipollutant method, as well as the averaging across units of common ownership are desirable elements given the many variables of boiler type, size, fuel, and plant configuration. The air pollution control industry offers a suite of technologies in order to provide the best solution for a given boiler and the most cost effective approach both for mercury emission reduction and to reduce SO_2 and NO_x under the multipollutant option described in the rule. The air pollution control industry will continue to improve and refine existing technologies as well as develop new technologies to meet and exceed regulatory requirements. ICAC supports the timing, mercury reduction requirements, and compliance flexibility included in the proposed regulations.

As you should be aware, air pollution control technologies follow and respond to regulatory drivers. This has been the case with the application of NO_x control technologies on coal-fired boilers and it will be the case for mercury control technologies as well. In the mid-1990s, States in the Northeast began requiring selective catalytic reduction technologies to be installed on coal-fired boilers to address regional ozone issues. Selective catalytic reduction technology is a major capital project that requires the integration of the technology with boiler components and other downstream emissions control equipment. A typical 500 MW installation requires over 1,000 tons of steel; 200 tons of catalyst; 300,000 man-hours of construction labor; and 2-3 years to engineer and construct. At the time, SCR technology had not been commercially applied on any coal-fired boilers in the U.S. although the technology had been applied on 100s of boilers in Germany and Japan. State regulatory agencies in the Northeast provided the regulatory drivers that required the installation of the technology even though it had never been tested at full scale on any boilers in the U.S. Currently, there are over 200 commercial, full-scale SCR systems installed on coal-fired boilers in the U.S. with an additional 100 installations projected to start-up over the next several years due to regional clean air regulations. Selective catalytic reduction installations on coal-fired power plants in the U.S. demonstrated that strong, flexible policies that rest on a sound technical basis drive emissions control installations.

Concerning mercury control technologies, there are many approaches that can be taken to achieve mercury emission reductions depending on the stringency of the regulatory requirement and the boiler's operating parameters (e.g. coal type, existing emissions control systems, boiler size). One method of obtaining mercury control from coal-fired power plants is by enhancing the emissions control equipment that are already installed in order to enhance their operation to capture mercury as a cobenefit of the emissions control process. Enhancing the performance of flue gas desulfurization systems provides one method of achieving mercury control with existing emissions control equipment. Recent clean air regulations for coal-fired power plants have required the installation of a significant number of flue gas desulfurization systems on coal-fired boilers to reduce emissions of SO_2. Approximately one-third of the coal-fired power plant capacity has some form of FGD installed and an additional one-third of the units are expected to have FGD systems installed by 2015. Wet flue gas desulfurization systems or wet scrubbers are able to simultaneously capture mercury as a cobenefit of the SO_2 control process. The mercury that is captured in the FGD is in the form of oxidized mercury which is soluble in liquids. The extent of capture varies based on a number of parameters but can be enhanced with the addition of chemicals to the wet scrubber and/or through the oxidation of mercury as it passes through a selective catalytic reduction system situated upstream of the wet scrubber. Full scale test results have demonstrated greater than 90 percent mercury removal from coal-fired power plants with SCR and wet scrubber emissions control combinations. Cobenefit control of mercury through a wet-FGD is likely the least cost option as a minimal amount of new capital equipment is required to achieve enhanced mercury removal.

For other mercury control options, elemental mercury can be converted to oxidized mercury so that the mercury is more easily captured in downstream air pollution control equipment. A number of these approaches are being tested and deployed today. One example of a mercury oxidizing technology that will provide additional mercury reductions is with the addition of an oxidation catalyst upstream of a wet scrubber. The catalyst oxidizes elemental mercury to oxidized mercury which is more readily captured in liquids such as those found in wet scrubber processes. The oxidation catalyst can be installed upstream of an SCR system or as an alternative to installing an SCR system. The Department of Energy has funded a project on a 200 MW coal-fired boiler that will test this method of mercury control starting in April 2008. A second generation of oxidation catalyst is currently being developed and tested that would both oxidize and bind both elemental and oxidized mercury. This oxidation catalyst technology would be placed downstream of the particulate control device. Short term testing has been successful with longer term demonstrations scheduled for 2008. Another method of achieving mercury control reductions is by optimizing the combustion conditions in the furnace to enhance native mercury oxidation that occurs under firing conditions. The mercury oxidation technologies mentioned above provide a few examples of mercury control approaches that can enhance mercury capture and optimize control costs.

