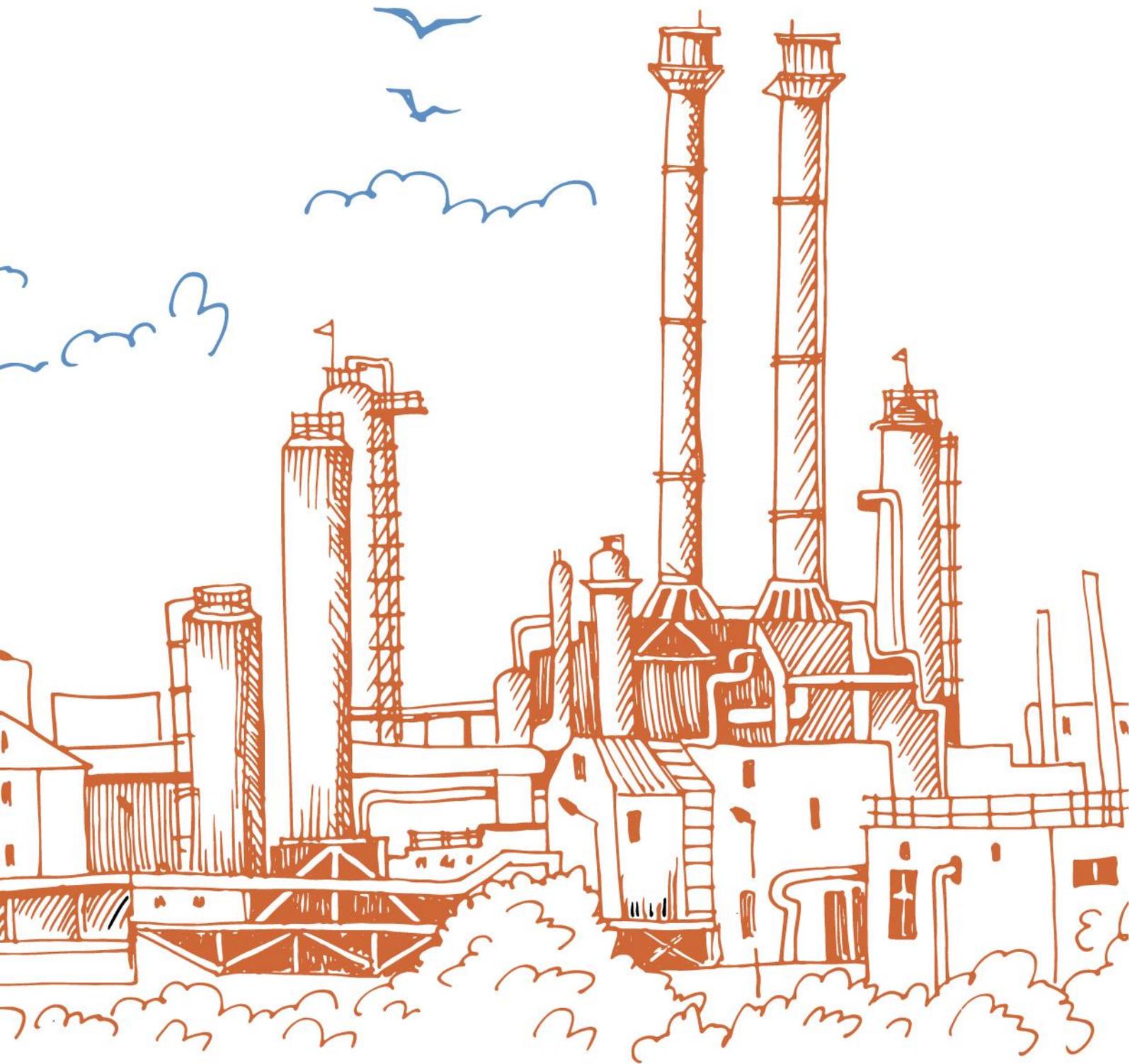


Suggestions on Draft Order on Methodology for Estimation of Electricity Generated from Biomass in Biomass Co-fired Coal-based Thermal Power Plants



Rajasthan Electricity Regulatory Commission (RERC) has invited comments/suggestions on "Draft order on methodology for estimation of electricity generated from biomass in biomass co-fired coal-based thermal power plants".

The present submission is in response to the draft order published on the commission's website. We request the Commission to accept this submission on record.

Moisture Content

In the step 1 of the methodology proposed in the draft, the quantity of biomass is used to compute the Heat input and Electrical energy generated through biomass. This quantity varies depending on the moisture content. Compared to coal, the moisture content of biomass changes substantially due to weathering (deterioration of quantity/quality through contact with water, atmospheric gasses, and biological organisms). The moisture also reduces furnace temperature, increases emissions due to incomplete combustion, creates problems in feeding, handling, and transport of fuel blends (coal + biomass) and decreases the efficiency of ESP systems.

We also request the Commission to include the monitoring of moisture of the biomass while measuring the quantity. We submit that the moisture content of every biomass stock used for feeding/blending must be measured as per IS:1350 (Part-1):2002 and be reported on the website. This will be particularly useful in improving the overall efficiency of power plants for fuel blends.

Gross Calorific Value

We also submit the Gross calorific value (GCV) of biomass used in the methodology must be measured as per IS:1350 (Part-2):2017 and reported based on an "as-fired basis" for every stock used for feeding/blending.

Additional Comments

The Commission in the draft order directed the Rajasthan Renewable Energy Corporation Limited (RREC) to develop the appropriate formats for monitoring/estimation of energy generated from biomass. We request the Commission also to include monitoring the Ash content of biomass for every stock used for feeding/blending as per IS:1350 (Part-4):2000 in its directions to RREC. Ash content leads to slagging and fouling on the furnace walls of the boiler. This problem is very severe with paddy straw biomass since it contains about 20% silica¹. Also, biomass is generally heavily contaminated with soil which adds to the ash content in it.

¹ Nazopatul P. Har, Irzaman, and Irmansyah , "Crystallinity and electrical properties of silicon dioxide (SiO₂) from rice straw", AIP Conference Proceedings 2202, 020028 (2019) <https://doi.org/10.1063/1.5141641>

We further request the Commission direct the RREC to monitor the bulk density of biomass as per IS: 17642:2021 and be reported on the website for every stock used for feeding/blending. The bulk density, together with the net calorific value, determines energy density. It is also an important parameter to estimate volume requirement for storage, transport and feeding.