

Solar Coffee Roaster

Vers.-Nr.:

Betrieb: Am Sande

Schlag: Auf der Hobestadt

AGT & DITSL

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Project description

Conventional coffee roasting techniques used by the farming community of developing countries are costly due to rapidly increasing costs of fossil fuels and electricity that needs high initial investment. Moreover, traditional coffee roasting techniques causes deforestation by cutting trees for burning wood as a fuel to provide heat for roasting green coffee beans. During the recent years coffee flowers were erected at different stages due to non-uniform patterns of rainfall that dire need to provide On-form roasting facilities of coffee beans. This research was taken up to provide decentralized solar coffee roasting on form levels by using renewable energy such as solar concentrator. Scheffler reflector having surface area of 8 m² was used to converge the direct normal irradiance (DNI) on a 450 mm diameter roasting cylinder heat exchanger, which transfers the available heat energy to a 10 kg capacity stainless steel roaster cylinder by conduction process. The absorbed heat is then transferred to unroasted coffee beans by conduction while cylinder rotation maintains uniform roasting. Green coffee beans were fed in the roasting cylinder through a feeding hopper and after the roasting process the coffee beans were slide towards discharge chute. Thermal Image camera was used to determine the heat losses from the roasting cylinder.