Concerning mercury specific control technologies, activated carbon injection has been successfully applied in Europe on waste-to-energy plants for over a decade with the technology being transferred to coal-fired power plants in the U.S today. The technology injects activated carbon upstream of a particulate collection device and has demonstrated mercury emission reductions as high as 80-90 percent. The same technology has been tested at full-scale on dozens of coal-fired boilers in the U.S. under the Department of Energy's demonstration program and through the Electric Power Research Institute (EPRI) and other self-funded electric power industry initiatives. The technology is relatively simple in comparison to a typical SCR system. An ACI system consists of a storage silo for the activated carbon and pneumatic conveying system that injects the activated carbon at a controlled feed rate at the desired locations in the ductwork prior to the particulate control device. Minimal engineering is required and installations can be completed in as little as nine months. More full scale demonstration and testing data are available on activated carbon injection technology for coal-fired power plants than was available in past instances for any other emissions control technology such as selective catalytic reduction prior to the development of regulations by state and federal clean air agencies.

With that said, there is no single mercury control technology that will achieve the reductions needed for all coal types, boiler types, and power plant configurations. Power plants and coal types are not all created equally and the multiple variants will require the application of engineered solutions to address specific conditions and needs. This has also been the challenge for the application of emissions control technologies for other pollutants on coal-fired power plants that has spurred the development of a suite of control technology options for each pollutant. In addition, flexibility within regulations is good for technology suppliers and users so that risks are reduced and least cost options can be deployed. Some means of providing flexibility include developing market-based cap-and-trade programs or averaging, phased approaches that incrementally require more emissions reductions over time, and "soft landings" that permit the installation of the technology and set the emissions limits based on the best performance achievable.

Today, control technology vendors are actively installing mercury control systems across the U.S., in states that have developed mercury control programs independent of the federal Clean Air Mercury Rule. There are more than twenty states that have proposed mercury reduction plans that are more stringent than the federal plan with the earliest compliance date beginning at the end of 2007. The compliance options for boilers in these states include mercury specific control technologies, multipollutant technologies, combustion modifications, oxidation catalysts, as well as cobenefit control through existing emissions control equipment.

For mercury specific control technologies, primarily activated carbon injection, the air pollution control industry has reported booking new contracts for mercury control equipment on eighty-three coal-fired power plant boilers across the U.S. representing a vast range of boiler configurations, sizes, and coal-types. The cumulative generation capacity of these sixty-eight boilers is more than 40,000 MW, which is around twelve percent of the nation's coal-fired power plant capacity. These bookings are for controlling mercury on new and existing boilers ranging in size from 52 to 880 MW in capacity with the average size unit being 500 MW in size. The technology bookings are for all three of the predominant types of coal burned in U.S. electric power plant boilers including subbituminous, bituminous, and lignite coals. The diversity of coal burned by the units is broad including units burning high sulfur bituminous, low sulfur subbituminous, bituminous blended with biomass, western bituminous and subbituminous blends, bituminous blends, and lignite/subbituminous multi-fuel applications.

The mercury control technology bookings are also to be integrated with a broad range of existing emissions control technology configurations that are designed to control other emissions from the coal-fired boilers. The complete list of the mercury specific control bookings is given at the end of this document. The following is a list of each of the different control configurations that the mercury specific controls that have been booked to date will be applied to, including boilers with:

Cold-Side ESP
ESP
ESP/FF
ESP/FF (TOXECON)
ESP/FF Parallel Flow
ESP/WFGD
ESP/WFGD/WESP
FT-SNCR/CDS/FF
HS-ESP/FF/WFGD
Lime Injection/ESP/WFGD/WESP
Lime Injection/ESP/WFGD/WESP
Multi-pollutant
SCR/FF
SCR/FF/WFGD
SCR/FF/WFGD
SNCR/ACI/CDS-DFGD/FF (CFB Boiler)
SDA/FF
TOXECON

In summary, the drivers for mercury specific emissions control bookings are state regulations requiring significant reductions, applications for new source permit requirements, and consent decrees. The bookings represent full-scale, commercial systems that have been installed or are currently being installed on coal-fired power plants. A number of the mercury control systems are currently operating with several others scheduled to start-up over the next couple years.

