

# Heat Transfer Augmentation of Ethylene Glycol: Water Nanofluids and Applications – A Review

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## ABSTRACT

This paper introduces the historical background about the development of water based, ethylene glycol (EG) based and EG:water mixture nanofluids for the past 20 years. The primary consideration is to review the salient of research work related to EG:water mixture nanofluids and their applications. Nowadays, the fundamental studies of nanofluids are increasing rapidly for engineering applications. The determination of the forced convection heat transfer and pressure drop was reviewed for nanofluid flow in a tube. The experimental and numerical heat transfers of nanofluids were presented. A review of other relevant research studies is also provided. Substantial heat transfer literature has been studied on water based nanofluids used in the fundamental study for engineering applications. However, there are limited studies that use EG:water mixture nanofluids in evaluation of forced convection heat transfer. A number of research studies have been performed to investigate the transport properties of EG:water mixture nanofluids either in experimental or numerical approach. As the performance of EG:water mixture nanofluids could be verified through experimental studies, researchers have conducted the experimental works using several types of potential nanofluids. As a result, nanofluids have been used in certain engineering applications such as in automotive, transportation, cooling of electronics components, solar, and nuclear reactor coolant.

**KEYWORDS:** Heat transfer; Nanofluids; Ethylene glycol:water mixture; Heat transfer coefficient

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