

DIFFERENT DEPENDING ON THE TYPE OF INSULATION MATERIALS AND FUELS RESEARCH ON OPTIMAL INSULATION THICKNESS AND FLUE GAS EMISSIONS

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DIFFERENT DEPENDING ON THE TYPE OF INSULATION MATERIALS AND FUELS RESEARCH ON OPTIMAL INSULATION THICKNESS AND FLUE GAS EMISSIONS

Heat insulation is the one of the most important energy saving method for heating and cooling applications. In this study, by the think of using three different kinds of insulation materials (EPS, Rock Wool, and XPS), optimum insulation thicknesses, energy savings, and payback times calculated according to degree-hour method for externally insulated cellular concrete exterior wall in sixteen different cities which are chosen from first and second heat regions of Turkey. The effect of insulation thickness on waste gas emissions is also investigated in great detail. According to heating oriented study results, the city of Diyarbakır has the highest optimum insulation thickness. In the case of using XPS insulation material, optimum insulation thickness in Diyarbakır is 0.057m mean while the value is 0.026m in the city of Mersin in heating applications. Comparing payback times, on the other hand, we found the values of 3,54 years and 5,38 years for Diyarbakır and Mersin respectively in heating applications.

Keywords: heating degree hour, optimal insulation thickness, flue gas emissions

Key Policies for CO₂ Reduction and its Evaluation

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ABSTRACT

Key Policies for CO₂ Reduction and its Evaluation

Fossil fuels has the main role for the most important environmental problem as climate change. Carbon dioxide (CO₂) which is the primary effects in greenhouse gases, mostly emitted result from burning of the fossil fuels. In this study, describe the key policies for CO₂ reduction and subjects evaluated related with scenarios as namely; increasing the using of nuclear energy and renewable energy, efficiency in electric production and consumption sectors and also consumption of fossil fuels. With the evaluation of them, it is the most important strategy for all over the world countries without any concession.

Keywords: alternative scenarios, climate change, CO₂, greenhouse effect, sustainability,

Promising method of cleaning noxious emissions into atmosphere by means of a magnetic gas purifier

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ABSTRACT

Promising method of cleaning noxious emissions into atmosphere by means of a magnetic gas purifier

Issues of reducing noxious emissions from marine diesel engines have been considered. Characteristic features of three possible scenarios for bunkering companies' trading policies since 2015 have been analyzed. One of most promising techniques for exhaust gas cleaning from toxic components by means of a smoke scrubber to be used aboard sea-going vessels has been proposed. The smoke scrubber will allow for 90% cleaning of exhaust gases from marine diesel engines.

Keywords: noxious emissions, exhaust gas, toxic components, marine diesel engines, smoke scrubber, MARPOL Convention

A Critical Reading of Environmental Kuznets Curve: CO₂ Emissions in Turkey

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ABSTRACT

A Critical Reading of Environmental Kuznets Curve: CO₂ Emissions in Turkey

Environmental Kuznets Curve (EKC) proposes a non-monotonic relationship between environment and economical level. Referring the original Kuznets curve, environmental Kuznets curve also tries to define another important reduced relationship along with economic development. Therefore it has become an attraction point for the empirical studies giving reference for almost all the areas of the subject of the relationship between economy and environment. An important empirical area of the hypothesis is between CO₂ emission which is a global emission and GDP per capita being the representative of economic development. The present and near future situations of the environmental pressure are evaluated by taking the CO₂ emission as a representative of environmental pressure. Being directly connected to energy, CO₂ emissions are generally evaluated differently than other emissions.

Our study critically analyzes main confusions in the literature and tries to clear meaning of the estimates for Turkey's CO₂ emissions. As for reduced form EKC time series analyses for Turkey, there are a few statistically robust analyses; and a main diversion cause from minor econometric analysis try to be clarified here.

As to physical emissions values, it is not difficult to predict a short term rise for the carbon dioxide emissions level. Particularly, Turkey, as a developing country with lower values that under the turning points of the world panels, is very likely to show further environmental pressure increase in terms of carbon dioxide emission in the short-term.

Keywords: environmental Kuznets curve, EKC, environmental pressure, CO₂ emissions, Turkey. JEL Codes: Q53, Q56, Q57, R11.

Improvements in the performance of trans-critical CO₂ refrigeration cycles

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ABSTRACT

Improvements in the performance of trans-critical CO₂ refrigeration cycles

With growing environmental concerns of global warming and ozone depletion, environmentally benign natural refrigerants have attracted considerable attention. As one of the natural refrigerants, carbon dioxide has many excellent advantages in engineering. In addition to its environmental advantages, CO₂ offers certain attractive thermal characteristics.

In order to improve the trans-critical cycle using CO₂, several modifications are possible: the introduction of the intercooler, the use of the turbine and recovering the work generated, using the ejector in place of the expansion valve, the use of two-stage cycle and the combination of these changes. In this paper, four new two-stage trans-critical CO₂ refrigeration cycles of high performance have been presented. Based on the first law of thermodynamics and optimization method their maximum performance and optimum pressures were determined. The results obtained were also compared to other cycles found in the literature

Keywords: Carbon Dioxide, Trans-Critical Cycles, Comparison, Performance.

A CLOUD MASK ANALYSIS WITH SUNSHINE AND CLEARNESS INDEX: A CASE STUDY FOR MARMARA AND SOUTHEASTERN ANATOLIA REGIONS OF TURKEY

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ABSTRACT

The aim of this paper is to evaluate the satellite derived cloud mask product to determine whether it can be used in radiation modeling studies or not. For this purpose, the cloud mask data set for 2011, obtained from EUMETSAT, was processed and used. On the other hand, the sunshine and clearness index time series have been arranged for the same year, which are computed by taking into account the ground based observations of 9 meteorological stations of Turkey. The simple correlations between the aforementioned time series were investigated. A pronounced relation between the satellite based cloud mask product and the determined indices was observed. However, this relation was not found to be enough for using the cloud mask product in solar radiation modelling studies.

Keywords: cloud mask, sunshine index, clearness index, radiation models