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Polymer Spiral Film Gas-Liquid Heat Exchanger for Waste Heat Recovery in Exhaust Gases

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Abstract : Spiral heat exchangers are known as excellent heat exchanger because of far compact and high heat transfer efficiency. An innovative spiral heat exchanger based on polymer materials is designed for waste heat recovery process. Such a design based on polymer film technology provides better corrosion and chemical resistance compared to conventional metal heat exchangers. Due to the smooth surface of polymer film fouling is reduced. A new arrangement for flow of hot flue gas and cold fluid is employed for design, flue gas flows in axial path while the cold fluid flows in a spiral path. Heat load recovery achieved with the presented heat exchanger is in the range of 1.5 kW thermic but potential heat recovery about 3.5kW might be achievable. To measure the performance of the spiral tube heat exchanger, its model is suitably designed and fabricated so as to perform experimental tests. The paper gives analysis of spiral tube heat exchanger.

Keywords : spiral heat exchanger, polymer based materials, fouling factor, heat load
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