Applied Thermal Engineering 179 (2020) 115684

Contents lists available at ScienceDirect

Applied Thermal Engineering

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

Experimental studies on the performance improvement of household refrigerator connected to domestic water system with a water-cooled condenser in tropical regions

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HIGHLIGHTS

- Residential water supply system to cool the condenser of household refrigerator.
- Water-cooled condenser saves 21 to 27 percent energy in household refrigerator.
- Brazed plate heat exchanger improves the energy efficiency of household refrigerator.
- Water-cooled condenser reduces the TEWI of domestic refrigerators.

ARTICLE INFO

Keywords:
Household refrigerator
Residential building sector
Energy efficiency
Water-cooled condenser
Total equivalent warming impact

ABSTRACT

The consumption of electrical and thermal energies in the residential building sector is growing fast and many strategies are being followed to overcome the energy demand in this sector. Among the various strategies, performance enhancement of refrigeration systems has been identified as one of the important areas for investigation. Due to the increase in the use of small-scale appliances and their impact on global energy requirements, specific research has to be focused on small scale systems with water-cooled condensers to reduce the energy consumption in residential buildings. In this study, the water-cooled condenser of a refrigeration system was connected to the prevailing water distribution system of a house with suitable changes in the existing arrangements. The proposed system was analysed for energy savings and environmental benefits. The experimental work was conducted in the tropical region, and the experimental findings indicated that the brazed plate condenser in small-scale refrigeration systems could decrease 21 to 27% of daily energy consumption. The total equivalent warming impact was found as 26.8% lower than that of conventional systems. Among the refrigerants, R290/R600a (45.2:54.8 – mass percentage) mixture showed 5.9% lower per day energy consumption and 8.9% higher COP than that of R134a. Compared to R134a, the R1234yf showed an increase of 4.7% and 7.3% in per day energy consumption and pull-down time respectively for all tested conditions. However, this small reduction in the performance of R1234yf may be tackled by optimizing the system components. Thus the building energy-efficiency could be improved by integrating the household refrigerator with the use of general water supply in a residential building.

1. Introduction

Enhancing energy efficiency in buildings is one of the most cost-effective measures to minimize carbon dioxide emissions. Population growth and economic development are the major driving forces behind increasing energy usage and carbon-dioxide emissions [1]. Comparatively, in tropical regions, the energy consumption of the residential buildings is so high because of the poor ventilation and the excess heat stored in building walls. So, vapour compression appliances consume more energy [2]. Paris Climate Conference, December 2015 established an international plan of action to reduce global warming below 2 °C. Achievement of this target is a big challenge to all the developing countries where the electricity demand from 2013 to date has been increasing at an average annual rate of 6.9% [3].

The International Energy Agency (IEA) recorded a sharp rise in energy demand in the building sector from 116.8 EJ in 2010 to 184.2 EJ

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https://doi.org/10.1016/j.applthermaleng.2020.115684
Received 12 October 2019; Received in revised form 1 June 2020; Accepted 29 June 2020
Available online 03 July 2020

Materials Today: Proceedings xxx (xxxx) xxx

Contents lists available at ScienceDirect

Materials Today: Proceedings

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

Optimization of geometric parameters for mode-I fracture analyse on glass fiber woven mat thermoplastic laminated composites

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ARTICLE INFO

Article history:
Available online xxxx

Keywords:
Laminated composites
HDPE composites
Mode-I fracture
Taguchi technique
Optimization

ABSTRACT

The present work is to optimize the geometric parameters such as width (W), breath, total width (C), height (h), and crack length (a) of glass fiber woven mat reinforced thermoplastic laminate composite for Mode-I fracture analysis with compact tension testing mode. The laminated HDPE composites were prepared by hot compression molding with three layers of HDPE and two-layer of glass fiber woven mat. The design of experiments (L27 Orthogonal array) was prepared based on the Taguchi technique with four parameters and three levels. The mode-I fracture toughness and energy-releasing rate were calculated for all samples. The ANOVA and regression equation were used to find the effect of toughness and energy releasing rate of the laminate composites. The experimental and regression results are compared and predicted the error. Finally, the optimum shape to laminate composites is suggested for predicting fracture behaviors of various synthetic and natural fiber woven mat reinforced polymer composites in mode-I under compact tension mode.

