Government College of Engineering, Salem- 11

(An Autonomous Institution affiliated to Anna University, Chennai)

SELF-STUDY REPORT

CRITERION 3

3.4.3 Number of research papers published per teacher in the Journals as notified on UGC CARE list during the last five years

(Submitted to National Assessment and Accreditation Council)

Self Declaration

This is to certify that the supporting documents for this metric exceed the 5MB upload limit. Therefore, links to sample documents and some samples are provided in the following pages. Any/all Supporting documents will be provided, if required. All links, documents and images are verified and authenticated.

5/2/24

IQAC – Chairperson

Internal Quality Assurance Cell
Govt. College of Engineering
Salem - 636 011.

3.4.3. Number of research papers published per teacher in the Journals as notified on UGC CARE list during the last five years (From 2018-2019 to 2022-2023)

Number of research papers in the journals notified on UGC CARE list during the last five years	**575**
Number of full time teachers (without repeat count) during the last five years	**112**

Formula:

$$= \frac{\text{Number of research papers in the journals notified on UGC Care list during the last year}}{\text{Number of full time teachers (without repeat count) during the last five year}} \times 100$$

$$= \frac{575}{112} \times 100$$

$$= \mathbf{5.133}$$

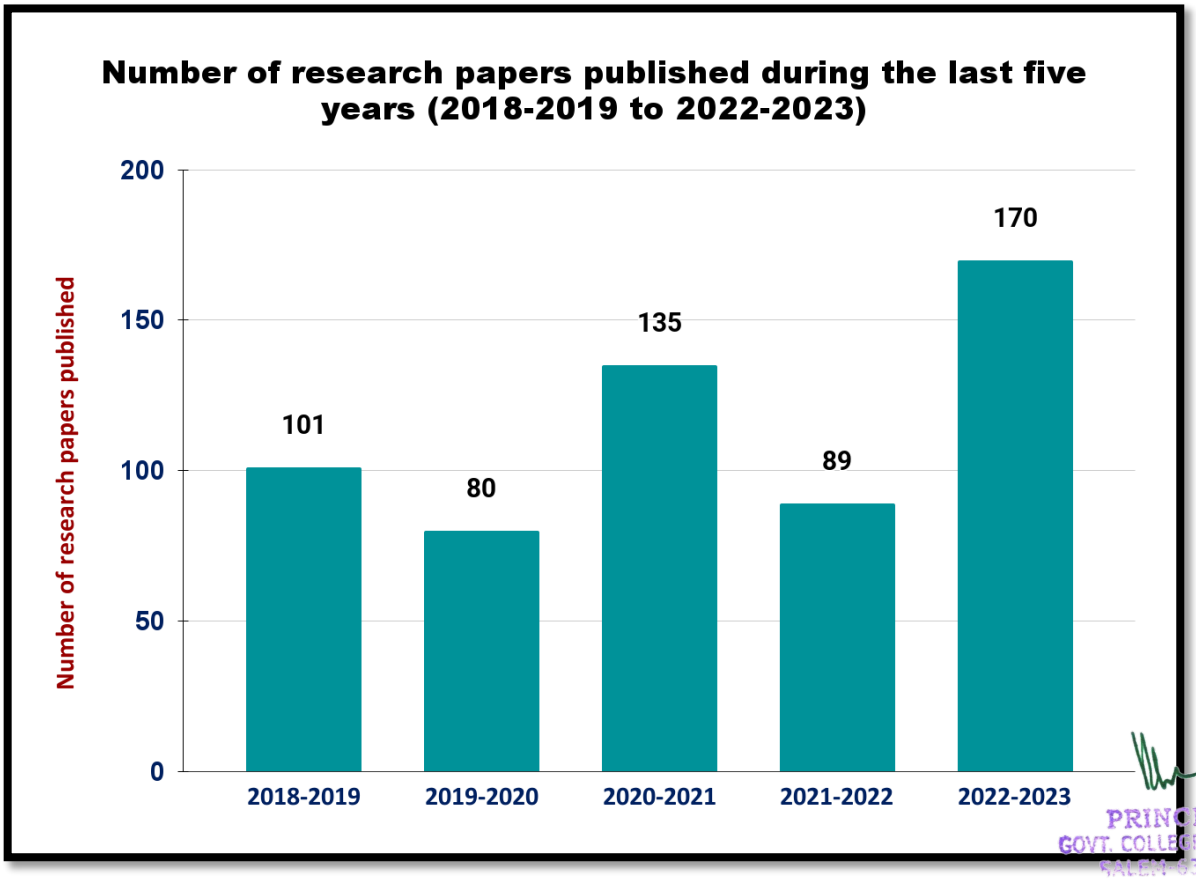
PRINCIPAL
GOVT. COLLEGE OF ENGG.,
SALEM-636 011

