CARBON CAPTURE
IN COAL FIRED POWER PLANTS

CAP-4
NOx REMOVAL

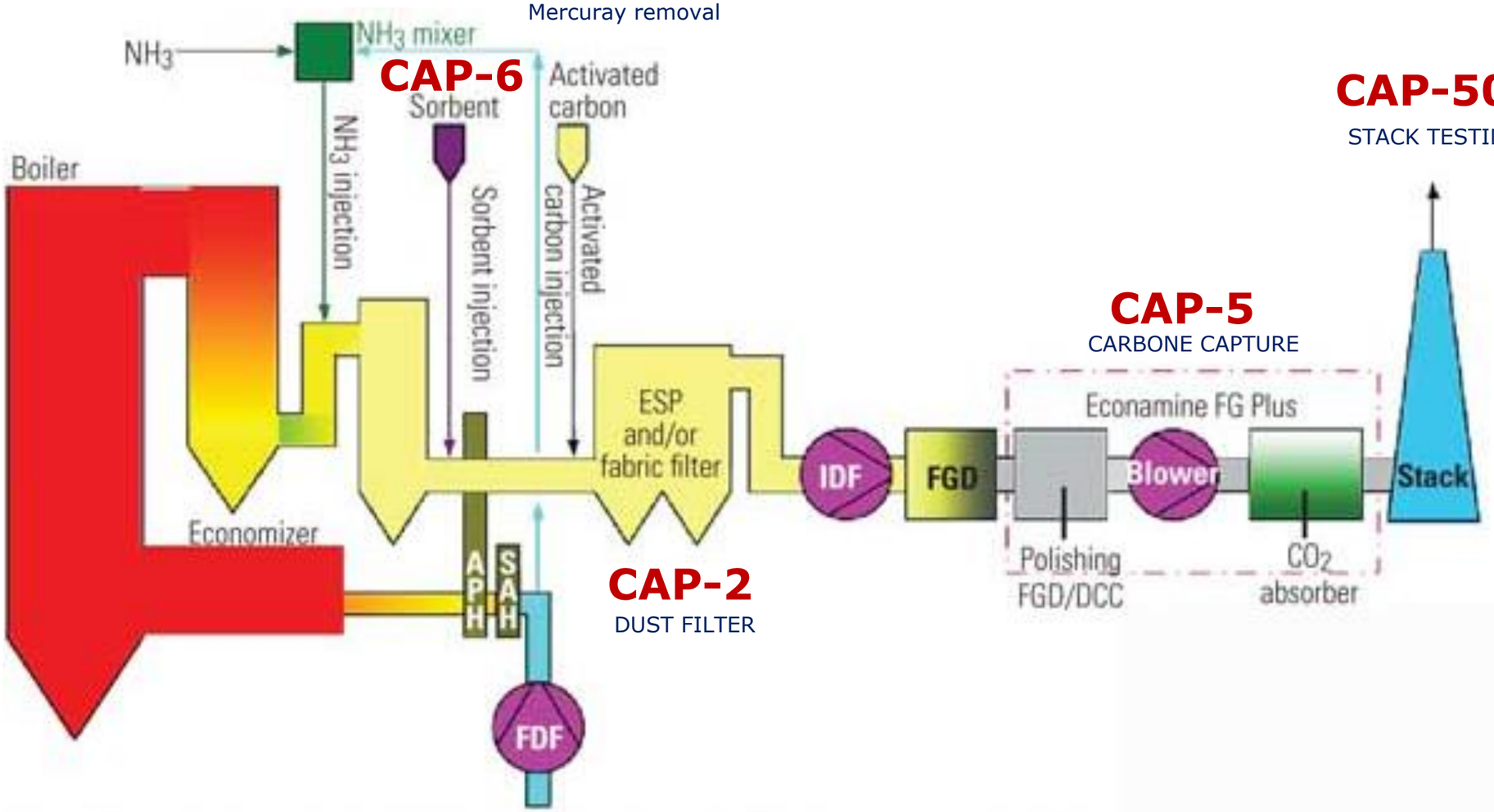
CAP-3
Mercuray removal

CAP-6
Sorbent

CAP-50
STACK TESTING

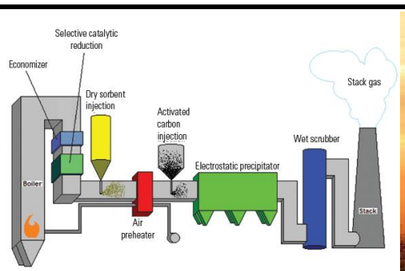
CAP-5
CARBONE CAPTURE

CAP-2
DUST FILTER



Notes: SCR = selective catalytic reduction, APH = air preheater, DCC = direct contact cooler, ESP = electrostatic precipitator, FDF = forced draft fan, FGD = flue gas desulfurization, IDF = induced draft fan, SAH = steam air heater