Selection and peer-review under responsibility of the scientific committee of the 2021 Research, Invention, and Innovation Congress: Materials Science

1. Introduction

The high-performance engineering polymer materials have been used in various engineering applications like automobile, aerospace and construction structural parts. In worldwide, the researcher working in the field of polymer matrix composites have used various manufacturing techniques for developing defect fee ad high performance materials. The different types of new polymer materials are continuously developed to replace the old materials due to better performance [1]. The fracture toughness of T300/913 carbon fiber reinforced epoxy composites was tested under Mode-I fracture test using compact tension specimen. In tensile mode test, the initial critical energy releasing rate was found low compared to propagation and in compressive mode test, the propagation value was not meaningful [2]. The increasing the glass fiber volume faction in polyester composites was increasing the fracture toughness (K_{IC}) and critical energy releasing rate. The maximum values were found at 60% of fiber content [3]. The fracture toughness of 300/920 laminated carbon epoxy composites were developed with 0° and 90° ply orientation. It showed that the maximum values was found for composite containing 0° orientation and also increasing it ply thickness [4]. The threes point bending tests was conducted on chopped strand mat glass fiber polyester composite and measured the critical stress intensity factor (CSTF) by mode -I fracture. The CSFT was calculated by J-integral, compliance and initial notch depth methods [5]. The effect of textile weave configuration, the stacking sequence and yarn linear density showed that the addition woven mat have improves 2–4 times K_{IC} compared to net epoxy [6]. X-ray microcomputed tomography was used to evaluated the micro crack propagation of natural fibers hybrid epoxy composites [7]. The fracture toughness of the glass epoxy composites was depended on fiber mat orientation [8]. The maximum fracture toughness was observed in more layer of glass fiber woven mat composite than the glass and steel mat hybrid composite [9]. Increasing the carbon fiber content was increasing the fracture toughness and the maximum observed in glass/carbon hybrid composites [10]. Increasing the volume fraction of glass and banana fiber epoxy composites was increased the fracture toughness and the maximum volume fraction was 20%. [11]. The tensile and compressive fracture toughness was studied based on plane strain condition of oven and copped glass fiber polypropylene composite [12]. The double cantilever

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https://doi.org/10.1016/j.matpr.2021.10.433

Selection and peer-review under responsibility of the scientific committee of the 2021 Research, Invention, and Innovation Congress: Materials Science

Received: 8 July 2020 | Revised: 22 November 2020 | Accepted: 29 December 2020

DOI: 10.1002/pc.25940

RESEARCH ARTICLE

spe INSPIRING PLASTICS PROFESSIONALS Polymer COMPOSITES WILEY

Mechanical strength retention and service life of Kevlar fiber woven mat reinforced epoxy laminated composites for structural applications

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Abstract

This work investigates the diffusivity, long-term tensile performance and prediction of service life of Kevlar fiber woven mat reinforced epoxy laminated composites (KFMRELC). The composites were prepared by hand layup method with compression molding process. The tensile test was conducted on dry and aged composites as per ASTM D 638 standard. These composites were immersed in water at various temperatures of 20°C, 40°C and 60°C and various time periods. The diffusivity was calculated by Fick's law. The activation energy and service life were calculated by Arrhenius principle. In results, the tensile strength was gradually decreased by increasing the immersion time, and the maximum reduction was found at 60°C and 300 days due to loss of bonding between the fiber and matrix. Increasing the aging temperature was decreased bonding between the fiber and matrix which reduced the tensile strength. Therefore, the KFMRELC composite retained long life and exhibited less reduction in tensile stress at 20°C environment. Considering 80% of tensile strength retention, the life of KFMRELC composite was found 50 year less at higher temperature because the rate of diffusivity and degradation were found higher. Hence, the maximum tensile strength retention was showed for 50 years. Based on the life cycle curve, the KFMRELC composite can be selected for suitable applications.

