3.3.2 Number of research papers per teachers in the Journals notified on UGC website during the year

Title of paper	Name of the author/s	Department of the teacher	Name of journal	Year of publication	ISSN number	Link to the recognition in UGC enlistment of the Journal
A review on substitute piston engine combustion system with the help of homogenous charge compression ignition theory using methyl alcohol and diesel fuel	Pravin Patil, Pankaj Bonde, Hemant Nehete	Mechanical	Journal of Maharaja Sayajirao University of Baroda	2023	0025-0422	https://ugccare.unipune.ac.in/Apps1/User/WebA/ViewDetails?JournalId=101000039&flag=Search
Design analysis of an innovative solar biomass hybrid dryer for drying turmeric	Kishor Mahajan, Tushar Koli, Dr. Vijaykumar Patil	Mechanical	Springer Nature	2024		Design analysis of an innovative solar biomass hybrid dryer for drying turmeric | Interactions

A REVIEW ON SUBSTITUTE PISTON ENGINE COMBUSTION SYSTEM WITH THE HELP OF HOMOGENOUS CHARGE COMPRESSION IGNITION THEORY USING METHYL ALCOHOL AND DIESEL FUEL

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Abstract

In comparison to conventional engines, homogeneous charge compression ignition (HCCI) engine technology is relatively young and has not yet reached a level of maturity that would allow for commercialization. It may leverage both the benefits of both engine configurations—high engine efficiency and low emissions—by using either spark ignition or compression ignition. A large variety of fuels with low emissions can be used in HCCI engines. Owing to these benefits, HCCI engines can be used in hybrid engine configurations, which further reduce fuel usage. However, before the engine can be commercialized, several issues with it, like banging and a low to medium working load range, must be fixed. Consequently, in order to comprehend the behavior of HCCI engines, a thorough investigation must be conducted.

Keywords: engine, efficiency, emission, ignition

Introduction

To improve the quality of the ambient air, reduce greenhouse gas emissions, secure primary energy resources, and meet the ever-tougher emission regulations, the automotive industry must develop clean technologies with reduced fuel usage. As a result, in an era of intense competition, fuel and engines utilized in the transportation industry must meet two significant challenges: increasing efficiency and lowering emissions. Within the automotive industry, two main combustion technologies that are well-established are Compression Ignition (CI) and Spark Ignition (SI). Both CI and SI engines have advantages and disadvantages and run on fossil fuels. The spark discharge that is theoretically provided at the conclusion of the compression stroke ignites this uniform mixture. In spark ignition engines, the timing of the spark discharge controls when combustion begins. Because SI engines have a fixed air/fuel ratio, the only way to regulate engine load is to control the mass flow of air into the combustion

Design analysis of an innovative solar biomass hybrid dryer for drying turmeric

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Interactions

Aims and scope →

Submit manuscript →

Kishor M. Mahajan, Vijaykumar H. Patil & Tushar A. Koli

Abstract

Food loss and spoilage often occur due to inefficient preservation techniques and infrastructure. Moisture is the main factor, and open-air drying is the most common method. However, insects and ultraviolet rays can harm crops and reduce their nutritional value, making food unsanitary. Mechanical and microwave drying are efficient, but their high costs and operational complexity limit their widespread adoption. Solar drying, particularly hybrid solar drying technology, is a promising alternative that balances efficiency, cost, and environmental impact. Solar-powered biomass backup dryers address these issues and offer a more sustainable alternative. This paper details the design of a solar-assisted hybrid dryer for drying turmeric rhizomes with an initial moisture content of 80% and a recommended final moisture content of 10%. The dryer is designed considering the normal temperature and relative humidity in the Jalgaon district of Maharashtra, India, and the average daily incident shortwave solar energy. The dryer is a square-shaped cabinet with a chimney. The design includes a solar absorber, a biomass burner, a blower, a drying cabinet, and an exhaust heat exchanger. The theoretical design is validated here before the actual fabrication of the dryer using a fluent Ansys tool. The ansys results show that the temperature distribution in the cabinet dryer is consistent between 60 and 65 degrees Celsius, with an air velocity of 2 m/s ensuring even drying. The pressure of the pressurized inlet air decreases due to tray obstacles. This development will aid small-scale turmeric processors in drying turmeric rhizomes quickly, safely, and under hygienic conditions, contributing to product value and international market standards.