HOT FLUE GAS CLEANING
Guidelines for New Plants
Clean Development Mechanism (CDM)
Good engineering practice (GEP)



Rev	Description	Date	Name	Check
Rev-3				
Rev-2				
Rev-1				

Date	Drawn	Check	Appr.	Scale
25 APRIL 2015	O.Songur	O.Songur	Y.Sidorov	NS

PAKPAŞ "Quality comes first"

ASIA MINERAL RESOURCE AMR

REAN COMMODITY

CAP-5

Job No	Page	Symbol	Unit No	Cat	Type+Format	Serial No	Rev
1232	1/1	DWG	00	A	UD	0100.01	05

Carbon capture and storage (CCS) *(or carbon capture and sequestration) is the process of capturing waste carbon dioxide (CO2) from large point sources, such as fossil fuel power plants, transporting it to a storage site, and depositing it where it will not enter the atmosphere, normally an underground geological formation. The aim is to prevent the release of large quantities of CO2 into the atmosphere (from fossil fuel use in power generation and other industries). It is a potential means of mitigating the contribution of fossil fuel emissions to global warming[1] and ocean acidification.[2] Although CO2 has been injected into geological formations for several decades for various purposes, including enhanced oil recovery, the long term storage of CO2 is a relatively new concept. The first commercial example was Weyburn in 2000.[3] 'CCS' can also be used to describe the scrubbing of CO2 from ambient air as a climate engineering technique.*

http://en.wikipedia.org/wiki/Carbon_capture_and_storage

Capturing and compressing CO2 may increase the fuel needs of a coal-fired CCS plant by 25–40%. These and other system costs are estimated to increase the cost of the energy produced by 21–91% for purpose built plants. Applying the technology to existing plants would be more expensive especially if they are far from a sequestration site. Recent industry reports suggest that with successful research, development and deployment (RD&D), sequestered coal-based electricity generation in 2025 may cost less than unsequestered coal-based electricity generation today.

http://www.southernaircorp.com/stacktesting.html

Rev	Description	Date	Name	Check
Rev-3				
Rev-2				
Rev-1				

Date	Drawn	Check	Appr.	Scale
25 APRIL 2015	O.Songur	O.Songur	Y.Sidorov	NS

PAKPAŞ "Quality comes first"

ASIA MINERAL RESOURCE AMR

CAP-5

REAN COMMODITY

Job No	Page	Symbol	Unit No	Cat	Type+Format	Serial No	Rev
1232	1/1	DWG	00	A	UD	0100.01	05

Commercially Available CO2 Capture Technology

08/01/2009 | Dennis W. Johnson; Satish Reddy, PhD; and James H. Brown, PE, PMP, Fluor Corp.

While many CO2 removal technologies are being researched through laboratory and pilot-scale testing, an existing technology has a significant operating history at commercial-scale facilities, where it is collecting CO2 from multiple sources, including low-CO2 concentration flue gas (<3.1% by volume) with high oxygen concentrations (>13% by volume).

Technology for the removal of carbon dioxide (CO2) from flue gas streams has been around for quite some time. The technology was developed not to address the greenhouse gas effect but to provide an economic source of CO2 for use in enhanced oil recovery and industrial purposes, such as in the beverage industry.

In 1989, Fluor Corp. purchased the license for a CO2 capture technology from Dow Chemical. Through the years of process and technology improvements, Fluor Corp. has developed an advanced amine-based postcombustion CO2 capture technology called Econamine FG Plus (EFG+). The EFG+ technology is the first and the most widely applied process that has extensive proven operating experience in the removal of CO2 from high-oxygen-content flue gases such as those typically present in a coal-fired power facility. The solvent formulation is specially designed to recover CO2 from low-pressure, oxygen-containing streams such as boiler gas streams without rapid degradation due to the presence of oxygen.

