

## عنوان مقاله:

An investigation on convective boiling heat transfer of R1234yf inside alternating flattened tubes

## محل انتشار:

سی و یکمین همایش سالانه بین المللی مهندسی مکانیک ایران و نهمین همایش صنعت نیروگاهی ایران (سال: 1402)

تعداد صفحات اصل مقاله: 5

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## خلاصه مقاله:

Alternating flattened tubes, which are made of plain and flattened sections at each segment, improve two-phase heat transfer by increasing the heat transfer surface, creating vorticities, and mixing the flow. The present study investigates the effect of vapor quality and mass velocity on the heat transfer coefficient in alternating flattened tubes. The test section consists of three different alternating tubes with an effective length of 70 cm and an internal diameter of 8.2 mm. The flattening ratio, the number of segments, and segment length are the geometrical parameters that differ in test tubes. In this research, R1234yf refrigerant has been used, which is one of the new refrigerants with a global warming potential of 4 and is a very suitable alternative to refrigerants such as R1234yf. A number of 150 distinct experiments were performed in the range of vapor qualities of 0.09 to 0.91 and mass velocities of 110, 210, and 300 kg/m<sup>2</sup>s. The results show that the mass velocity and vapor quality always directly impact the heat transfer coefficient. It is also observed that the use of alternating flattened tubes increases the heat transfer coefficient by up to 254% compared with simple round tubes.

## کلمات کلیدی:

Alternating flattened tubes, Experimental study, R1234yf, Heat transfer coefficient, Flow boiling

## لینک ثابت مقاله در پایگاه سیویلیکا:

<https://civilica.com/doc/1668588>



