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II. DESCRIPTION

2.1 TITLE OF INVENTION: Process to Recover Carbon Emissions and Other Greenhouse Gases from Power Plants and other Processes, including Combustion.

2.2 DESCRIPTION

2.2.1 Introduction:

2.2.1.1 The process of combustion or indeed the more generic exothermic reaction of hydrocarbons with oxygen to result in release of energy, is the bedrock of modern power generation, automotive propulsion etc., is also unfortunately one of the greatest threats to the world by way of carbon emissions and greenhouse gases. Environmental change in the context of increased carbon emissions and greenhouse gases is resulting in increased global warming, which is adversely changing the planet we live in. The impact of change is bringing about increased natural disasters and loss of life as a minimum, while the deeper and longer term effects remain undetermined.

2.2.1.2 This invention focuses on capturing the harmful gases through the use of either adsorbents, solvents or by differential phase change, in one or more stages. Either or combination of process method may be implemented with equally successful results. Indeed, in some applications the choice of process methodology may be affected based on the energy balance, scale of operation, size of footprint desired etc. Once the gases are separated into high concentration groups, the process of separation is intensified by several additional stages comprising of typically different process methods, whereupon the selection of such process methodology, is based on purity required and concentration of contaminant gases present, the physical properties the gas species present, and differences thereof etc.

2.2.1.3 Once the gas species are sufficiently purified, it may be converted in either pressure, phase and/or temperature to yield its final form of a useful commodity. Of ten the useful commodity and the commercially optimal commodity are one and the same.



III. CLAIMS

3.1 Power Plants are one the world largest polluters. The International Energy Agency estimates world installed power generation to be more than 120,000 GW of capacity today. Although figures vary depending on technology used to generate power and fuel feedstock used therein, as well as age and state of maintenance of the relevant power plant, on average approximately 400kg per hour of Carbon Dioxide is released into the atmosphere for every 1MW of operating power plant fuel on fossil fuel. On the fore-going basis, each 1MW power plant will release approximately 3,500 tonnes of Carbon Dioxide per annum.

3.2 The present invention aims to prevent the continued release of such environmentally unfriendly gases, by providing a process to capture such gases to result in useful commodities. The process is not limited to use in power plants, however more generally to any combustion process and/or process that releases gaseous carbon emission and other greenhouse gases.