C817550 : MAJOR CHEMICAL ENGINEERING
KEY WORD: ELECTRON ATTACHMENT / AFTER BURNER / TREATMENT SYSTEM / COST EVALUATION

NOPPADOL ANUJAREEARPA : ENGINEERING DESIGN AND COST EVALUATION OF THE TREATMENT SYSTEM FOR GAS EMISSION FROM A CREMATORY. THESIS ADVISOR: PROF. WIWUT TANTHAPANICHAKOON, Ph.D. ;THESIS CO-ADVISOR MISS PORNCHAN KATECHULASRIROJ, 206 PP. ISBN 974-331-608-6

Engineering design and cost evaluation of treatment system for gas emission from a crematory is to be designed 2 kinds of different gas treatment system and evaluated total cost of each system and compared total cost between each other by using Net present value as the judgement of selection system as the criteria. The former treatment system is called Electron Attachment system and the latter system is called After Burning System.

The concentration of malodorous gasses and gas pollutants are based on Japanese observation data. The capacity of gas to be treated is calculated from the air consumption of all type of fuels inside a crematory furnace which relating to the variation of rate of combustion, temperature against the operating time. The configuration of the former system consists of Direct contact gas cooler, Water circulation system, Electron attachment reactor and Blower. The latter system consists of Cyclone, LPG fuel gas Thermal Oxidizer and Blower.

Basis of cost evaluation are 20 years project lifetime, 8% the average project opportunity cost of capital, 40 Baht/Dollar currency exchange rate and 10% facility tax rate. Capital cost, annual cash flow and NPV of the former system is 4,006,344 , 201,919 and –2,023,894 Baht, respectively and 4,725,850 , 98,371 and –3,760,039 Baht for the other system. Because the former system has higher NPV so it has the possibility to be selected as the applied gas treatment system. However this system should be studied in more detail i.e. Structure of system, improving destruction efficiency. So it will have cost reduction and become more realistic system to be applied.

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สาขาวิชา วิศวกรรมเคมี ลายมือชื่ออาจารย์ที่ปรึกษา .....

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