

There other hand, the rise in water

[Business](#), [Industries](#)



There are many effects of heat transfer issues to our world. One of it include the rising of demand for water usage during sweltering climate. According to Christopher, in a heat waves, water is an extremely regular used to cool down other metal structures susceptible to heat failure such as bridge. This causes serious shortages of water supply in many affected areas. This additionally can add to flame restraint issues for both urban and rural fire departments.

On the other hand, the rise in water temperature during heat waves will cause the degradation of water quality and a lot of bad effects for fish and aquatic populations It can likewise prompt the death or lop-sidedness of numerous different organisms in the lake, river and sea ecosystem. High temperatures because of high heat discharged are also additionally contributed to unlimited algae growth, causing fish death in rivers and lakes. Thus, the extremely heat released from industry area will contribute to water pollution.

Besides, according to Dan, the continuous of raising of heat also support to the more usage of energy consumption. This because human will use more energy for cooling purpose to withstand hot weather. Hence, the combustion of fossil fuels will become more frequent due to the high demands and more heat will be generated to the environment.

Heat exchanger is one of the common heat transfer application used in industry. Sadik (2002) stated that heat exchanger is an efficient and productive gadget device constructed for the efficacious heat transfer between two fluids with various temperatures. The material which are often

used to isolate the fluid is a solid wall which must be a strong divider with function to prevent mixing and in direct contact between two fluids.

Heat exchangers are very wide used in biochemical processing industries, food processing industry, pharmaceuticals aspect, dairy industries, chemical plants and also petroleum plants industry. The use of heat exchangers in bioprocess industry is popular which is from high temperature pasteurization to low temperature which is freezing. Based on Padmakshi (2013), got some type of heat exchangers which include shell and tube heat exchangers, plate heat exchangers, plate & shell heat exchangers, plate fin heat exchangers, dynamic scraped surface heat exchangers, phase change heat exchangers and double pipe heat exchangers. In fact, P. Raskovic (2010) mentioned that the basic principle of heat exchanger is only involved the heat transfer between two fluids with different temperature. Both two fluids are brought in close contact with each other however there are separated from mixing by a physical obstruction which like solid wall. The temperature of the both two fluids will soon reach to an equilibrium temperature through the heat transfer.

The energy from each fluid is exchanged from the hot to cool media and no heat generate which mean no extra heat is added or removed. The heat exchangers must be designed and build to suit for all the cases of heat exchange and the performance also need to be the best suited for all conditions due to the not constant of heat in the heat exchange process and the not constant of the heat amount of the fluids. Furthermore, the design

also need to be like the heat exchange is at a specific rate needed by the condition of the process.

Originally, heat exchangers are created and designed to be additional oversized for the cases of fouling occur. The surface of heat exchanger is also needed to be additional large for sufficiently substantial to carry out operations. For example, Heat exchangers can be used in food industry as a process of cooling down various products. Kravanja (2012). Products such as hazelnut pastes and various types of food pastes also required to be cooled down first or heated up before proceeding to the further process. The type of Heat Exchanger used is a Scraped Surface Heat Exchanger. The Scraped Surface Heat exchanger is designed and created for processing different high viscosity materials for example food and heat exchanging a variety of heat sensitive products like fruit pulps.

Fouling of heat exchangers in industries is a long term operational problem that compromises energy recovery and environmental welfare. According to H. Muller (2009), fouling in flow channels, tubes, or other parts in processing equipment may create a lot of major operating problems such as loss of heat transfer, under-deposit corrosion, increased pressure loss, and also flow maldistribution. These problems may contribute many negative impacts on cost, safety, health, and environmental aspects.

Meanwhile for environment aspects, fouling of heat exchangers will cause the increased of safety hazards released during operation and cleaning, increased in the consumption of electricity, water, fossil fuels, and other resources that are needed for cleaning, increased environmental hazards

and emissions. The environmental issues related to the released of harmful chemical fouling inhibitors, method of disposal of chemical wastes, CO₂ emissions and land or water pollution cause by operations of heat exchanger also have been pointed out. Routbort et al. (2009) stated that used nano? uids for industrial cooling could result in good energy savings and resulting emissions reductions. The replacement of cooling and heating water with nano? uids has the more potential to conserve energy.

Furthermore, using nano? uids as agent in closed-loop cooling cycles could also save more energy than using water as coolant. By this way, the consumption of energy can be decrease efficiently, and less natural sources will be used to generate energy. The replacement of nanofluid also able to reduce the emissions of carbon dioxide (CO₂), nitrogen oxides, and sulphur dioxide (SO₂) from industry area. This can help to save environment from the released of harmful gases and greenhouse gasses. References1.

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