Korean researchers develop portable system that harvests water from air

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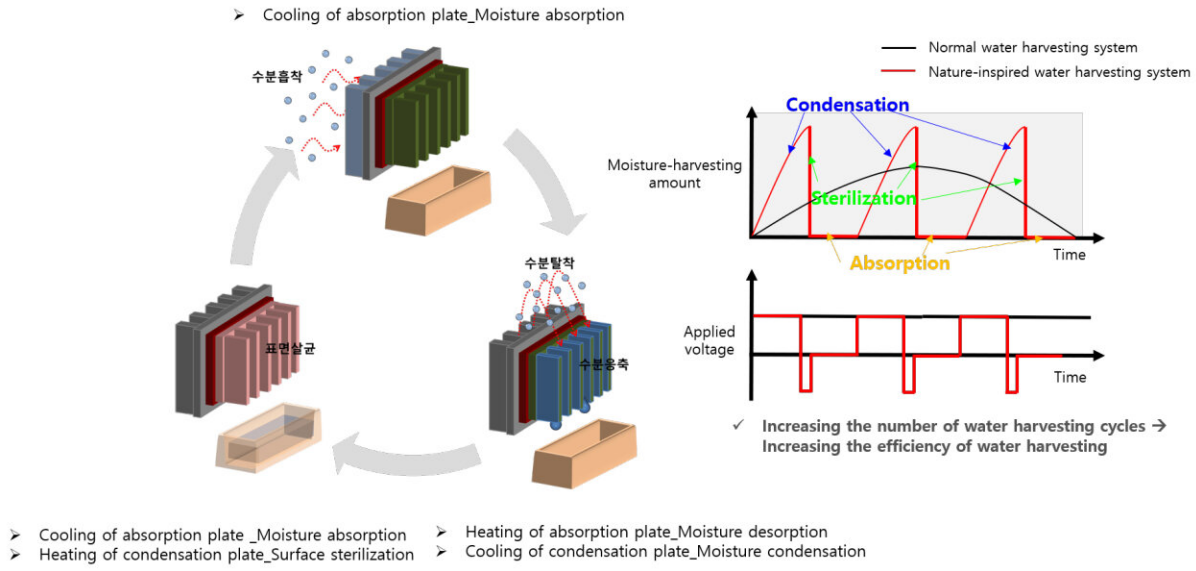

Concept of the core technology for the moisture collection cycle to increase moisture collection and energy efficiency. Credit: Korea Institute of Machinery and Materials (KIMM)

This newly developed moisture collection system is also highly stable, as the bacteria that exist on the surface of cooling fins, where moisture usually condenses, can be sterilized within a minute by instantaneously heating these fins to 80 degrees Celsius. Once collected, the water goes through a purification process via an eco-friendly and decomposable diatom-based filter.

Conventional "moisture collection systems" such as cooling-type dehumidifiers and air conditioners consist of a condenser, an evaporator, and a compressor to prevent oversaturation of moisture, which may raise concerns over noise and weight issues as well as environmental pollution resulting from the use of refrigerants.

Moisture collection systems that utilize thermoelectric modules are being developed to address these concerns, but one of the disadvantages of such systems is that the energy efficiency of moisture collection is much lower compared with compressor-type systems equipped with compressors.

The moisture collection capacity of the "portable moisture collection system" that has been newly developed by KIMM's research team is more than double that of conventional systems featuring thermoelectric modules.

One of the key points is that the heating surface of the thermoelectric module can be used as a moisture absorption plate. Moisture in the air is collected under the absorption mode of the moisture absorption plate, which is then transferred to the condensation plate under the heating mode, thereby enhancing the efficiency of moisture collection.

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