

3-b-6 River

Is it possible to have a pressure of $P = 5 \text{ kPa}$ in a condenser that is placed near a river and cooled by the water of the river that has a temperature of $T = 10^\circ\text{C}$? And in a condenser that is placed in the dessert and cooled with outside air of $T = 35^\circ\text{C}$?

Answer: Only for the one near the river

Only for the one near the river, because the saturation temperature of steam at 5 kPa is 32.87°C , which is much higher than the temperature of the cooling water, but lower than the temperature of the air in the desert. So, the condenser cannot reject heat to the environment in the dessert.