

**ABSTRACT:** The purpose of this study is to know the effects of mass flow rate, inlet temperature and type of flow against overall heat transfer coefficient (U). Heat Exchanger used in this study was plate and frame type of CARBAMATE CONDENSER. Mass flow rate of hot fluid was varied into 0.276 and 0.3 kg/s; mass flow rate of cold fluid was varied into 0.276 and 0.22 kg/s; inlet temperature of hot fluid was varied into 142,4°C; type of flow was varied into counter current. The results showed that mass flow rate of hot and cold fluid influenced overall heat transfer coefficient. Also, the higher inlet temperature, the bigger overall heat transfer coefficient obtained. In this study, the biggest of U value was obtained in variable of inlet temperature 187,6°C, mass flow rate of cold fluid 0,276 kg/s, mass flow rate of hot fluid 0,3 kg/s, which were 140.6532 W/m<sup>2</sup>°C using type of counter-current flow and 135.4576 W/m<sup>2</sup>°C using type of co-current flow. Type of counter-current flow gave more satisfactory result of U value than type of co-current.

**Keywords:** plate and frame, heat transfer, heat exchanger, overall heat transfer coefficient.