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,

~~a~~ 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 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, ~~and~~

an air energy heat pump,

~~wherein the mixing tank is connected to the desalination chamber through a connecting pipe, and the connecting pipe is conductively connected to lower end of the desalination chamber; the air energy heat pump comprises~~

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, ~~wherein the hot pipe is arranged in the heating device,~~ the cold pipe ~~is~~ 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, ~~wherein the air compression mechanism comprises an air cylinder, and a first piston arranged in the air cylinder, the outlet end of the air cylinder arranged in communication with the mixing tank through an air pipe, the first piston being connected to the connecting rod;~~ the liquid compression mechanism ~~comprises~~ 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~~, the outlet end of the hydraulic cylinder being in communication with the mixing tank through a water pipe, the second piston being~~ and connected to the connecting rod.

[Claim 3] The seawater desalination device according to [Claim 2], characterized in that: ~~there is~~ 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 ~~each~~ 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 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~~s~~ of any one of [Claims 1-8] in agricultural irrigation.

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