3.4.3. Number of research papers published per teacher in the Journals as notified on UGC CARE list during the last five years (from 2018-2019 to 2022-2023)

Supporting Document	
GCE irins website	https://gcesalem.irins.org/
Link to the supporting document	3.4.3/ Link 1

Year of publication	2018-2019	2019-2020	2020-2021	2021-2022	2022-2023
Journals published	101	80	135	89	170

Supporting Document
3.4.3/ Link 2



Sample/Reference for GCE IRINS

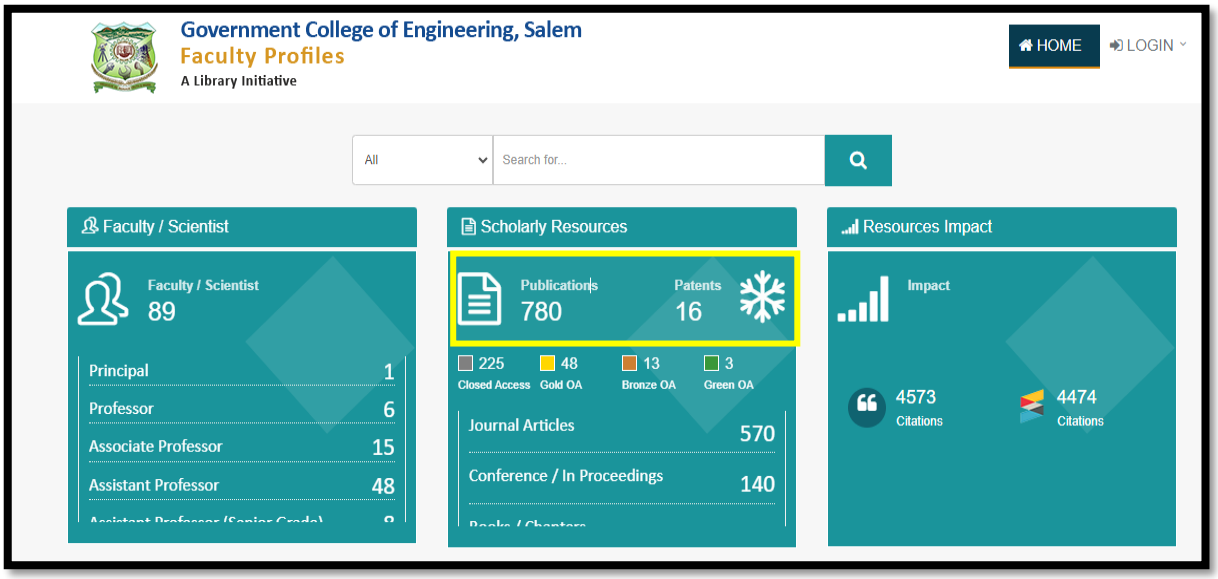


Figure 1 IRINS portal showing Institutions Publications

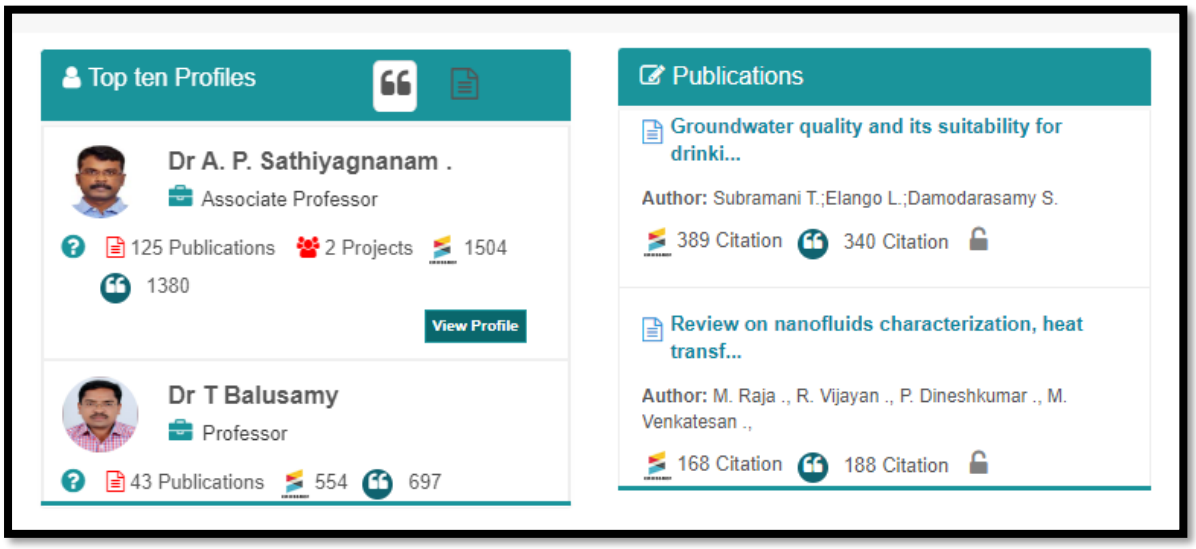


Figure 2 IRINS portal showing Institutions Top profiles

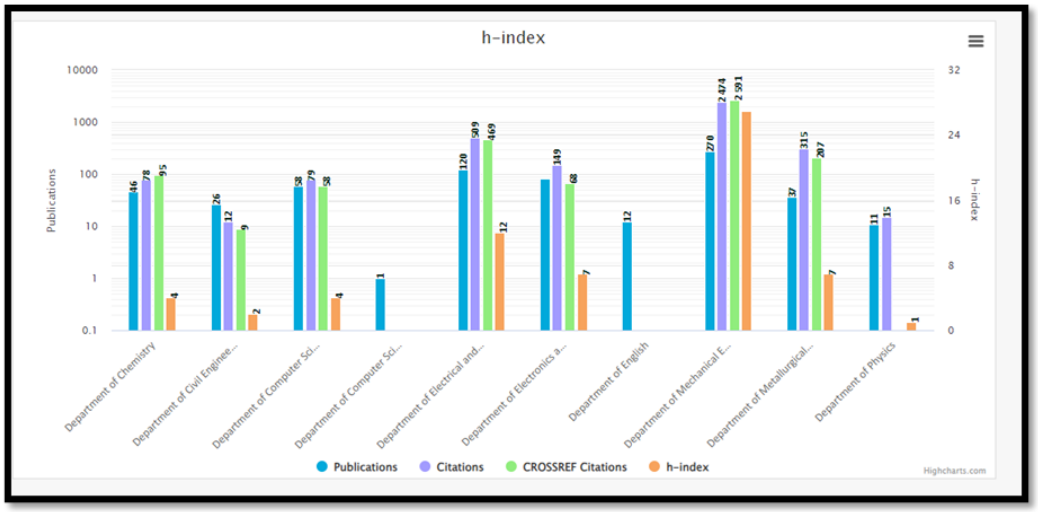
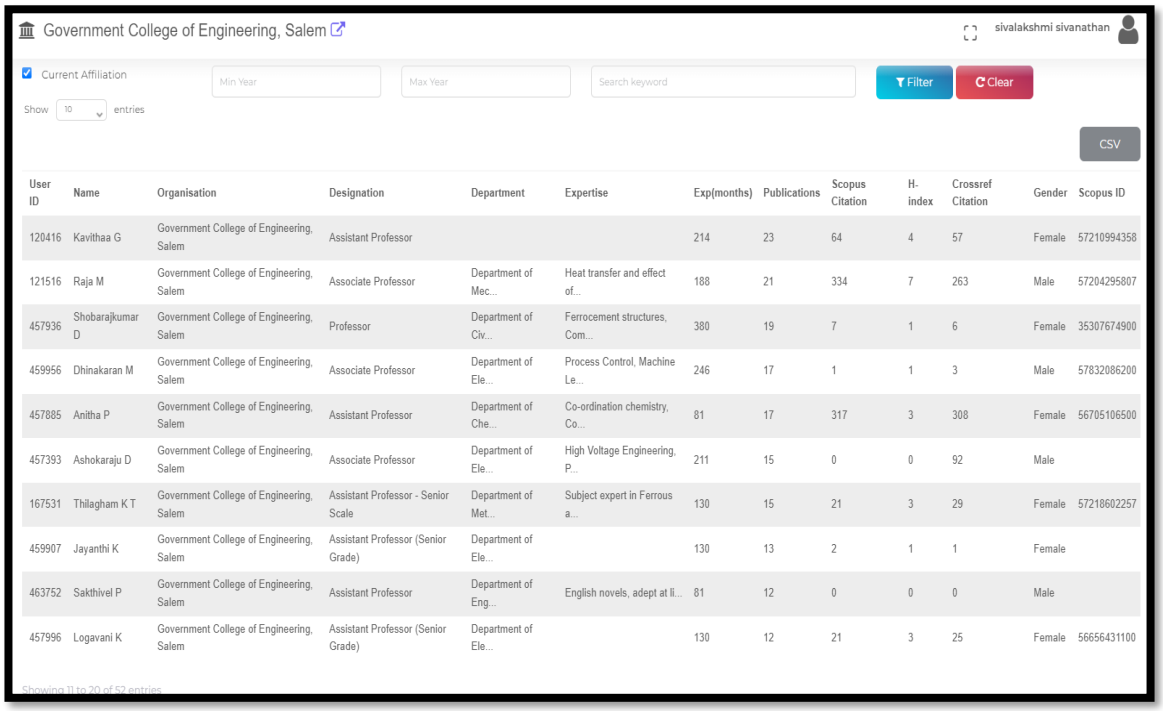