The air pollution control industry continues to work responsibly with power plant operators to ensure that mercury control systems are integrated into the facility's design and specific coal requirements, and that any operational issues can be addressed. Significant advances continue to be made in mercury control technology and commercial deployment is ongoing.

Sincerely,

Chad S. Whiteman
Deputy Director

INSTITUTE OF CLEAN AIR COMPANIES

Commercial Electric Utility Mercury Control Technology Bookings

Air pollution control vendors are reporting booking new contracts for mercury control equipment for more than two dozen power plant boilers. The contracts for commercial systems are attributed to federal and state regulations, including new source permit requirements and consent decrees, which specify high levels of mercury capture. Below is a summary of the mercury control equipment that has been procured to date. **Last Update: 04-14-08**

	Plant Size (MW)	Location	Prime OEM Contractor	Coal	APC Configuration	Hg Control	New Plant or Retrofit	Regulatory Driver	Anticipated Startup Date
1	90 MW ea. 270 Total	**Midwest**	Siemens Envir. Sys. (Norit/ADA-ES)	PRB	TOXECON	ACI	Retrofit	Consent Decree	1st Qtr 2005
2	250	**East**	Siemens Envir. Sys.	Bituminous	SDA/FF	ACI	Retrofit	State Regulatory	2nd Qtr 2008
3	250	**East**	Siemens Envir. Sys.	Bituminous	SDA/FF	ACI	Retrofit	State Regulatory	2nd Qtr 2008
4	650	**East**	Siemens Envir. Sys.	Bituminous	ESP	ACI	Retrofit	State Regulatory	
5	740	**Midwest**	B&W (ADA-ES)	PRB	SDA/FF	ACI	New Plant	New Construction Permit	
6	550	**Midwest**	B&W (ADA-ES)	PRB	SDA/FF	ACI	New Plant	New Construction Permit	
7	350	**West**	B&W (ADA-ES)	PRB	SDA/FF	ACI	Retrofit	Consent Decree	
8	350	**West**	B&W (ADA-ES)	PRB	SDA/FF	ACI	Retrofit	Consent Decree	
9	800	**West**	B&W (ADA-ES)	PRB	SDA/FF	ACI	New Plant	New Construction Permit	
10	350	**East**	ADA-ES	Bituminous	ESP	ACI	Retrofit	Consent Decree	
11	350	**East**	ADA-ES	Bituminous	ESP	ACI	Retrofit	Consent Decree	
12	204	**Midwest**	Dustex	PRB	TOXECON	ACI	Retrofit	Consent Decree	
13	375	**East**	Siemens Envir. Sys.	Bituminous		ACI	Retrofit	Consent Decree	1st Qtr 2008
14	650	**Midwest**	Alstom (ADA-ES)	PRB	SDA/FF	ACI	New Plant	New Construction Permit	
15	156 MW ea.	**Midwest**	Powerspan	Bituminous	Multi-pollutant	ECO	Retrofit	Construction Permit	

