

Phe Plate Heat Exchanger Services And Gaskets Plough

Process Heat Exchangers 1988

Learning from Experiences with Compact Heat Exchangers David Reay 1999

Plate Heat Exchanger Enhancement Techniques Sasan Zahmatkesh 2025-02-01 Plate Heat Exchanger Enhancement Techniques: in Support of the Energy Transition and a Circular Economy lays out the basics and provides fundamental knowledge on the applications of the plate heat exchanger (PHE) and how it can be optimized to make energy conversion more efficient and improve the economy. This reference introduces relevant studies that explain the heat transfer mechanism of the PHE, its design, and how developing more compact and evolved heat exchangers contributes to a sustainable, cleaner, and more energy-efficient future. Researchers, scientists, engineers, professionals, and students working in nanotechnology, materials science, and sustainability, particularly on reuse and end-of-life materials from renewable sources, will find this volume, written by a global panel of experts, valuable to their work and ensuring their pursuit of the shared goal of clean, affordable energy.

Plate Heat Exchangers for General Refinery Services 2006

Plate Heat Exchangers Tips and Tricks Giuseppe Tommasone 2017-11-12 Plate Heat Exchangers suggestions for design (Fouling, Pressure Drops, Plate material, Gaskets material)

Part 2 -- Brazed Aluminum Plate-fine Heat Exchangers American Petroleum Institute 2006

Heat Exchanger Equipment Field Manual Maurice Stewart 2012-07-23 From upstream to downstream, heat exchangers are utilized in every stage of the petroleum value stream. An integral piece of equipment, heat exchangers are among the most confusing and problematic pieces of equipment in petroleum processing operations. This is especially true for engineers just entering the field or seasoned engineers that must keep up with the latest methods for in-shop and in-service inspection, repair, alteration and re-rating of equipment. The objective of this book is to provide engineers with sufficient information to make better logical choices in designing and operating the system. Heat Exchanger Equipment Field Manual provides an indispensable means for the determination of possible failures and for the recognition of the optimization potential of the respective heat exchanger. - Step-by-step procedure on how to design, perform in-shop and in-field inspections and repairs, perform alterations and re-rate equipment - Select the correct heat transfer equipment for a particular application - Apply heat transfer principles to design, select and specify heat transfer equipment - Evaluate the performance of heat transfer equipment and recommend solutions to problems - Control schemes for typical heat transfer equipment application

Plate Heat Exchangers Bengt Sundén 2007 Plate-and-frame heat exchangers (PHEs) are used in many different processes at a broad range of temperatures and with a variety of substances. Research into PHEs has increased considerably in recent years and this is a compilation of knowledge on the subject.

Containing invited contributions from prominent and active investigators in the area, it should enable graduate students, researchers, and research and development engineers in industry to achieve a better understanding of transport processes. Some guidelines for design and development are also included.

Study of Heat Transfer in Plate Heat Exchanger by Using CFD Simulation Wan Nurmaisarah Wan Hamaruddin 2012 A plate heat exchanger is a type of heat exchanger which uses metal plates to transfer heat between two fluids. The metal plates that commonly used are stainless steel because of its ability to withstand high temperatures, its strength and its corrosion resistance. The basic working principle is very simple though; the channels that formed between the plates and corner ports are arranged so that the two fluid flows through alternate channels. The heat is transferred through the thin plate between the channels, and creating complete counter current flow for highest possible efficiency. No intermixing of the fluid or leakage to the surroundings will occur as gaskets around the edges of the plates seal the unit. The objectives of this study are to study the heat transfer performance of plate heat exchanger for heating diesel with hot water and to observe which configurations and parameters that gives the best results. In addition, the objective is to study and modeling the heat transfer of plate heat exchanger using simulation.

Computational Fluid Dynamic (CFD) is a tool used in this simulation which consists of GAMBIT and FLUENT. Volume meshing in GAMBIT is an important part to be considered before doing simulation in FLUENT as a solver. Parameters that had been used were velocity and temperature of water. The velocity for both diesel and hot water were calculated using mass flow rate of 100L/min, 150 L/min and 200 L/min as a basic. The temperature of hot water varies from 60°C, 70°C and 80°C. Thus, this paper presents the simulation of heat transfer in plate heat exchanger model for parallel and series configurations. It is observed that lower velocity and high temperature of water gives better heat transfer performance. Parallel configuration is selected for the best configuration in this study.

Industrial Heat Exchangers Graham Walker 1982

Plate Heat Exchangers M. F. Edwards 1984

Plate Heat Exchangers for General Refinery Services 2006

Modeling Pressure Drop and Heat Transfer in Plate Heat Exchanger Channels Mahmoud Hamoda 2022 In compact heat exchangers, surface enhancements have been used for augmenting heat transfer due to the growing urgency for energy conservation and reduced environmental impact. Plates with corrugated walls are utilized in plate heat exchangers (PHEs) as they increase the effective heat transfer area, disrupt and reattach the boundary layer, and promote swirl flow resulting in a compact heat exchanger with high heat transfer performance. As a result, their applications have grown considerably to include a wide range of industries and processes, such as food, pharmaceutical, power generation, cooling engine oil, and dairy product processing. Due to heat exchanger size constraints, a compact heat exchanger's flow passages are often short in the automobile industry, especially for cooling engine oil and transmission oil. Hence, the heat exchanger is likely working with developing flow characteristics that have higher heat transfer and pressure drop compared to developed flow. A review of the open literature reveals a gap in the knowledge regarding the influence of the channel length on the thermal-hydraulic performance of PHE, which needs additional research. Also, no general models or correlations have been developed for predicting heat transfer and pressure drop in the entrance region of PHEs. Therefore, this thesis aims to experimentally investigate the effect of the channel length on the thermal-hydraulic performance of PHEs and to develop models for use in predicting pressure drop and heat transfer of PHEs, including the entrance region. An experimental facility is constructed to perform a series of single-phase flow tests on pressure drop and heat transfer of chevron PHE with two different channel lengths, 20.3 cm and 10.1 cm, and three different chevron angles, 30°, 45°, and 60°. Mineral oil and water are used as the working fluids to cover laminar and turbulent flow regions. The results show that plates with a higher chevron angle experience higher pressure drop and heat transfer, which is consistent with the literature. Furthermore, the results of the effect of channel length on the Nusselt number of a PHE are very interesting as they demonstrate a significant impact of channel length on heat transfer performance of PHEs. The Nusselt number for short channels is considerably higher than for longer channels, indicating that thermal entrance effects are present. In addition, the Fanning friction factor results show that it is independent of the channel length at very low Reynolds numbers, while it is greatly impacted by the length of the channel at higher Reynolds numbers. The significance of these findings is that PHE channel length is an important factor that needs to be considered; however, it is often neglected due to assuming fully developed flow. This is important when designing a PHE and/or developing general models or correlations to predict the thermal and hydraulic performance of the PHE to cover a wide range of the Reynolds numbers. It is especially significant for applications where the length of the heat exchanger's flow passage is constrained. Finally, models for predicting the Fanning friction factor and Colburn factor are developed, which are a function of the plate length, corrugation depth, chevron angle, and Reynolds number. Agreement between the proposed models and the present experimental data is within $\pm 20\%$. These models are also validated against numerical and experimental data from the literature and show good agreement within $\pm 20\%$ in most cases within the range of applicability. Thus, the proposed models may be used for preliminary designs of a chevron PHE.

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