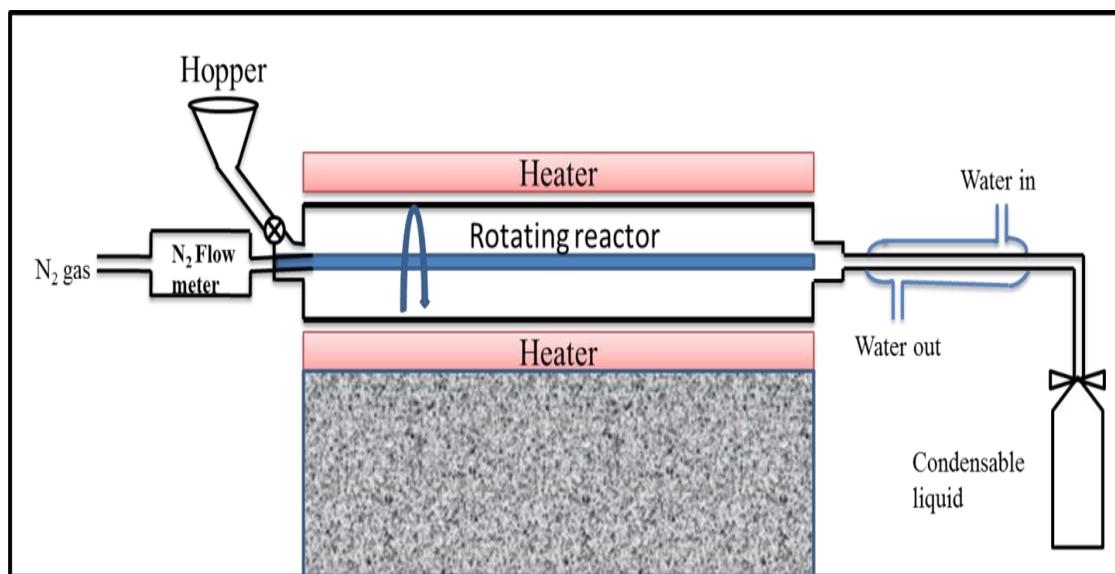




Name of the Technology/knowhow/process: Waste biomass to biocoal by rotating reactor type torrefaction technique

Summary: India is agriculture based country and generates more than 600 million tonne of biomass waste from different crops. The waste crop residue burning in the agriculture field poses lot of environmental, health and economical issues in the various part of India on the other hand it is good renewable source of energy, widely available and carbon-neutral. In this direction, efforts are made to improve properties of waste crop residue via rotating reactor torrefaction. Torrefaction is a thermal process to convert biomass into a coal-like material, which has better fuel characteristics than the original biomass. Torrefied biomass is more brittle, making grinding easier and less energy intensive. The chopped waste crop residue was torrefied at different temperature ranging from 250 to 300°C in the protective environment. It is observed that, gross calorific value increases from 3640 to 4500 Kcal/ kg whereas fixed carbon content increases to 21 to 34 % and density increase from 0.22g/cc to 0.50 g/cc. The volume of torrefied material decreases significantly as compared to raw waste crop residue. The 10 % use of torrefied product with sub bituminous coal in different applications can consume hundred million tonnes of crop residue and as a results reduction in significant amount of green house gases hence earning of carbon credit.





Applications: co-firing of torrefied biomass with coal, combined heat and power generation, standalone combustion, production of bio-based fuels and chemicals, heating blast furnaces and industrial applications

Novelty features: It is simple technology of conversion of waste crop residue in to biocoal by torrefaction technique in the temperature range 200-300°C.

Advantages: It reduce the volume of crop residue significantly, alter the physical and chemical properties of waste biomass, the calorific value is equivalent to that of sub bituminous coal, hydrophobic etc.



Readiness level of the Technology:

Idea	Concept Definition	Proof of Concept	Prototype	Lab Validation	Technology Development	Technology Demonstration	Technology Integrated	Market Launch
					√			

IPR related details: Nil

Year of Introduction: May 2023

Broad Area/Category: Environment

User Industries: Thermal power plants, small scale industry, rice mills, steel industry, etc