

열교환장치의 냉각수 계통에서 세라믹 볼의 파울링 저감효과

성순경[†](경원전문대) · 서상호* · 최진용** (숭실대)**Fouling Mitigation Effects of Ceramic Balls in Cooling Water System of Heat Exchanger**

Sun-Kyung Sung, Sang-Ho Suh, Jin-Yong Choi

Key Words: Fouling Mitigation(파울링 저감), Cooling Water(냉각수), Heat Exchanger(열교환기), Ceramic Ball(세라믹볼).**Abstract :** The objective of this study was to investigate the effects of fouling mitigation for ceramic ball in cooling water system experimentally. The devices filled ceramic balls were connected with the bypass line of the laboratory heat exchanging system. Cooling water in the heat exchanging system was artificial water. To visualize the formation of fouling on the heat transfer surface a number of images were obtained using a CCD camera with real-time microscopy. Fouling resistances and overall heat transfer coefficients were measured in order to analyze fouling mitigation effects. It was found that the ceramic ball devices for artificial water reduced the formation of fouling compared to the no-mitigation devices.

마이크로채널을 가진 소형열교환기의 성능실험

홍용주[†](KIMM) · 고득용*(KIMM)**Performance Test of Miniature Heat Exchangers with Microchannels**

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Key Words: Heat Exchanger(열교환기), Microchannel(마이크로채널), Pressure Drop(압력강하), Effectiveness(유효도)**Abstract :** Etched microchannel heat exchanger, a subfield within MEMS, has high heat flux capability. This capability makes microchannels well-suited for a wide variety of application of cooling and chemical reaction. In this study, counter flow type miniature heat exchangers, which have flat metal plates with chemically etched microchannels, were manufactured by brazing method. Four type of the heat exchangers, which have straight microchannels, wavy microchannels, pin-fin channels and serpentine microchannels, were investigated to compare their thermal and hydraulic performance. Gas to gas heat exchange experiments were performed to measure pressure drop and effectiveness of the heat exchangers at given gas flow rates and temperature difference.