KEYWORDS

activation energy, diffusivity, environmental degradation, long-term performance, service life

1 | INTRODUCTION

In the last few decades, the attention of material scientists and engineers has been directed toward development of polymer composites reinforced with natural and synthetic fibers as a viable alternative for conventional materials. These materials are considered for various applications such as infrastructure, sports, packaging, etc. However, the synthetic fiber reinforced polymer composites have been widely used for higher load carrying structural members owing to their high specific strength, low density and high specific stiffness. Among the different synthetic fibers available, Kevlar fiber mat is frequently preferred to prepare thermoset polymer matrix composites. In spite of using this higher strength synthetic fiber, the service life of the polymer composites should be stable for durability and reliability. Matei et al.[1] predicted the characteristics and physical-mechanical properties of epoxy composites

INTERNATIONAL JOURNAL OF CRASHWORTHINESS
https://doi.org/10.1080/13588265.2021.1926861

Crashworthiness characterization of jute fiber woven mat reinforced epoxy composite tube for structural application using Taguchi's method

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ABSTRACT

This work investigates the crashworthiness of jute fiber mat reinforced epoxy composite circular tubes by introducing holes around the tube circumference. The composite tubes were tested under quasi-static compressive mode. Based on Taguchi's method considering L27 orthogonal array, the optimization of design variables was carried out by selecting three design variables with three levels such as lengths (70, 140 and 210 mm), hole diameter (6, 8 and 10 mm) and number of drill holes (2, 4 and 6) with changing their position. From experiments, the crashworthiness indicators like maximum stress, absorbed energy and specific absorbed energy were calculated. By introducing the holes on tubes, the crashworthiness was varied, and in optimization, the Analysis of Variance showed the interaction effect of design variables. The signal-to-noise results showed the maximum effect of variables on crashworthiness. The developed regression model results were compared with experimental results. The mechanism of failure of all samples was examined from photography.

ARTICLE HISTORY
Received 23 November 2020
Accepted 3 May 2021

KEYWORDS
Composites; mechanical properties; thermoset; structure

1. Introduction

Thin wall structures are made of different materials such as aluminium, steel, fiber-reinforced composites, hybrid structure and foam-filled tubes. These structures have been widely used for various applications like cars, trains, trucks and airbuses for absorbing the crash energy during the accident. The capacity for energy absorption of composite improves human survival in auto accidents. Energy absorption is contingent on various parameters such as type of fiber, matrix, fiber structure, specimen appearance, processing conditions, fiber volume fraction, and test conditions [1]. The thin-walled columns built by fiber-reinforced polymer composites (FRP) used in civil and structural engineering applications [2–4], and automotive engineering [5–7] due to the high ratio of strength-to-weight, corrosion resistance, and energy absorption. The impact strength of Fiber Glass tubes (FGT) under uniaxial and lateral impact force are examined by the effect of length to diameter (L/D) ratio and degree of variation of crashworthiness on circular tube. The results indicated that two parameters assigned in the FGT tube have a substantial influence on the impact resistance [8]. The carbon fiber FRP and aluminium circular tubes were used to make the hybrid structure. The effect of hybridization reduced total weight of tubes. The 37% of specific absorbed energy (SAE) was found to be 37% more compared to the pure aluminium tube. The failure of a hybrid element indicated the mixture of clean material energy absorption mechanisms. By design optimization, the energy absorption of carbon fiber/aluminium hybrid with different shapes under dynamic loading was measured through numerical simulation and compared with experimental results. The aluminium foam-filled aluminium tube showed better crash energy absorption than unfilled tube [9–12].

