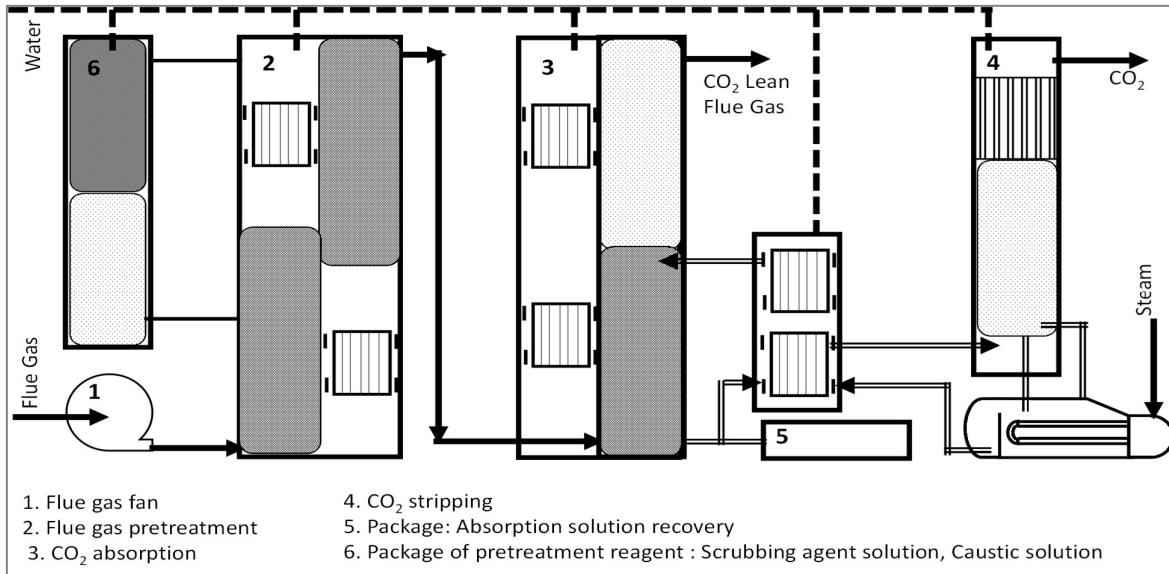


D.2. Process Description



Presently, flue gas exiting boiler flows through ESP followed by Wet Flue Gas Desulphurization (FGD) unit and thereafter it is discharged through stack. Flue gas for CO₂ capture plant shall be tapped from downstream of FGD. Size and exact location of flue gas tapping in existing flue gas duct, shall be decided by NTPC and Bidder with mutual consultation.

As shown in the figure, there are two main sections in CO₂ capture plant - first is the CO₂ absorption section [3] to separate the CO₂ from flue gas into absorption-solution, and second is the CO₂ stripping section [4] to strip CO₂ gas from absorption-solution. To maintain flue gas parameters at the inlet of absorption section [3], there is flue gas pretreatment section [2]. Flue Gas Fan [1] is used to draw flue gas and push it through flue gas pretreatment section [2] and CO₂ absorption section [3]. In CO₂ absorption section [3], solvent is used to separate CO₂ from flue gas. Thereafter, 'CO₂ rich solvent' is taken to CO₂ Stripper section where heat energy from steam is utilized to separate CO₂ from 'CO₂ rich solvent'. CO₂ thus separated, contains significant amount of moisture, which needs to condense appropriately. Also, to enhance heat recovery and maintain purity of solvent in continuous operation, different auxiliary packages e.g. absorption-solution recovery, scrubbing agent solution, caustic solution, cooling tower etc are envisaged. The aforesaid process is indicative for tender purpose only, bidders are free to use any process which will fulfil the requirement of tender. Flue Gas Fan shall be provided with Variable Frequency Drive (VFD) together with electrically operated gates.

Further, following supporting packages may be suitably envisaged: (i) Solvent Treatment Package to remove metal ions, high molecular weight degraded products, heat stable salts etc from the solvent; (ii) Package for preparation of dosing solutions viz solid scrubbing agent, caustic solution etc for flue gas pretreatment, (iii) Appropriate filtration system to remove suspended solids from circulating solutions (iv) Cooling Tower etc. (v) Safety & Fire protection system including fire extinguishers.