Figure 3 h-index of the Institution



User ID	Name	Organisation	Designation	Department	Expertise	Exp(months)	Publications	Scopus Citation	H-index	Crossref Citation	Gender	Scopus ID
120416	Kavithaa G	Government College of Engineering, Salem	Assistant Professor			214	23	64	4	57	Female	57210994358
121516	Raja M	Government College of Engineering, Salem	Associate Professor	Department of Mec...	Heat transfer and effect of...	188	21	334	7	263	Male	57204295807
457936	Shobarajkumar D	Government College of Engineering, Salem	Professor	Department of Civ...	Ferrocement structures, Com...	380	19	7	1	6	Female	35307674900
459956	Dhinakaran M	Government College of Engineering, Salem	Associate Professor	Department of Ele...	Process Control, Machine Le...	246	17	1	1	3	Male	57832086200
457885	Anitha P	Government College of Engineering, Salem	Assistant Professor	Department of Che...	Co-ordination chemistry, Co...	81	17	317	3	308	Female	56705106500
457393	Ashokaraju D	Government College of Engineering, Salem	Associate Professor	Department of Ele...	High Voltage Engineering, P...	211	15	0	0	92	Male	
167531	Thilagham K T	Government College of Engineering, Salem	Assistant Professor - Senior Scale	Department of Met...	Subject expert in Ferrous a...	130	15	21	3	29	Female	57218602257
459907	Jayanthi K	Government College of Engineering, Salem	Assistant Professor (Senior Grade)	Department of Ele...		130	13	2	1	1	Female	
463752	Sakthivel P	Government College of Engineering, Salem	Assistant Professor	Department of Eng...	English novels, adept at li...	81	12	0	0	0	Male	
457996	Logavani K	Government College of Engineering, Salem	Assistant Professor (Senior Grade)	Department of Ele...		130	12	21	3	25	Female	56656431100

Showing 11 to 20 of 52 entries

Figure 4 IRINS portal showing Institutions Publications

3.4.3. Number of research papers published during the last five years (from 2018-2019 to 2022-2023)

Departments	2018-2019	2019-2020	2020-2021	2021-2022	2022-2023
Civil Engineering	7	10	8	14	14
Computer Science and Engineering	6	2	11	9	9
Electrical and Electronics Engineering	23	17	27	25	34
Electronics and Communication Engineering	12	18	17	10	34
Mechanical Engineering	38	17	33	18	32
Metallurgical Engineering	9	8	22	5	18
Science & Humanities	6	8	17	8	29