	Plant Size (MW)	Location	Prime OEM Contractor	Coal	APC Configuration	Hg Control	New Plant or Retrofit	Regulatory Driver	Anticipated Startup Date
	315 Total								
16	750	**Midwest**	Siemens Envir. Sys.	High Sul. Bit	ESP/WFGD/W ESP	ACI	New Plant	Construction Permit	3rd Qtr 2009
17	680	**South**	Alstom (ADA-ES)	PRB	SDA/FF	ACI	New Plant	Construction Permit	
18	107	**East**	BPI	Bit./Bio-Mass	FT-SNCR/CDS/FF	ACI	Retrofit	DOE Demo.	
19	860	**South**	BPI	Lignite	SCR/FF/WFGD	ACI	New Plant	Construction Permit	
20	860	**South**	BPI	Lignite	SCR/FF/WFGD	ACI	New Plant	Construction Permit	
21	220	**West**	B&W (ADA-ES)	PRB	SDA/FF	ACI	New	Construction Permit	
22	575	**Southwest**	B&W (STC)	West.Bit/Sub. Bit. Blend	HS-ESP/FF/WFGD	ACI	Retrofit	Construction Permit	
23	575	**Southwest**	B&W (STC)	West.Bit/Sub. Bit. Blend	HS-ESP/FF/WFGD	ACI	Retrofit	Construction Permit	
24	335	**Northeast**	ADA-ES	Bituminous	Cold-Side ESP	ACI	Retrofit	Voluntary Regional Emission Abatement Plan	
25	880	**South**	Siemens Envir. Sys.	PRB	ESP/FF (TOXECON)	ACI	Retrofit	Voluntary Regional Emission Abatement Plan	4th Qtr 2008
26	350	**Midwest**	Hamon (ADA-ES)	PRB	SCR/FF	ACI	Retrofit	State Regulatory	
27	650	**Southwest**	ADA-ES	PRB	ESP/FF	ACI	Retrofit	Voluntary Regional Emission Abatement Plan	
28	628	**Southwest**	ADA-ES	PRB	ESP/FF Parallel Flow	ACI	Retrofit	Voluntary Regional Emission Abatement Plan	
29	855	**Southwest**	ADA-ES	Lignite/PRB	ESP/WFGD	ACI	Retrofit	Voluntary Regional Emission Abatement Plan	
30	670	**Midwest**	Alstom/ADA-ES	PRB	SCR/FF/WFGD	ACI	Retrofit	Construction Permit of new unit	
31	850	**Midwest**	Alstom/ADA-ES	PRB	SCR/FF/WFGD	ACI	New	Construction	

	Plant Size (MW)	Location	Prime OEM Contractor	Coal	APC Configuration	Hg Control	New Plant or Retrofit	Regulatory Driver	Anticipated Startup Date
								Permit	
32	167	**East**	Sorbent Technologies	E- Bitum	ESP/WFGD	ACI	Retrofit	Consent Decree	
33	108	**Midwest**	Dustex	PRB	TOXECON	ACI	Retrofit	Consent Decree	
34	159	**Midwest**	NORIT	PRB	ESP	ACI	Retrofit	CAMR	1st Qtr 2010
35	348	**Midwest**	NORIT	PRB	ESP	ACI	Retrofit	State Regulatory	
36	237	**Midwest**	NORIT	PRB	ESP	ACI	Retrofit	State Regulatory	
37	347	**Midwest**	NORIT	PRB	ESP	ACI	Retrofit	State Regulatory	
38	341	**Midwest**	NORIT	PRB	ESP	ACI	Retrofit	State Regulatory	
39	566	**Midwest**	NORIT	PRB	ESP	ACI	Retrofit	State Regulatory	
40	561	**Midwest**	NORIT	PRB	ESP	ACI	Retrofit	State Regulatory	
41	850	**Midwest**	NORIT	PRB	ESP	ACI	Retrofit	State Regulatory	
42	850	**Midwest**	NORIT	PRB	ESP	ACI	Retrofit	State Regulatory	
43	359	**Midwest**	NORIT	PRB	ESP	ACI	Retrofit	State Regulatory	
44	385	**Midwest**	NORIT	PRB	ESP	ACI	Retrofit	State Regulatory	
45	281	**Midwest**	NORIT	PRB	ESP	ACI	Retrofit	State Regulatory	
46	551	**Midwest**	NORIT	PRB	ESP	ACI	Retrofit	State Regulatory	
47	400	**Southwest**	Alstom/ADA-ES	PRB	SDA/FF	ACI	New	Construction Permit	
48	495	**Alberta Canada**	B&W/NORIT	Can. Sub-Bit.	SDA/FF	ACI	New	Construction Permit	
49	800	**Midwest**	Siemens Envir. Sys.	E. Bit	Lime Inj./ESP/ WFGD/WESP	ACI	New	Construction Permit	2 nd Qtr 2010