The aluminium circular tube showed the maximum quasi-static axial compressive load (i.e. mean crushing force 20.873 kN) without corrugation at diameter of 79.5 mm and sheet thickness of 1.65 mm compared to shallow and deep corrugation [13]. Fourier varying sectional tubes were designed for crash box and based on the orthogonal array the design optimization was conducted. By increasing the perimeter, the specific energy absorption (SEA) was increased [14]. The ABAQUS software was used to analyse the energy absorption of corrugated aluminium AA6060 tapper tube and compared with experimental results. The initial peak load was reduced by introducing the longer corrugations with more wavelength [15]. The aluminium tube of φ 60 mm, thickness of 2 mm with length of 106.5 mm was prepared by heat treated method and straight tube showed crash higher peak and crash energy per stroke compared to slits section tubes [16]. The Crashworthiness of single and bitubal polygon aluminium tubes was analysed with foam-filled and the foam density of 0.36 g/cm^3 showed maximum mean crushing force. The testing crosshead velocity was varied as 5, 15, and 25 m/sec. The SEA was found

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Received: 26 May 2021 | Revised: 25 July 2021 | Accepted: 21 August 2021

DOI: 10.1002/app.51602

ARTICLE

Applied Polymer SCIENCE WILEY

Evaluation of tensile strength retention and service life prediction of hydrothermal aged balanced orthotropic carbon/glass and Kevlar/glass fabric reinforced polymer hybrid composites

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Abstract

Quest to reduce challenges of high structural weight and cost of metallic components is increasing. It has led to their replacement with carbon and Kevlar fibers reinforced polymer (FRP) composites. These aforementioned problems can be further solved through hybridization of carbon/glass (CG) and Kevlar/glass (KG) fibers to reduce the manufacturing cost and materials usage, not at detriment of their properties. Also, investigation into their tensile properties, diffusivity, and service life is germane. Therefore, the present study focuses on influence of hybridization of CG and KG fibers on seawater diffusivity, service life, and tensile strengths of their composite systems, through hydrothermal aging. The hybrid composites were aged in seawater for 50, 150, and 300 days at temperatures of 20, 40, and 60°C. From the results obtained, it was evident that the maximum moisture absorption of both FRP hybrid composites occurred at 60°C in 300 days of hydrothermal aging. The maximum tensile strengths were obtained in unaged composite counterparts. Also, the aged FRP hybrid composites exhibited the lowest tensile strengths at 150 days. The retention of maximum tensile strengths of CG and KG FRP hybrid composites showed 75% and 70% for 100 years at hydrothermal aging temperature of 40°C. Therefore, both FRP hybrid composite samples exhibited promising behaviors for various marine and outdoor applications.

KEYWORDS

degradation, mechanical properties, thermosets

1 | INTRODUCTION

The use of synthetic fiber reinforced polymer (FRP) composites made up of carbon, Kevlar, and glass fibers is widely encouraged by researchers, academicians, and industrialists, due to their lightweight, higher strength-to-weight, higher stiffness-to-weight, higher specific strength, relative less cost for making composites, and

Fuel 278 (2020) 118250

Contents lists available at ScienceDirect

Fuel

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

Full Length Article

Multi-functional fuel additive as a combustion catalyst for diesel and biodiesel in CI engine characteristics

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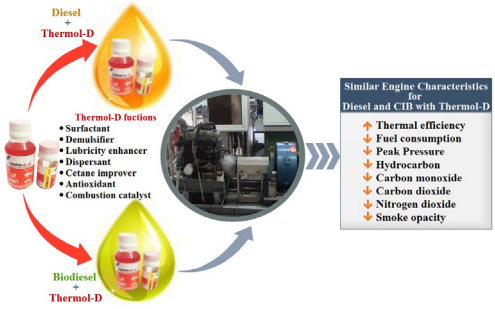
GRAPHICAL ABSTRACT