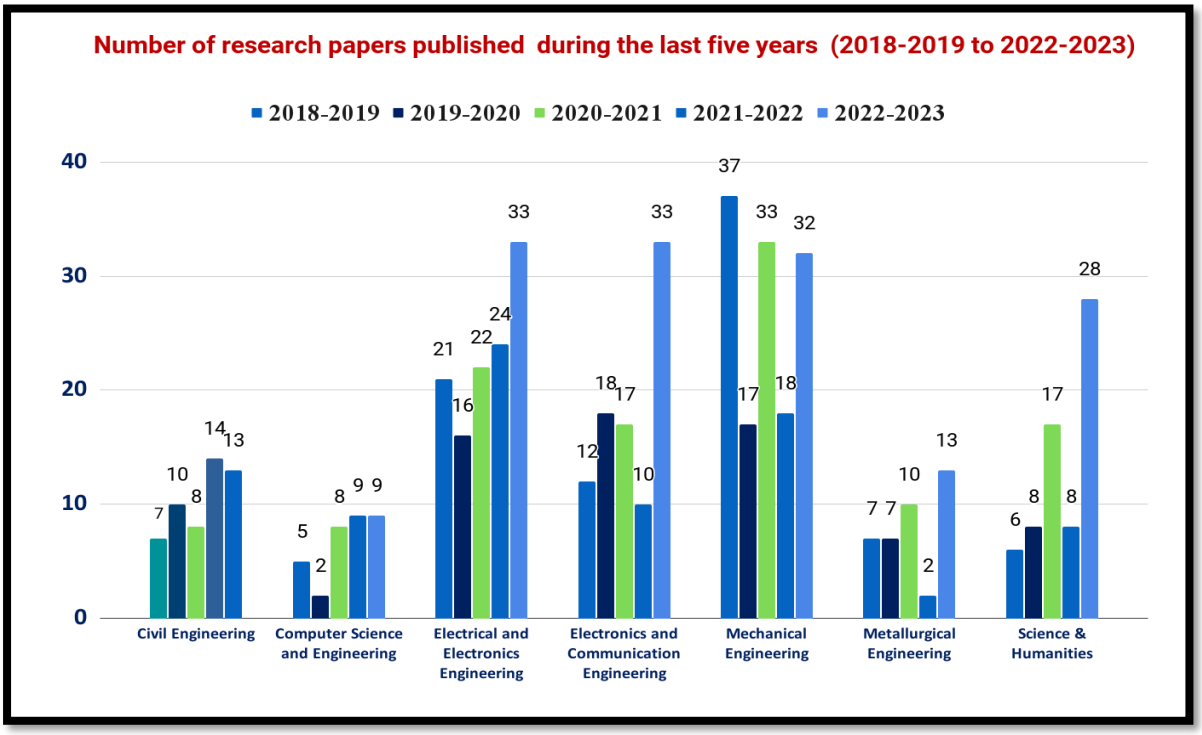


Figure 5 IRINS portal showing Departmental Publications over the years 2018-2019 to 2022-2023

Sample/Reference of research papers published

ENERGY SOURCES, PART A: RECOVERY, UTILIZATION, AND ENVIRONMENTAL EFFECTS
https://doi.org/10.1080/15567036.2019.1607923

Prediction and optimization of engine characteristics of a DI diesel engine fueled with cyclohexanol/diesel blends

Kaliyaperumal Gopal[a,b], A.P. Sathiyagnanam[b], B. Rajesh Kumar[c,d], D. Damodharan[a], Melvin Victor De Poures[a], S. Saravanan[c], D. Rana[e], and Balaji Sethuramasamyraja[d]

[a]Department of Mechanical Engineering, Jeppiaar Engineering College, Chennai, Tamil Nadu, India; [b]Department of Mechanical Engineering, Annamalai University, Chidambaram, Tamil Nadu, India; [c]Department of Mechanical Engineering, Sri Venkateswara College of Engineering, Chennai, Tamil Nadu, India; [d]Department of Industrial Technology, Jordan College of Agricultural Sciences and Technology, California State University, Fresno, California, USA; [e]Department of Chemical and Biological Engineering, University of Ottawa, Ottawa, Ontario, Canada

ABSTRACT

This study uses cyclohexanol – a high-carbon, cyclic bio-alcohol which is a derivative of lignocellulosic biomass – in blended form with diesel to power a direct-injection single-cylinder diesel engine that is widely used in Indian agricultural sector. Experiments were conducted at the engine's rated load using the blend composition of cyclohexanol in diesel (10%, 20% and 30% by vol.), EGR (10%, 15%, and 20%) and injection timing (19°, 21° and 23°CA bTDC) as controllable factors. The optimization criterion is to minimize smoke, NOx emissions, and BSFC. Response surface methodology coupled with desirability approach was used to predict and optimize NOx, smoke opacity and BSFC measured from the experiments. The top solutions predicted by desirability approach were validated by confirmatory experiments and were found to describe the experimental data to a reasonable accuracy of within 4%. With reference to diesel operation, it was found that 10% by vol. of cyclohexanol/diesel blend injected at 21°CA bTDC and 10% EGR reduced NOx (43.1%▼) and smoke opacity (32.4%▼) with an increase in BSFC (4%▲). Cyclohexanol/diesel blend at optimum conditions delivered better smoke reduction but with higher NOx and slight increase in BSFC Cyclohexanol/diesel blends can be recommended as a full-time fuel to substitute diesel subject to long-term durability tests in diesel engines.

