

Comparison of the results provided by versions 2.71 and 2.72 of the refrigeration machine pilot in off-design regime

hlc = 1034.62 Re = 82.69	hlc = 1035 Re = 82.69 AI = 0
hlvc = 1048.18 Re = 86.27	hlvc = 1048 Re = 86.26 Alv = 19.82
hvc = 1062.59 Re = 90.20	hvc = 1063 Re = 90.20 Av = 5.186
hlf = 169.63 Re = 2686.64	hlf = 169.9 Re = 2687 UAI = 0
hlvf = 1163.75 Re = 2686.03	hlvf = 1712 Re = 2687 UAlv = 12.88
hvf = 91.86 Re = 41680.45	hvf = 92.38 Re = 41681 UAv = 0.441

This figure, which presents for the evaporator the values of the exchange coefficients, Reynolds numbers, surfaces and UAs of each sub-exchanger, makes it possible to compare the results provided by the different versions of the refrigerator driver in off-design regime.

For this model, the approximate calculation of the Gungor Winterton correlation initially used led to an error: the NTU was underestimated. This results in a slight reduction in the exchange area in version 2.72, from 28.5 m² to 25.

hlc = 495.40 Re = 36038.25	hlc = 498.3 Re = 36039 AI = 1.536
hlvc = 1019.68 Re = 35415.81	hlvc = 1870 Re = 36647 Alv = 10.45
hvc = 303.62 Re = 259268.65	hvc = 309.2 Re = 259269 Av = 5.382
hlf = 3889.38 Re = 13431.46	hlf = 3890 Re = 13432 UAI = 0.753
hlvf = 3900.06 Re = 13322.47	hlvf = 3901 Re = 13323 UAlv = 18.43
hvf = 3911.78 Re = 13204.63	hvf = 3912 Re = 13205 UAv = 1.648

This figure shows for the condenser the values of the exchange coefficients, Reynolds numbers, surfaces and UAs of each sub-exchanger.

The same applies to the condenser, as Shah's approximate formulation leads to an error.

The condenser area is 17.4 m² for version 2.72 instead of 25 for version 2.71.