ARTICLE INFO

Keywords:
Diesel engine
Biodiesel
Calophyllum Inophyllum
Fuel additives
Multi-functional catalyst
Thermol-D

ABSTRACT

The present research work aims at investigating the effect of newly developed multifunctional additive with diesel and Calophyllum Inophyllum biodiesel on compression ignition engine characteristics. A newly developed hydrocarbon based multifunctional fuel additive named as "Thermol-D" which comprises of various ingredients at suitable composition like surfactant, demulsifier, lubricity enhancer, dispersant, cetane improver, antioxidant and combustion catalyst. In this present study, the Thermol-D has been doped with conventional diesel and Calophyllum Inophyllum biodiesel at 0.5 ml, 1 ml and 2 ml concentrations. Moreover, the Thermol-D addition with diesel and biodiesel has shown remarkable stability at all concentrations without any phase separation issues. All the fuel comparative analysis is carried out using all the fuel samples at same operating conditions under load variation from No load to full load at constant engine speed. It has been noticed that the doping of Thermol-D with diesel and biodiesel has increased the brake thermal efficiency by 21% and 43% at 100% loading conditions due to the presence of combustion catalyst and cetane improver in the additive. The multifunctional additive presence in the fuel blends is reduced the carbon monoxide and unburnt hydrocarbon emissions by 32–36% and 20% respectively. Furthermore, the oxides of nitrogen emission has also reduced at significant rate in the range of 18–20.5% for 2% Thermol-D addition with diesel and biodiesel. The Thermol-D contains slight fraction of antioxidant and cetane improvers which has resulted in combustion temperature. All the combustion characteristics are improved by the addition of Thermol-D with diesel and biodiesel.

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https://doi.org/10.1016/j.fuel.2020.118250
Received 11 January 2020; Received in revised form 10 May 2020; Accepted 27 May 2020

MACBRO TECHNOLOGY INDIA PVT LTD

Global Engineering Solutions

Date: 17TH APR 2021

This is certify that following candidates has completed the Project & INTERNSHIP PRORGAM at MACBRO R&D CTR-ERODE. During this Intern period, they have been exposed to Catia Tool knowledge, plastic domain knowledge and various Automotive Projects title on **"DESIGN AND DEVELOPMENT OF CENTER CONSOLE USING CATIA".**

ROSHAN.B	17MER164
KALAIVANAN.A	17MEL256
KISHORE KUMAR.K	17MEL260

the requirement for the reward of BACHELOR DEGREE in "MECHANICAL ENGINEERING" from KONGU ENGINEERING COLLEGE- PERUNDURAI from the period 16-02-2021 to 31-03-2021 at MACBRO TECHNOLOGY INDIA PRIVATE LIMITED, ERODE.

Permitted to submit the project report to College/University Authorities.

For MACBRO TECHNOLOGY INDIA PRIVATE LIMITED

AUTHORISED SIGNATORY

Date: 17TH APR 2021

Place: Erode

MACBRO GUIDE

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TO WHOMSOEVER IT MAY CONCERN

This is to certify that **S.AMULRAJ (17MEL233), P.ELAVARASAN (17MEL244), P.GIRIDHAR BALAJI (17MEL245) IVth** year B.E (Mechanical Engineering) student of KONGU ENGINEERING COLLEGE, Erode. Have done 10 days industrial project in our industry during the period on **(09.3.2021 to 19.3.2021)**. During the mentioned period their conduct was good.

For VINAYAKA ELECTRO ALLOYS (I) PVT LTD

Vinayaka Electro Alloys (I) Pvt. Ltd. Ingur 638 052

S.Venkatachalamurthi,

Director

Place: Perundurai

Date: 19-04-2021

INDUSTRY CERTIFICATE

RAMACHANDRAN POULTRY FARM

This is to certify that R.ANANTH , M.BABY GAYATHRI , G.DHANUSH IV year B.E(Mechanical Engineering) student of KONGU ENGINEERING COLLEGE , Erode .Have done 6 day survey in our poultry farm during the period on (15.3.2021 to 20.3.2021) . During the mentioned period their conduct was Good . We wish them Good luck .