ARTICLE HISTORY
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Revised 14 February 2019
Accepted 4 April 2019

KEYWORDS
Cyclohexanol; diesel engine; emissions; high carbon alcohols; optimization

Introduction

Diesel engines offer un-matched fuel conversion effectiveness, sturdiness and torque ability and hence are widely employed as prime-movers in public transit systems, agricultural equipment, industrial implementations, power generation, construction and heavy machinery across the world (Mahmudul et al. 2017). The International Energy Agency (IEA) has predicted that the global crude oil demand will rise to 99 million barrels per day by the year 2035 (Abas, Kalair, and Khan 2015). There is an estimate that the reserves of crude oil are gradually diminishing at the rate of 2.1% per annum (Nashawi, Malallah, and Al-Bisharah 2010). Hence, it is imperative that alternative forms of diesel engine compatible fuels have to be identified to improve energy security by the way of bio-based renewable sources. Instability in crude oil prices has an impact on the economies of countries without oil reserves and are heavily dependent on import. In the past 10 years, India relied greatly on imports to satisfy its snowballing fuel demands. High volume of oil imports took a toll on India's foreign reserves and had a direct implication on economic growth (Ghosh 2011).

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Color versions of one or more of the figures in the article can be found online at www.tandfonline.com/ueso.

Alexandria Engineering Journal (2018) 57, 2209–2214

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www.elsevier.com/locate/aej
www.sciencedirect.com

ORIGINAL ARTICLE

Analysis the optimum inlet air temperature for controlling homogeneous charge compression ignition (HCCI) engine

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Available online 4 September 2017

KEYWORDS

Homogeneous charge compression ignition engines;
Inlet air temperature;
Diesel fuelled;
Emission reduction;
Improve engine output

Abstract Homogeneous charge compression ignition engine is promising replacement for conventional CI diesel engine with lower oxides of nitrogen (NO_x) and smoke emissions and improves the thermal efficiency with consume less amount of fuel. In general, HCCI engine operates with lean air/fuel charge for all operating condition, and it makes the HCCI combustion more complex and difficult to control the start of ignition point. The inlet air temperature is the primary parameter for controlling the HCCI combustion. In this study, the HCCI engine was operated at different inlet air temperatures as 90 °C, 100 °C, 110 °C, 120 °C, 130 °C, 140 °C and 150 °C respectively. From this study, it was observed that the level of NO_x emission increased with increasing the inlet air temperature and smoke emission was reduced with increasing the inlet charge temperature. The inlet air temperature about 120 °C showed maximum reduction of smoke emission about 15HSU at 60% load. Similarly, CO and HC were reduced with increasing the inlet air temperature. The specific fuel consumption of HCCI mode engine decreased with increasing the inlet air temperature and the power output of the engine increased with increasing the suction air temperature.

1. Introduction

The automobiles act major role on atmosphere pollution and global warming. Particularly, diesel engines are emitted high level of oxides of nitrogen (NO_x) and smoke emissions due to consuming of more amount of fuel. Homogeneously charged compression ignition engines are focused recently due to its minimum fuel consumption, low NO_x and smoke emissions [1–4]. The HCCI engines are capable of producing more power at high load operation than conventional diesel engine. The HCCI operation is combination of spark ignition engine and compression ignition engine [5]. In HCCI engine, the homogeneous air- fuel charge prepare by using port fuel injection system or direct in-cylinder injection system [6].

The HCCI combustion take place at multiple points of the combustion chamber, during the end of compression stroke without flame frond or a diffusion flame [3]. The start of

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Peer review under responsibility of Faculty of Engineering, Alexandria University.

