Energy-Free Power Saving Device for Air Conditioners

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The global electricity consumption due to cool air conditioning is huge, accounting for about 10% of the total global electricity demand. The self-powered energy saving device for air conditioners designed in this paper recycles the condensation to cool the condenser to improve the energy efficiency of the air conditioner and reduce power consumption. The device uses the airflow generated by the cooling fan of the air conditioner external unit to drive the propeller which then drives a micro air pump to produce compressed gas. Gas and water mixes in a venturi gas-liquid two-phase misting nozzle, which atomizes the condensation water and sprays it to the condenser at the optimal angle. Thereby reducing the temperature of the refrigerant in the condenser (condensation temperature), increase the amount of subcooling without adding additional energy consumption, and reduces the work done by the compressor, so as to achieve energy saving. After theoretical calculations, experimentation and optimization of spray angle, this power saving device can save more than 10% of air conditioning electricity. This power saving device also has the characteristics of easy installation and low cost, and if fully popularized, it can reduce the total global electricity consumption by about 1%. It will make a significant contribution to the world achieving carbon peak and carbon neutrality. It is of great practical significance for achieving the ambitions goals of the Paris Agreement.

Awards Won:

First Award of $5,000

Peggy Scripps Award for Science Communication