

ABSTRACT

Provided is a process for cooling and washing a biomass syngas and system thereof. The process is directed to a biomass syngas with a temperature of 1000-1100°C, a dust content of less than 20 g/Nm³, and a tar content of less than 3 g/Nm³. The process includes: 1) sending the biomass syngas to a chilling tower (2), and chilling and solidifying the biomass syngas to form a slag; 2) sending the biomass syngas after being chilled and solidified into the slag to a waste heat boiler to recycle waste heat, and condensing the biomass syngas to form a heavy tar; 3) sending the biomass syngas after passing through the waste heat boiler to a scrubbing-cooling tower (5) for dust extraction and cooling; 4) sending the biomass syngas after dust extraction and cooling in the scrubbing-cooling tower (5) to an electro-precipitator (6) to perform deep dust extraction and tar removal. The system includes the chilling tower (2) connected to a high-temperature pyrolysis biomass gasifier, and the chilling tower (2) is sequentially connected to the waste heat boiler, the scrubbing-cooling tower (5), and the electro-precipitator (6) via syngas pipelines. The present process is fluent, simple in system structure, highly efficient in heat use, and syngas treatment gives good results.