For Ramachandran poultry farm

Nelikkarampalyam Kokkalai(po) Tiruchengode Namakkal
6369045599, 9442383825
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PROJECT COMPLETION LETTER FROM THE COMPANY

From: ARUL <arul@delaxe.com>
Sent: Tuesday, March 23, 2021 11:51 AM
To: Dr.A.Sivakumar <askmech@kongu.ac.in>
Cc: 'PRABHU' <prabhu@delaxe.com>
Subject: RE: visit to our factory

Dear sir,

Your students came from your college and the names are Nawin, Prawin,Nirmal.

They have discussed about the project about manufacturing and software used for hosiery garments.
This is for your kind information.

Rgds,

J.Arul Prakash
General Manager
DELUXE KNITTING MILL
SF.NO.50 DELAXE AVENUE
KANGAYAM ROAD
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SARAN KNITS
HIGH CLASS HOSIERY MANUFACTURERS & EXPORTERS

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Date : 15th Feb. 2021.

TO WHOM IT MAY CONCERN

This is to certify that **Mr. A.PRAGADESH (REG NO : 17MER137)**, a student of **KONGU ENGINEERING COLLEGE , ERODE** studying **B.E (MECHANICAL ENGINEERING)**, has successfully completed his internship training from 8th February 2021 to 13th February 2021 (One Week) in our organization.

It is further certify that the internship project report was carried out under the guidance from the internship supervisor.

We are glad to state that during the period of his internship programme, he was sincere, punctual and particularly strong in his analytical skill. His contact was found to be satisfactory.

We wish him success to his future.

Sincerely,

SARAN KNITS .

For SARAN KNITS

Authorised Signatory

15/02

No : 1263 A, Selvalakshmi Nagar, Ayampalayam Road, Palavanchipalayam,Tirupur - 641 608.

SARAN KNITS
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Date : 15th Feb 2021

TO WHOM IT MAY CONCERN

This is to certify that **Mr. S.R.PRAVEEN RAJ (REG NO : 17MER143)** , a student of **KONGU ENGINEERING COLLEGE , ERODE** studying **B.E (MECHANICAL ENGINEERING)** , has successfully completed his internship training from 8th February 2021 to 13th February 2021 (One Week) in our organization.

It is further certify that the internship project report was carried out under the guidance from the internship supervisor.

We are glad to state that during the period of his internship programme, he was sincere, punctual and particularly strong in his analytical skill. His contact was found to be satisfactory.

We wish him success to his future.

Sincerely,

SARAN KNITS .

For SARAN KNITS

Authorised Signatory

15/02

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SARAN KNITS
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GSTIN:33ADBFS4967Q1ZD

Date : 15th Feb. 2021.

TO WHOM IT MAY CONCERN

This is to certify that **Mr. M.RAGUL (REG NO : 17MER152)** , a student of **KONGU ENGINEERING COLLEGE , ERODE** studying **B.E (MECHANICAL ENGINEERING)** , has successfully completed his internship training from 8th February 2021 to 13th February 2021 (One Week) in our organization.

It is further certify that the internship project report was carried out under the guidance from the internship supervisor.

We are glad to state that during the period of his internship programme, he was sincere, punctual and particularly strong in his analytical skill. His contact was found to be satisfactory.

We wish him success to his future.

Sincerely,

SARAN KNITS .

For SARAN KNITS

Authorised Signatory

15.02

No : 1263 A, Selvalakshmi Nagar, Ayampalayam Road, Palavanchipalayam,Tirupur - 641 608.

ASHOK LEYLAND
Aapki Jeet. Hamari Jeet.