	Plant Size (MW)	Location	Prime OEM Contractor	Coal	APC Configuration	Hg Control	New Plant or Retrofit	Regulatory Driver	Anticipated Startup Date
50	800	**Midwest**	Siemens Envir. Sys.	E. Bit	Lime Inj./ESP/WFGD /WESP	ACI	New	Construction Permit	2nd Qtr 2011
51	350	**Midwest**	ADA-ES	PRB	ESP	ACI	Retrofit	Construction Permit	
52	568	**Southwest**	AESI/ADA-ES	Lignite	CFB Boilers/SNCR/ ACI/CDS-DFGD/FF	ACI	New	Construction Permit	
53	248	**Midwest**	ADA-ES	PRB	ESP	ACI	Retrofit	State Regulatory	
54	590	**Midwest**	ADA-ES	PRB	ESP	ACI	Retrofit	State Regulatory	
55	608	**Midwest**	ADA-ES	PRB	ESP	ACI	Retrofit	State Regulatory	
56	110	**Midwest**	ADA-ES	PRB	ESP	ACI	Retrofit	State Regulatory	
57	272	**Midwest**	ADA-ES	PRB	ESP	ACI	Retrofit	State Regulatory	
58	375	**Midwest**	ADA-ES	PRB	ESP	ACI	Retrofit	State Regulatory	
59	100 ea. 200 Total	**Northeast**	Clyde Bergemann EEC	PRB	Dry Injection/FF	ACI	Retrofit	State Regulatory	
60	200 ea. 400 Total	**Northeast**	Clyde Bergemann EEC	PRB	Dry Injection/FF	ACI	Retrofit	State Regulatory	
61	200 ea. 400 Total	**Northeast**	Clyde Bergemann EEC	PRB	Dry Injection/FF	ACI	Retrofit	State Regulatory	
62	300	**Midwest**	Allied/ADA-ES	PRB	CDS/FF	ACI	Retrofit	Construction Permit	
63	200	**Midwest**	Siemens Envir. Sys.	III Bit	FF/WFGD/ WESP	$Ca(OH)_2$ /ACI	Retrofit	State Regulatory	3rd Qtr 2009
64	680	**East**	Siemens Envir. Sys.	INR Bit & Pet Coke	FF/WFGD	$Ca(OH)_2$/ ACI	New	Construction Permit	4th Qtr 2009
65	680	**East**	Siemens Envir. Sys.	INR Bit & Pet Coke	FF/WFGD	$Ca(OH)_2$/ ACI	New	Construction Permit	1st Qtr 2010
66	493	**Midwest**	Siemens Envir. Sys.	PRB	SDA/FF	ACI	Retrofit	State Regulatory	3rd Qtr 2009

	Plant Size (MW)	Location	Prime OEM Contractor	Coal	APC Configuration	Hg Control	New Plant or Retrofit	Regulatory Driver	Anticipated Startup Date
67	638	**Midwest**	Siemens Envir. Sys.	PRB	Initial ESP Later SDA/FF	ACI	Retrofit	State Regulatory	3rd Qtr 2009
68	637	**Midwest**	Siemens Envir. Sys.	PRB	Initial ESP Later SDA/FF	ACI	Retrofit	State Regulatory	3rd Qtr 2009
69	627	**Midwest**	Siemens Envir. Sys.	PRB	Initial ESP Later SDA/FF	ACI	Retrofit	State Regulatory	3rd Qtr 2009
70	382	**Midwest**	Siemens Envir. Sys.	PRB	ESP	ACI	Retrofit	State Regulatory	3rd Qtr 2009
71	880	**South**	Siemens Envir. Sys.	PRB	ESP/FF Toxecon	ACI	Retrofit	Voluntary Regional Emissions Abatement Plan	4th Qtr 2009
72	880	**South**	Siemens Envir. Sys.	PRB	ESP/FF Toxecon	ACI	Retrofit	Voluntary Regional Emissions Abatement Plan	2nd Qtr 2009
73	880	**South**	Siemens Envir. Sys.	PRB	ESP/FF Toxecon	ACI	Retrofit	Voluntary Regional Emissions Abatement Plan	1st Qtr 2010
74	620	**East**	Alstom/ADA-ES	E. Bit & Columbian	ESP/DFGD/PJ FF	ACI	Retrofit	State Regulatory	
75	52 MW 73 MW	**West**	ADA-ES	PRB	ESP	ACI (Combined Sys.)	Retrofit	CAMR Early Compliance	
76	860	**Southwest**	NORIT	Lignite	ESP	ACI	Retrofit	CAMR	1st Qtr 2010
77	618	**Southwest**	NORIT	Sub. Bit.	ESP	ACI	Retrofit	CAMR	3rd Qtr 2010
78	837	**Southwest**	NORIT	Lignite	ESP	ACI	Retrofit	CAMR	1st Qtr 2010
79	620	**East**	NORIT	Bituminous	ESP	ACI	Retrofit	State Regulatory	1st Qtr 2010
80	614	**East**	NORIT	Bituminous	ESP	ACI	Retrofit	State Regulatory	1st Qtr 2010
81	348	**Southwest**	Sorbent Technologies	W. Bit/Sub. Bit Blend	HS-ESP/FF/WFGD	ACI	Retrofit	Construction Permit	
82	329	**Southwest**	Sorbent Technologies	W. Bit/Sub. Bit Blend	HS-ESP/FF/WFGD	ACI	Retrofit	Construction Permit	
83	220	**West**	Allied/ADA-ES	PRB	CFB/FF	ACI	New	Construction Permit	

