

(12) PATENT APPLICATION PUBLICATION

(21) Application No.201941040473 A

(19) INDIA

(22) Date of filing of Application :06/10/2019

(43) Publication Date : 18/10/2019

(54) Title of the invention : COMBINED RENEWABLE ENERGY BASED HEAT, POWER GENERATION AND COOLING SYSTEM AND A METHOD THEREOF

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(62) Divisional to Application Number	:NA	
Filing Date	:NA	

(57) Abstract :

The present invention related to combined heat, power generation and cooling system with a method of using biogas as hot source for process heat and solar photovoltaic cell as hot source driving organic Rankine cycle. According to the main aspect of the invention, tri-generation system comprises of organic Rankine cycle as power generation cycle. The tri-generation system comprises of waste heat recovery, plurality of heat exchangers, a separator, plurality of turbines and generators, plurality of pumps, mixer, ejector, evaporator, throttle valve wherein, the heating arrangement used in the combined heat and power system is solar concentrating collector and or plurality of bio digester. The present invention relates to a combined power generation, heating and cooling system comprising of bio-digester which supplies process heat and ejector refrigeration system to provide cooling effect thereof extracting heat from ORC turbine.

No. of Pages : 15 No. of Claims : 8