Penurunan tekanan dan perpindahan kalor pada aliran dua fase dengan r 22 dan r 290 dalam pipa berdiameter 7 6 mm = Pressure drop and heat transfer in two phase flow with r 22 and r 290 in the pipeline diameter 7 6 mm

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Abstrak

[ABSTRAK
Saat ini penggunaan refrigran yang ramah lingkungan menjadi kebutuhan manusia. Penelitian tentang refrigran pengganti, salah satunya R-290 menjadi kebutuhan untuk mengetahui karakteristik didih alir. Penelitian penurunan tekanan, dan pertukaran kalor R-290 diharapkan dapat menggantikan posisi R-22 sebagai refrigran alami. Dalam percobaan aliran didih R-290 dan R-22 sebagai pembanding dilakukan dalam pipa konvensional berdiameter 7,6 mm. Variasi fluks kalor dari 5,9 kW/m2 sampai 25,04 kW/m2, fluks massa dari 282 kg/m2.s sampai 630 kg/m2.s, dan temperature saturasi dari -0,42 oC sampai 11,97 oC untuk R-22, sedangkan variasi 9,89 kW/m2 sampai 25,04 kW/m2, fluks massa dari 185 kg/m2.s sampai 445 kg/m2.s dan temperature saturasi dari 3,73 oC sampai 9,56 oC untuk R-290. Hasil yang diperoleh adalah penurunan tekanan dipengaruhi oleh fluks massa, fluks kalor dan temperature saturasi, dimana R-22 mempunyai penurunan tekanan lebih rendah dari R-290. Sedangkan untuk perpindahan kalor dipengaruhi oleh fluks kalor dan temperature saturasi, sedangkan fluks massa tidak menunjukkan perubahan nilai perpindahan kalor baik untuk R-22 dan R-290. R-290 mempunyai nilai perpindahan kalor lebih besar dari R-22. Persamaan prediksi paling baik untuk penurunan tekanan R-22 oleh Mishima-Habiki (1996) , sedangkan R-290 oleh Homogenous (1960). Persamaan prediksi paling baik untuk perpindahan kalor R-22 oleh Shah (1982), sedangkan R-290 oleh Kwang II Choi (2009) .;
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ABSTRACT
To day the use of environmentally friendly refrigran into human needs. Research on refrigran substitutes, one of which R-290 being the need to know the characteristics of flow boiling. Study pressure drop and heat exchange R-290 is expected to replace the R-22 as a natural refrigran. In the experiment the flow boiling of R-290 and R-22 as the comparison is done in a conventional pipe diameter of 7.6 mm. The variation of the heat flux of 5.9 kW/m2 to 25.04 kW/m2, mass fluxes from 282 to 630 kg/m2.s kg/m2.s, and the saturation temperature of -0.42 ° C to 11.97 ° C to R-22, while the variation of 9.89 kW/m2 to 25.04 kW/m2, mass fluxes from 185 to 445 kg/m2.s kg/m2.s and saturation temperature of 3.73 ° C to 9.56 ° C to R-290. The result is a pressure drop is influenced by the mass

flux, heat flux and saturation temperature, where the R-22 has a lower pressure drop than R-290. As for the heat transfer is affected by the heat flux and saturation temperature, while the mass flux showed no change in the value of a good heat transfer for R-22 and R-290. R-290 has a value greater heat transfer than R-22. The best prediction equation for the pressure drop of R-22 by Mishima-Habiki (1996), while the R-290 by homogenous (1960). The best prediction equation for the heat transfer of R-22 by Shah (1982), while the R-290 by Kwang II Choi (2009).;To day the use of environmentally friendly refrigran into human needs. Research on refrigran substitutes, one of which R-290 being the need to know the characteristics of flow boiling. Study pressure drop and heat exchange R-290 is expected to replace the R-22 as a natural refrigran. In the experiment the flow boiling of R-290 and R-22 as the comparison is done in a conventional pipe diameter of 7.6 mm. The variation of the heat flux of 5.9 kW/m2 to 25.04 kW/m2, mass fluxes from 282 to 630 kg/m2.s kg/m2.s, and the saturation temperature of -0.42 ° C to 11.97 ° C to R-22, while the variation of 9.89 kW/m2 to 25.04 kW/m2, mass fluxes from 185 to 445 kg/m2.s kg/m2.s and saturation temperature of 3.73 ° C to 9.56 ° C to R-290. The result is a pressure drop is influenced by the mass flux, heat flux and saturation temperature, where the R-22 has a lower pressure drop than R-290. As for the heat transfer is affected by the heat flux and saturation temperature, while the mass flux showed no change in the value of a good heat transfer for R-22 and R-290. R-290 has a value greater heat transfer than R-22. The best prediction equation for the pressure drop of R-22 by Mishima-Habiki (1996), while the R-290 by homogenous (1960). The best prediction equation for the heat transfer of R-22 by Shah (1982), while the R-290 by Kwang II Choi (2009)., To day the use of environmentally friendly refrigran into human needs. Research on refrigran substitutes, one of which R-290 being the need to know the characteristics of flow boiling. Study pressure drop and heat exchange R-290 is expected to replace the R-22 as a natural refrigran. In the experiment the flow boiling of R-290 and R-22 as the comparison is done in a conventional pipe diameter of 7.6 mm. The variation of the heat flux of 5.9 kW/m2 to 25.04 kW/m2, mass fluxes from 282 to 630 kg/m2.s kg/m2.s, and the saturation temperature of -0.42 ° C to 11.97 ° C to R-22, while the variation of 9.89 kW/m2 to 25.04 kW/m2, mass fluxes from 185 to 445 kg/m2.s kg/m2.s and saturation temperature of 3.73 ° C to 9.56 ° C to R-290. The result is a pressure drop is influenced by the mass flux, heat flux and saturation temperature, where the R-22 has a lower pressure drop than R-290. As for the heat transfer is affected by the heat flux and saturation temperature, while the mass flux showed no change in the value of a good heat transfer for R-22 and R-290. R-290 has a value greater heat transfer than R-22. The best prediction equation for the pressure drop of R-22 by Mishima-Habiki (1996), while the R-290 by homogenous (1960). The best prediction equation for the heat transfer of R-22 by Shah (1982), while the R-290 by Kwang II Choi (2009).]