Terminology:

- ESP – Electrostatic precipitators use electrical fields to remove pollutants such as particulates and mercury from boiler flue gases. The electric field drives particulates to the collecting electrodes where they are periodically dislodged using a mechanical process.
- Cold-Side ESP – Cold side electrostatic precipitators are ESPs located on the downstream side of the air preheater or heat exchanger (which transfers heat from the flue gas to the air to be fed into the furnace) and therefore operates at relatively low temperatures (i.e., temperatures of no more than about 200° C).
- HS-ESP – Hot side electrostatic precipitators are ESPs are located on the upstream side of the air preheater and therefore operate at relatively high temperatures (i.e., more than about 250° C).
- WESP – Wet electrostatic precipitators use electric fields to remove pollutants such as particulates and mercury from boiler flue gases. The electric field drives particulates to the collecting electrodes which are periodically washed off with a liquid.
- ACI – Activated carbon injection is a form of sorbent injection technology that injects powdered activated carbon into the flue gas where it mixes with the gas to contact the sorbent. The sorbent is then collected in the particulate control device where there is a second opportunity for sorbent to contact the mercury in the flue gas.
- FF – Fabric filter, commonly referred to as a baghouse, is a particulate control device that also captures mercury. Fabric filter collectors pass the flue gas through a tightly woven fabric where the particulates in the flue gas will be collected on the fabric by sieving and other mechanisms. The dust cake which forms on the filter is periodically removed from the fabric and collected in a hopper.
- TOXECON – TOXECON is an EPRI patented technology in which sorbents, including activated carbon is injected into a pulse-jet baghouse installed downstream of the existing particulate control device.
- WFGD – Wet flue gas desulfurization or wet scrubber is control system designed to remove SO_2 from flue gases and can also capture mercury. In a wet scrubber, a liquid sorbent is sprayed into the flue gas in an absorber vessel. The pollutant comes into direct contact with the sorbent and forms a wet slurry waste that is separated from the process stream.
- DFGD – Dry flue gas desulfurization or dry scrubber injects an alkaline sorbent into the flue gas to remove SO_2 and particulates but can also capture mercury. Dry flue gas desulfirization produces a dry solid by-product as the flue gas leaving the absorber is not saturated like in a WFGD.
- SDA – Spray dryer absorber is a form of dry flue gas desulfurization system.
- SCR – Selective catalytic reduction is a NO_x control device that can oxidize mercury. The basic principle of SCR is the reduction of NO_x to N_2 and H_2O by the reaction of NO_x and ammonia (NH_3) within a catalyst bed.
- SNCR – Selective non-catalytic reduction is a NO_x control device that utilizes a chemical process where a reducing agent, typically ammonia or urea, is injected into the process gases to convert nitrogen oxides into molecular nitrogen.
- CFB – Circulating fluidizied bed is a combustion process where crushed coal is mixed with limestone and fired in a process resembling a boiling fluid.
- APC Configuration – Air pollution control configuration refers to the emissions control technologies that are currently on the boiler or that contribute to mercury control.