Claims:

1. An atmospheric water generator apparatus, which comprises:

a fluid heating device;

a fluid cooling device, wherein said fluid cooling device is a vapor compression refrigerator;

means to enhance water capture from ambient air comprising a water condensing surface thermally connected to said fluid cooling device, said water condensing surface including a plurality of protruding fin-like surfaces protruding from a tube, said water condensing surface comprising a superhydrophobic coating on the water condensing surface, said superhydrophobic coating comprising a superhydrophobic surface having a contact angle greater than 150 degrees, a superhydrophilic coating on the water condensing surface said syperhydrophilic coating comprising a superhydrophilic surface having a contact angle less than 10 degrees, or a combination thereof;

an air-cooled heat rejection device in fluid communication with said fluid heating device; and

an air fan configured to induce airflow across said water condensing surface.

2. The atmospheric water generator apparatus as set forth in claim 1 wherein said air-cooled heat rejection device includes at least one plate.

3. The atmospheric water generator apparatus as set forth in claim 1 wherein said air-cooled heat rejection device includes a plurality of fins.

4. The atmospheric water generator apparatus as set forth in claim 1 wherein said air fan is configured to induce airflow across said heat rejection device.

5. The atmospheric water generator apparatus as set forth in claim 1 wherein cold refrigerant fluid is moved from said vapor compression refrigerator past said water condensing surface, through said fluid heating device, through said heat rejection device, and back to said vapor compression refrigerator.

6. The atmospheric water generator apparatus as set forth in claim 1 wherein said superhydrophobic coating on the water condensing surface comprises nanostructured surfaces of

deposited nanoscale structures.

7. The atmospheric water generator apparatus as set forth in claim 1 wherein said water condensing surface includes at least one plate.