15/04/2021

CERTIFICATE

This is to certify that **Mr. Niranjan Kumar R (17MER127)** pursuing **Bachelor of Mechanical Engineering** from **Kongu College of Engineering, Erode** has undergone the **PROJECT – " To Improve Wheel alignment straight pass by reducing 'Thrust Angle' Defect "** at Ashok Leyland Ltd (Unit-II), Hosur from **15/03/2021 to 15/04/2021.**

15/4/21

R N VELUMANI
SENIOR MANAGER – HR

Gnanamani College of Technology

(Accredited by NAAC)
NH-7, A.K.Samuthiram, Pachal Post , Namakkal Dist. - 637018, Tamilnadu. Cell: 99444 93900
Ph: 04286-293888, 293999, Fax: 04286-293800, Web: www.gct.org.in, Email: info@gct.org.in

Date: 30.11.2020

To

Dr.V.Hariharan, B.E., M.E., Ph.D.,
Professor,
Department of Mechanical Engineering,
Kongu Engineering College,
Erode,

Dear sir,

Sub: Requesting to be a Reasource Person for the "Webinar" on 09.12.2020 – Reg

Greetings from Gnanamani College of Technology,

Gnanamani College of Technology is located in Namakkal District, Tamilnadu, offering Quality and Value based Technical Education starting from Under graduate to Doctoral Degree Program and serving the rural community for the past 10 years in a successful manner.

In our college, Webinars are conducted to provide a platform for the Students/Researchers/Academicians to learn the latest trends in Tehnology. Accordingly we have arranging a Webinar entitled **"Industrial vibration problems" on 09.12.2020** for this semester.. It is our pleasure to seek you as a Resource person for this occasion. The staff and student community will really be benifitted by your speech. Further arrangement shall be done as per your program.

Eagerly waiting to hear you in the Webinar.

03.12.20

With Best Regards,

PRINCIPAL
GNANAMANI COLLEGE OF TECHNOLOGY,
NH-7, A.K. Samuthiram,
Pachal (Po), Namakkal-637 018

Submitted to Principal

3.12.2020
HoD - Mech.

Thiagarajar Polytechnic College, Salem (TN) - AICTE Short Term Training Programme on NonDestructive Testing Methods - Invitation to act as Resource Person

TPT CIVIL STTP <tptcivilsttp2020@gmail.com>
Fri 12/11/2020 3:36 PM
To: Vaggeeram Hariharan <hariharanvag@gmail.com>; Dr.V.Hariharan <hariharan@kongu.ac.in>
To

Dr.V.Hariharan
Professor
Dept. of Mechanical Engineering
Kongu Engineering College
Perundurai, Erode-638 060

Dear Sir,

Greetings!

At the outset, I express my sincere gratitude for kindly accepting our invitation to act as a Resource person for the AICTE Short Term Training Programme on Non Destructive Testing Methods to be conducted by our institution through online mode.

In this connection, I am pleased to invite you to be the Resource person on 16.12.2020 (Wednesday), Day-3, Session 1 (9.30 pm to 11.00 pm). I certainly believe that your address will help the faculty members to learn the new technological advancements in the current industrial scenario and adopt the new advances in their teaching process.

The link for the programme is presented herewith.

Join Zoom Meeting

https://us02web.zoom.us/j/82649892648?pwd=K0VtaVlZL1lFM3BxTExubmQvZjBhdz09

Meeting ID: 826 4989 2648
Passcode: tpt

Thanks and regards,
P.Venugopal
Co-ordinator
Faculty of Civil Engineering
Thiagarajar Polytechnic College
Salem - 636 005.
94437 92530

Submitted to Principal 14.12.2020
HOD - Mech.

Topic : NDT for Engineering Applications

Thiagarajar Polytechnic College, Salem (TN) - AICTE Short Term Training Programme on NonDestructive Testing Methods - Invitation to act as Resource Person

TPT CIVIL STTP <tptcivilsttp2020@gmail.com>
Fri 12/11/2020 4:16 PM
To: Vaggeeram Hariharan <hariharanvag@gmail.com>; Dr.V.Hariharan <hariharan@kongu.ac.in>
To

Dr.V.Hariharan
Professor
Dept. of Mechanical Engineering
Kongu Engineering College
Perundurai, Erode-638 060

Dear Sir,

Greetings

At the outset, I express my sincere gratitude for kindly accepting our invitation to act as a Resource person for the AICTE Short Term Training Programme on Non Destructive Testing Methods to be conducted by our institution through online mode.

