CLAIMS

[Claim 1] A seawater desalination device, comprising:

a windmill,

a crank connected to a rotating shaft of the windmill,

a connecting rod connected to the crank,

an air-liquid compression mechanism connected to the connecting rod, the air-liquid compression mechanism for drawing and compressing air and seawater,

at least one mixing tank connected to the air-liquid compression mechanism for receiving the air and seawater therefrom to produce seawater droplets suspended in the air in the at least one mixing tank,

a desalination chamber conductively connected at its lower end to one of the at least one mixing tank through a connecting pipe for receiving the seawater droplets therefrom,

a heating device arranged in the desalination chamber for heating the seawater droplets,

a condensing device arranged in the desalination chamber above the heating device for condensing the heated seawater droplets into water,

a collecting tank connected to the condensing device for collecting the water,

an air energy heat pump,

a hot pipe in communication with an outlet end of the air energy heat pump, the hot pipe arranged in the heating device, and

a cold pipe in communication with an inlet end of the air energy heat pump, the cold pipe arranged in the condensing device; and the cold pipe is connected to the hot pipe through a throttle valve.

[Claim 2] The seawater desalination device according to [Claim 1], characterized in that: the air-liquid compression mechanism comprises:

an air compression mechanism for drawing in and compressing the air, the air compression mechanism comprising:

an air cylinder having an outlet end arranged in communication with the at least one mixing tank through an air pipe, and

a first piston arranged in the air cylinder and connected to the connecting rod, and

a liquid compression mechanism for drawing in and compressing the seawater, the liquid compression mechanism comprising:

a hydraulic cylinder having an outlet end being in communication with the at least one mixing tank through a water pipe, and

a second piston arranged in the hydraulic cylinder and connected to the connecting rod.

[Claim 3] The seawater desalination device according to [Claim 2], characterized in that: the at least one mixing tank comprises a plurality of mixing tanks, and the plurality of mixing tanks are conductively connected in sequence; and the connecting pipe is conductively connected to one of the plurality of mixing tanks located at the end of the sequence.

[Claim 4] The seawater desalination device according to [Claim 3], characterized in that: the air pipe is conductively connected to the plurality of mixing tanks simultaneously; and the water pipe is conductively connected to the plurality of mixing tanks simultaneously.

[Claim 5] The seawater desalination device according to [Claim 4], characterized in that: two adjacent mixing tanks of the plurality of mixing tanks are connected through a constant pressure valve; and the constant pressure valve is arranged at a joint between the connecting pipe and the mixing tank located at the end of the sequence.

[Claim 6] The seawater desalination device according to [Claim 1], characterized in that: the air energy heat pump further comprises a liquid pump, wherein the liquid pump is configured to drive the air energy heat pump, and the liquid pump is conductively connected to the connecting pipe.

[Claim 7] The seawater desalination device according to [Claim 1], characterized in that: the rotating shaft of the windmill is connected to a generator, and the generator is electrically connected to the air energy heat pump.

[Claim 8] The seawater desalination device according to [Claim 1], characterized in that: multiple atomizing nozzles are provided at one end of the connecting pipe arranged in the desalination chamber.

[Claim 9] An application of the seawater desalination device of any one of [Claims 1-8] in agricultural irrigation.

[Claim 10] An application of the seawater desalination device of any one of [Claims 1-8] in air humidification.