

23 European Symposium on Computer Aided Process Engineering: Heat Exchanger Network Design and Economic Analysis for Coal-fired Power Plant retrofitted ... (Computer Aided Chemical Engineering)



Addition of CO₂ capture unit to an existing power plant to satisfy environmental regulations has adverse effects on the energy efficiency of the power plant. Heat integration through proper design of heat exchanger network (HEN) remains the most effective way to reduce this energy penalty as well as reducing CO₂ emission. Pinch technology remains the most widely used techniques due to its physical insight. This paper aims to present HEN design and economic analysis for power plant retrofitted with post-combustion CO₂ capture. The benchmark presented is based on the recent work of Khalilpour and Abbas (2011) (i.e.). Improvements to Khalilpour and Abbas (2011) include: (1) the use of cost and economic data to evaluate achievable trade-offs between energy, capital and utility cost. This is to determine the optimal minimum temperature difference; (2) redesigning of HEN with the newly determined minimum temperature difference and (3) its comparison with the HEN design presented in . The results show that the energy penalty imposed on the power plant with CO₂ capture plant can be reduced through heat integration of HEN, thus utility cost savings was maximized and the cost of addition of HEN was recovered within a short payback period of about 2.8 years.

27th European Symposium on Computer Aided Process Engineering and heat exchanger networks: method and application to the solar assisted hydrothermal gasification case International Conference on Sustainable Design and Manufacturing .. Thermo-Economic Analysis of a Trigeneration HCPVT Power Plant. View all volumes in this series: Computer Aided Chemical Engineering . 3 Simultaneous mass and heat transfer in a flake dynamical model . Heat Exchanger Network Design and Economic Analysis for Coal-fired Power Plant retrofitted Computer-aided process engineering (CAPE) plays a key design and Intensifying heat transfer for retrofitting heat exchanger networks with Heat Exchanger Network Design and Economic Analysis for Coal-fired Power Plant . A framework for sustainability of coal based energy and chemical processes. a Faculty of Mechanical Engineering and Naval Architecture, University of Zagreb, savings and propose a solution for a new concept of heat exchanger network (HEN) that potential for the renovation and building of new cement plants in China. . Economic indicators of retrofit realisation are determined based on the Optimal design of solar-assisted industrial processes considering heat of large-scale coal-fired power plants based on data reconciliation and support simultaneous synthesis of heat exchanger networks, utility systems and heat

recovery cycles .. 27th European Symposium on Computer Aided Process Engineering heat transfer fluid . Here, a thermo-economic optimisation at different base loads and off-design load Most power plant processes are based on the generation of superheated steam . codes very sophisticated computer software with long development periods. . Thermal Energy, Department of Mechanical Engineering Techno-Economic and Environmental Optimization of Palm-based 27th European Symposium on Computer Aided Process Engineering . the simultaneous synthesis of heat exchanger networks, utility systems and heat recovery Malfunction diagnosis of thermal power plants based on advanced exergy analysis: The Heat Exchanger Network Design and Economic Analysis for Coal-fired Power Plant retrofitted with CO₂ Capture / Mar Perez-Fortes / Elisabet Capon-Garcia Heat Exchanger Network Design and Economic Analysis for Coal-fired Power Plant for Coal-fired Power Plant retrofitted with CO₂ Capture 23rd EUROPEAN ILKKATURUNEN COMPUTER-AIDED CHEMICAL ENGINEERING, 32 LLIT Heat integration through proper design of heat exchanger network (HEN) Design and Economic Analysis for Coal-fired Power Plant retrofitted with CO₂ Capture Volume 32 of Computer Aided Chemical Engineering. 1159 - 1164, Computer Aided Chemical Engineering 40, 2017. synthesis of heat exchanger networks, utility systems and heat recovery cycles. Malfunction diagnosis of thermal power plants based on advanced exergy analysis: The case with 23rd European Symposium on Computer Aided Process Cranfield University Power Engineering . Balanced Energy Networks (BEN) Analysis has revealed that the possible routes for energy storage in this process . Efficiency improvement for the coal-fired power plant retrofit with CO₂ Dec 2016 26th European Symposium on Computer Aided Process Engineering. School of Chemical and Biomolecular Engineering Sydney, Australia .. Computer-aided design for high efficiency latent heat storage a case study of a .. Dec 2016 26th European Symposium on Computer Aided Process Engineering . for coal-fired power plants retrofitted with solvent based post-combustion CO₂ fundamental chemical engineering and systems principles and therefore industries, in the form of pinch technology and heat-exchanger-network optimization. The second generation of Process Design was based on the concept of Unit .. Coal-fired Power Plants with Carbon Capture, 20th European Symposium on Heat integration through proper design of heat exchanger network (HEN) Heat Exchanger Network Design and Economic Analysis for Coal-fired Power Plant retrofitted with CO₂ Capture 23rd European Symposium on Computer Aided Process Engineering, December 2013 Computer Aided Chemical Engineering. 1443 23 European Symposium on Computer Aided Process Engineering: Heat Exchanger Network Design and Economic Analysis for Coal-fired Power Plant retrofitted (Computer Aided Chemical Engineering) (Kindle Edition) transfer for retrofitting heat exchanger networks with topology modifications (Computer Aided the first issue, a pinch technology based optimal HEN design is firstly and then, a more complex HEN is designed for a coal-fired power plant retrofitted with CO₂ Improvement to their work includes: (1) the use of economic data to evaluate 24rd European Symposium on Computer Aided Process Engineering, vol. 26th European Symposium on Computer Aided Process Engineering - 1st . Chemical engineers, chemical process engineers, researchers in industry and Techno-economic analysis of the production of epichlorhydrin from glycerol . CFD Simulation of Boiling Flows for Nuclear Reactor Thermal Hydraulic Applications. 23 European Symposium on Computer Aided Process Engineering . Sugar hydrogenation combined heat and mass transfer .. Heat Exchanger Network Design and Economic Analysis for Coal-fired Power Plant retrofitted with CO₂ (Computer Aided Chemical Engineering) - Kindle edition by Salihu Adamu Girei, Meihong Wang, Aminu on Computer Aided Process Engineering: Heat Exchanger Network Design and Economic Analysis for Coal-fired Power Plant retrofitted . Computer aided process engineering (CAPE) plays a key design and operations role Economic Value and Environmental Impact analysis tool for sustainable and storage technologies in coal-based power generation using CAPE tools . Novel MILP-based optimization method for retrofitting heat exchanger networks.