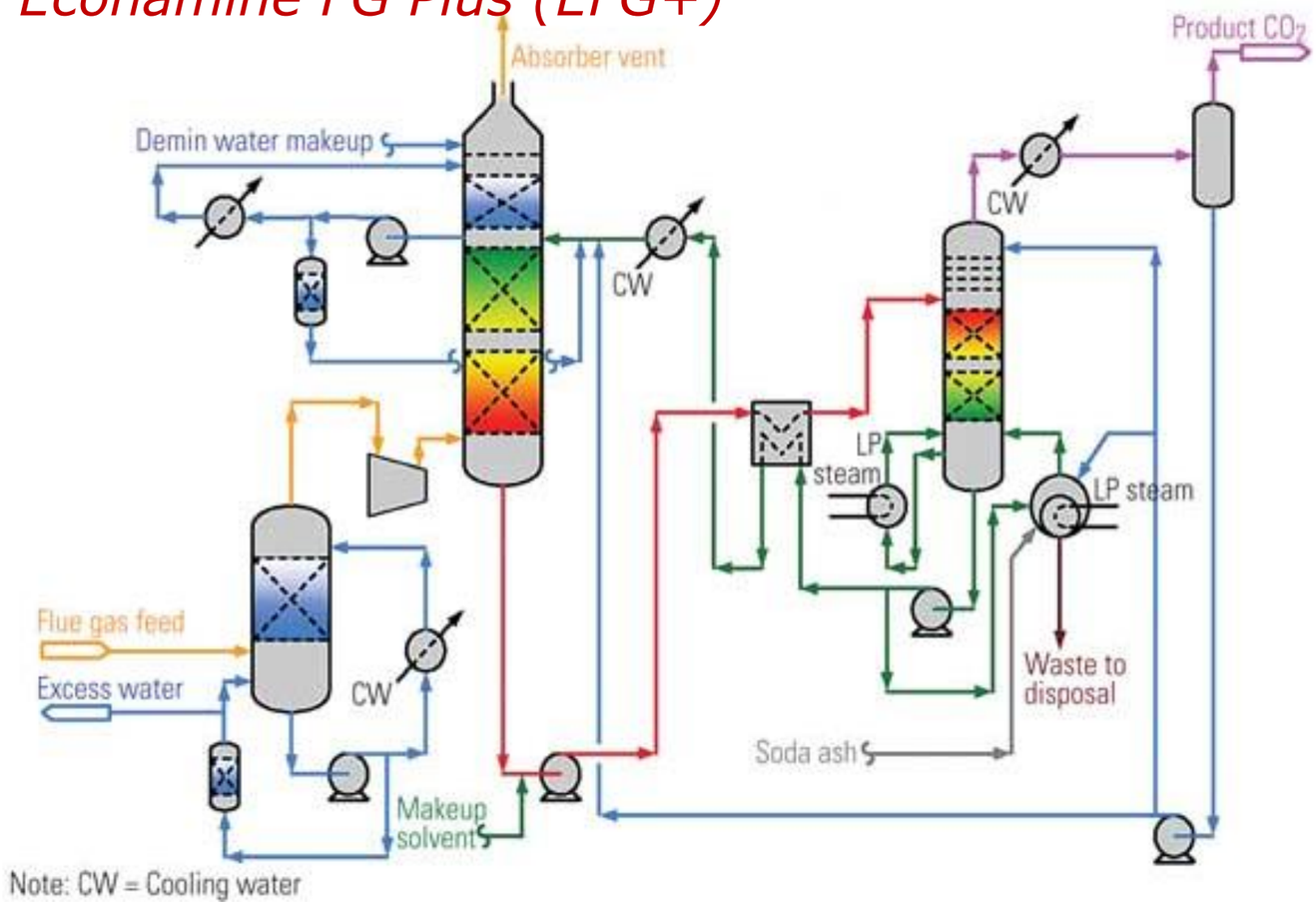
The EFG+ process utilizes simple, reliable equipment that is well-known to the gas-treating industry (Figure 1). The technology does not require a custom-manufactured or expensive solvent. The main ingredient of the solvent is readily available and inexpensive and is produced by solvent manufacturers worldwide.

In all, there are more than 25 licensed plants worldwide that employ the EFG+ technology — from steam-methane reformers to gas turbine power plants.

One of the most significant power applications of this CO2 removal system is at Florida Power & Light's licensed plant at the Bellingham Energy Center in Bellingham, Mass, which captured 365 short tons per day of CO2 from the exhaust of the natural gas – fired power plant. The Bellingham plant is now owned by NextEra Energy Resources, a subsidiary of FPL Group Inc.

http://www.southernaircorp.com/stacktesting.html

Econamine FG Plus (EFG+)



Go with the flow. The typical Econamine FG process uses simple, reliable equipment that is well-known to the gas-treating industry. Courtesy: Fluor Corp.

This EFG+ plant was designed and constructed by Fluor and maintained continuous operation from 1991 to 2005 (Figure 2). This facility is the only commercial-scale CO2 recovery unit in the world that has operated on gas turbine flue gas. In addition to its notably low CO2 concentration and high oxygen concentration, this flue gas stream is very pressure sensitive; a significant backpressure or pressure fluctuation in the flue gas cannot be tolerated.

POWER

READ FULL ARTICLE FROM BELOW LINK

http://www.powermag.com/commercially-available-co2-capture-technology/?pagenum=1

Rev	Description	Date	Name	Check
Rev-3				
Rev-2				
Rev-1				

Date	Drawn	Check	Appr.	Scale
25 APRIL 2015	O.Songur	O.Songur	Y.Sidorov	NS

PAKPAŞ "Quality comes first"

ASIA MINERAL RESOURCE AMR

CAP-5

REAN COMMODITY

Job No	Page	Symbol	Unit No	Cat	Type+Format	Serial No	Rev
1232	1/1	DWG	00	A	UD	0100.01	05