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Sample/Reference of research papers published

Optimization of window type and vent parameters on single-sided natural ventilation buildings

Published: 22 November 2018

Volume 136, pages 367–379, (2019) Cite this article

V. R. Lenin, S. Sivalakshmi & M. Raja

Abstract

The residential building sector is one of the major areas to reduce energy demand. In this study, the single-sided top vent-based natural ventilation parameters are optimized using Taguchi technique. The computational fluid dynamics tool is used to simulate the room model. The grid sensitivity analysis is executed to predict more precise results. The operating parameters for top vent and window-based ventilation investigated are top vent width, top vent height, the location of the top vent, the number of top vents and window type with different levels. The orthogonal array, L_8, is selected for the conduct of experiments. The signal-to-noise ratio and analysis of variance technique are used to optimize the results. The optimized results showed that the maximum top vent width, top vent height and more number of vents with higher window opening area reduce the maximum indoor air temperature and increase the mass flow rate of a single-sided residential room. Of all, around 60.64% numbers of top vents contributed to indoor temperature reduction. In addition, thermal exergy is also investigated on various vent sectional planes.

Sample/Reference of research papers published

ScienceDirect

Optik

Volume 273, February 2023, 170392

Numerical investigation of ultrawideband solar wave absorber with multiring resonator gold and composited MgF2-Tungsten substrate

Mahendran G [a], Govindaraju C [b], Vishal Sorathiya [c], Sunil Lavadiya [d]

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https://doi.org/10.1016/j.ijleo.2022.170392

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Abstract

This study uses computational methods to explore a multi-layered ultrawideband solar absorber's visible and infrared solar spectra with a gold ring resonator structure. The absorbers are studied across the entire solar spectrum, from 0.2 to 3μm in wavelength. Absorption, reflectance, and transmittance define the structures' performance characteristics. We have also performed numerical calculations to determine the structure's behavior across various geometric parameters, including overall dimensions, substrate size, and resonator thickness. Over a wide terahertz (THz) band, the suggested absorber structure can capture over 98% of incoming light. The performance of the absorber structure is compared to the AM 1.5 response to spectral irradiance to assess wide solar range absorption behavior. The absorber design has increased its effectiveness in absorbing the whole range of solar rays. Based on these findings, we can select an optimal operating frequency for both wide- and short-angle applications. By adjusting their sizes, readers can achieve selective band absorption, as suggested in the essay. This absorber structure may be used in constructing high-efficiency solar cells due to the incoming wave's stability at a wide incidence angle.

Introduction

Naturally occurring renewable energy sources improve environmental friendliness by expanding the types of energy used. This study's overarching goal is to identify novel contexts in which current technology might be deployed for humanitarian ends. Much effort has been put into studying different metamaterial structures for their potential to enhance absorption. Many devices, such as double split-rings, wire pairs, dielectric-metal coated U-shaped SRRs, and many more, are included here [1], [2], [3]. As a result of combining a wide variety of characteristics, metamaterials provide a route to entirely new electromagnetic characteristics. A significant paradigm change has occurred in photonics science with the discovery of a way to imitate the structure of natural materials while improving their optical properties [4], [5]. Optimizing optical qualities like absorption, transmittance, and reflectance is another area where optical metamaterials shine [4], [6], [7]. As such, this is a significant advantage of optical metamaterials. Solar cells have improved as a whole due to these many developments. Absorbers may be sorted into several categories depending on the frequency ranges and spectral

Sample/Reference of research papers published

Microprocessors and Microsystems 76 (2020) 103084

Contents lists available at ScienceDirect

Microprocessors and Microsystems

journal homepage: www.elsevier.com/locate/micpro

Adaptive motion estimation and sequential outline separation based moving object detection in video surveillance system

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ARTICLE INFO

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Keywords:
Moving object detection
Sequential outline separation
Background subtraction
Adaptive motion estimation

ABSTRACT

Moving object detection is an important task in the basic research field of automated video surveillance systems in computer vision and video processing. The application of moving object tracking is critical for military, surveillance systems and operational robot applications, and getting more critical day by day. Closer view gap, ghosting, and sudden lighting changes have been the primary issues in moving object detection in existing methods. To think about the above issues, this work proposes two methodologies like consolidating background subtraction and improved sequential outline separation strategies for the recognition of various moving objects from indoor and outdoor genuine video dataset. This kind of framework can be realized in the general public places such as shopping malls, air terminals and railway stations or the safety of any private premises is the primary concern. This work precisely distinguishes the moving objects with shifting object size and number in various complex situations. The simulation work is done with MATLAB software, to measure the detection error and processing time of the proposed strategy. The proposed sequential outline separation method starts with background subtraction and foreground detection for motion and object discovery and it is a procedure of separating the territory of enthusiasm from developed background. Simulation results and error rate investigation demonstrate that our proposed strategies identify the moving targets productively. As Compared to other conventional systems, our proposed adaptive motion estimation and sequential outline separation method performs better by achieving an accuracy of 97.45%, a sensitivity of 94.2%, and a specificity of 97.72%.

