The Fight to Overcoming Greenhouse Effect for Anti Global Climate Change, and the Current Situation of that Fight

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Abstract
Greenhouse effects are caused by the release of CO₂ from industries, particularly from thermal thermal power plants with fossil fuels. According to scientists, CO₂ emissions from thermal power plants account for nearly 50% of the global greenhouse effect, meaning that if we recover all CO₂ from thermal power plants, Looks like it will be fixed. In industry today, it is unreasonable if using Ethanolamine to recover CO₂, because the amine solution has many disadvantages, which is very expensive, resulting CO₂ is a dirty CO₂. The ethanolamine along with the adjuvants in the tower to form heat-resistant salts or to react with oxygen or other industrial dusts in the exhaust gas to consume a lot of solvent. Collection of CO₂ for anti-global climate change has not yet achieved the desired effect, according to us for four reasons:

1. This is the main reason, because we do not have the suitable industrial equipment and technologies.
2. Because we have not fully treated the industrial dust contained in the exhaust before the separation of CO₂.
3. Because we use amine solvents to collect CO₂.
4. The process of separating CO₂, preserving CO₂, transporting CO₂ as well as burying it to the bottom of the ocean is too costly and unreasonable.

Keywords: Greenhouse effect; CO₂ capture; Amine solvents fossil fuel; NaHCO₃ crystals; High-pressure metal bottle to containing liquid CO₂

Introduction
Because the effects of heat absorption of greenhouse gases like CO₂, CH₄, N₂O, O₃, fluoride organic compounds, the temperature of the Earth was up, beyond permissible limits, causing disaster for human, if we fail to promptly remedy the greenhouse effect, by treatment of greenhouse gases to a concentration needed to exist in Earth’s atmosphere, the men standing in front of disaster. After nearly 20 years of research, we can assert that the greenhouse effect can be completely overcome. The main reason causing the greenhouse effect is due to industrial emissions containing CO₂, combustion products from thermal power plants, factories producing construction materials, use of fossil fuels such as coal, diesel, natural gas CH₄. Since this plant has caused over 70% of global greenhouse effect. Even the CO₂, causing the greenhouse effect, exit from power plants accounted for 82.3% of CO₂ were emitted from different sources, of which more than 40% escape from the thermal power plants using fossil fuels [1,2], means that is, if we handle the emissions from these industrial plants, the greenhouse effect as has been overcome. In 1930 the technology has been published for collecting CO₂ emissions from industrial exhaust gases by using solvent Mono-Ethanolamine [2]. Nearly half a century ago [3]. Authors have written a textbook to teach students, the separation of Gases such as CO₂, SO₂, NO₂, H₂S from gas mixtures, using chemical methods with M,D,T-Ethanolamine, or soda (Na₂CO₃) solution in water. That is the scientific basis for the separation of those gases above has long been known. Over the past 30 years the research process of separating these gases from the industrial exhaust gas was conducted in a very intense. For the purpose of industrial emissions processing with industrial-scale of the firm BASF in 2010, the authors [4] have conducted tests of industrial-scale separation of CO₂ from industrial emissions. CO₂ absorption tower using Ethanolamine solvent height of 40 m, collected ability CO₂ could yield up to 300 kg/h and CO₂ can be converted to 90%.

They hope in 2015, the emissions from power plant with coal as fuel will be treated appropriately, and followed a planned process emissions from power plants with lignite as fuel. The works of Japanese scientist's research scale R&D technology to separate CO₂ from emissions from power plants using an aqueous solution containing Ethanolamine or original zeolite sorbents are noteworthy [5]. When using the MEA, they were separated by 90% CO₂ with concentration of CO₂ in the emission is from 4-13%V.L 600 Nm³/h scale. The authors used the absorption tower is 12.2m in height, and de-sorption tower 10.6m high; yield is 3tons of CO₂ collected CO₂/day. Norwegian firm conducted the project since 2005 emissions have been treated by post- combustion technology, which uses the MEA absorber [6], will race in 2014 to CO₂ separation to industrial scale, CO₂ collection costs about 25 Euro for 1 Ton CO₂, so the price was lower than 50% compared with current CO₂ collection price. According to the previous studies [7], is approximately 2020 technology to collect and store CO₂ could be commercialized. The method uses a solvent (M,D,T)-Ethanolamine containing water to separate CO₂ from industrial emissions have many drawbacks, and perhaps that is why more than 80 years, the man is no have the industrial solution feasible for the disposal of industrial waste gas emitted from the large power plant scale. In our opinion, the following are the disadvantages of ethylamine solvents, if it is using to remove carbon dioxide from industrial emissions:

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Because we cannot handle nearly 33-70% have warned that prices will be higher to levels no to bear, not only will expand out, and will be much larger than the surface of that factory. We must be used for emission sources with a Maxima capacity of approximately 500 m^3. In many technologies from the large thermal power plants using fossil fuels? According to Sam and Bioletti [18], we take the average dust content of 13 g/m^3, then we will see a tremendous amount of dust is 44.2 tons/h, 382,000 tons/year, escape to the atmosphere, if we cannot recover it. We not only lost a valuable product, the crushed material was very smooth, but also for environmental pollution, serious effects to human health. Such, only no-waste technologies will be satisfaction of us. But unfortunately, up to now, from the research and application technologies are escape many waste.

Second reason-disadvantage: Because we cannot handle nearly thoroughly industrial dust in industrial emissions before CO$_2$ separation. Currently in all technologies announced for handling industrial gases, they are not set requirements thoroughly treated industrial dust in the exhaust stream, because people cannot do that with industrial equipment today, special handling coal dust escaping from the coal furnace, this dust would make solvent, used to separate CO$_2$, is MDT Ethanolamine deterioration.

Third reason-disadvantage: Because we use solvent M,D,T-Ethanolamine for CO$_2$ separation from industrial emissions. Apart from the above solvent and one other cheap chemical compound with the implementation of CO$_2$ separation, which is soda ash (Na$_2$CO$_3$). Soda ash when dissolved in water can react with CO$_2$ to give us NaHCO$_3$, which has poor solubility, so it is easily separated from the solution under NaHCO$_3$ crystals, these crystals are easily broken destroyed at temperatures above 70°C for soda and food clean CO$_2$. This reaction is also known to people over 70 years [3]. CO$_2$ is a weak acid, soda is a weak base. CO$_2$ concentration in the emissions is not high; usually less than 15% VL, so the CO$_2$ reacts with the Na$_2$CO$_3$ will occur with very little performance, if without special measures. So, want to exercise with high performance response, we must have special solutions.

The fourth reason-disadvantage: The CO$_2$ separation, storage and transport as well as storing it to the deep ocean are too costly and unreasonable. According to Sam and Bioletti [18], the total cost to process 1ton of CO$_2$, including the cost of separating CO$_2$ from industrial emissions as high-pressure liquid CO$_2$ costs to CO$_2$ liquid high pressure pump through pipelines across the sea to where funeral CO$_2$ storage, pumping costs liquid CO$_2$ to the deep ocean is: A total of 40.7 to 72 USD/TCO$_2$. Partial separation of CO$_2$ from the exhaust gas in a clean state (no liquid) have accounted for over 70% of the total cost.

Conclusion

We do not currently implement effective global climate change mitigation for four reasons and the following four disadvantages:

1. We do not have the suitable equipment and technologies.
2. Because we have not fully treated the industrial dust in the industrial exhaust gas stream before CO$_2$ extraction.
3. Because we use amine solvents to collect CO$_2$.
4. Because the process of collecting, preserving, transporting and burying CO$_2$ to the ocean floor is too costly and unreasonable.

References