1. Introduction

The most common way to isolate dynamic objects is by moving a camera for what is called proximity recognition or background subtraction. It is widely used to implement human–to–human association systems such as human activities, object tracking, traffic dynamics and PC vision. In this system, the moving object is called an additional background area, which must be separated from the static data. According to the ultimate goal. Models made by background subtraction movements are more challenging than their actual counterparts. This process has evolved into a common method of motion detection.

The background subtraction must be separated when the initial display is set from the base object. We need to establish the right pixel level standard. Pixel satisfaction for this method is considered background and ignored. The environment should follow the friendly models and the gradual and accelerated light of change. We need to consider the difference in the spatial scale of the background model. The shaded area is found, such as projecting a moving object from the foreground object. Many objects are set within short–term and long–term intervals.

Recognizing and tracking of moving objects is the establishment of the entire visual observation framework, and it is the way to the accompanying propelled treatment. The reason for running object identification is to recognize the changed region from a background image. The optical flow strategy, which can concentrate and track the moving object productively, utilizes the normal for visual flow field of moving object which is changing with time going. Despite the fact that this technique possesses the preferred standpoint that it very well may be distinguished the free moving target when the camera is running, it has a muddled computing equation and poor enemy of clamor execution. Inter–frame difference method uses the differences of image sequences between the adjacent frames to extract the movement region of images. The method, which has a solid self–versatility for the dynamic condition, can't evacuate all the component pixels of images. For the

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0141-9331/

Sample/Reference of research papers published

ScienceDirect

Energy Conversion and Management

Volume 161, 1 April 2018, Pages 294-305

Combined influence of injection timing and EGR on combustion, performance and emissions of DI diesel engine fueled with neat waste plastic oil

D. Damodharan [a b], A.P. Sathiyagnanam [b], D. Rana [c], B. Rajesh Kumar [d], S. Saravanan [d]

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https://doi.org/10.1016/j.enconman.2018.01.045

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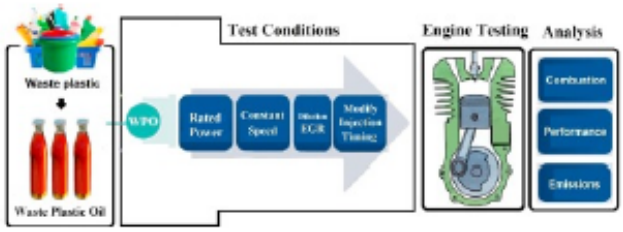
Abstract

Disposal of waste plastic accumulated in landfills is critical from the environmental perspective. The energy embodied in waste plastic could be recovered by catalytic pyrolysis as waste plastic oil (WPO) and could be recycled as a fuel for diesel engines. This method presents a sustainable solution for waste plastic management as the gap between global plastic production and waste plastic generation keeps widening. The present study investigates the combined influence of EGR and injection timing on the combustion, performance and emission characteristics of a DI diesel engine fueled with neat WPO. Experiments were conducted at three injection timings (21°, 23° and 25°CA bTDC) and EGR rates (10, 20 and 30%) at the engine's rated power output. When compared to diesel, the combustion event occurred closer to the TDC when the injection timing is delayed from 25°CA bTDC to 21°CA bTDC. The peak in-cylinder pressures and HRRs dropped gradually as the injection timing was delayed from 25°CA bTDC to 21°CA bTDC at all EGR rates. The engine delivered diesel-like fuel consumption with 5.1% higher brake thermal efficiency. NOx decreased up to 52.4% under 30% EGR when WPO was injected lately 21°CA bTDC. Smoke density remained lower by 46% and 9.5% for 10% and 20% EGR rates respectively for WPO only at early injection timing of 25°CA bTDC. HC and CO emissions stayed lower at early injection timing of 25°CA bTDC under 10% EGR. WPO injected at the advanced injection timing of 25°CA bTDC and low EGR rate of 10% was found to simultaneously reduce smoke and NOx by 46% and 38% respectively.

Graphical abstract



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