In this connection, I am pleased to invite you to be the Resource person on 26.12.2020 (Saturday), Day-6, Session 1 (9.30 pm to 11.00 pm). I certainly believe that your address will help the faculty members to learn the new technological advancements in the current industrial scenario and adopt the new advances in their teaching process.

The link for the programme is presented herewith.

Topic: NDT for Engineering Applications.

Join Zoom Meeting

https://us02web.zoom.us/j/82649892648?pwd=K0VtaVl2L1lFM3BxTExubmOvZz9hdz09

Meeting ID: 826 4989 2648
Passcode: tpt

Thanks and regards,
P. Venugopal
Co-ordinator
Faculty of Civil Engineering
Thiagarajar Polytechnic College
Salem - 636 005.
94437 92539

Submitted to Principal: 14.12.2020

HoD - Mech.

Request for resource person-reg

Institution of Engineers Erode Local Centre <ieierode2015@gmail.com>

Thu 20-08-2020 15:16

To: Principal Kongu Engineering College <principal@kongu.ac.in>

Cc: Dr.P.Selvakumar <selvakumar@kongu.ac.in>

Dear Sir,

IEI Erode Local centre in association with Vellalar college of Engg and Tech and Kongu Engg college is organizing webinar series in Mechanical Engineering division during 24.08.2020 to 28.08.2020. Kindly permit Dr.P.Selvakumar, ASP/Mech of your institution as the resource person to handle a session in the topic "Energy Management in Boilers and Compressors" on 25.08.2020.

Thanking you,

With regards,

Dr.R.Nallusamy
Honorary Secretary
IEI Erode Local Centre
Erode
9865539172
www.ieierode.org

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NH-544, Komarapalayam Tk., Namakkal Dt. - 637303, Tamil Nadu, INDIA, www.excelinstitutions.com

Certificate of Appreciation

This is to certify that **Dr.A.Sivakumar,** Professor, Department of Mechanical Engineering, Kongu Engineering College, Erode, Tamil Nadu has the **Chief Guest, delivered Keynote Address and act as External Session Chairperson** in AICTE Sponsored Online International Conference on Materials, Manufacturing, Robotics, Automation, Artificial Intelligence and Networking for Industry 5.0 (ICM RAIN-2021) on 28.01.2021 & 29.01.2021 (2-Days) organized by Department of Aeronautical Engineering, Excel Engineering College, Komarapalayam, Namakkal District, Tamil Nadu-637 303.

COORDINATOR **HoD** **PRINCIPAL**

NEHRU INSTITUTE OF ENGINEERING & TECHNOLOGY

"Nehru Gardens", Thirumalayampalayam, Coimbatore – 641 105.
ISO 14001:2004 Certified, Recognized by UGC with 2(f) & 12(B)
Approved by AICTE, New Delhi and Affiliated to Anna University, Chennai
Accredited by NAAC, NBA Accredited UG Courses : AERO, CSE, MECH

LETTER OF APPRECIATION

15.07.2021

To

Mr. A.ABUBAKKAR,
Assistant Professor (Sr.G),
Department of Mechanical Engineering ,
Kongu Engineering College,
Erode.

Sir,

On behalf of Department of Mechatronics Engineering, Nehru Institute of Engineering and Technology, we would like to extend our most heartfelt appreciation to you for being our resource person for the National level webinar on **"Energy Auditing and Opportunities"** Your presence on 08.07.2021 (Thursday) made the function more fruitful and memorable for us. The students and faculties are really benefitted by your contribution.

Thank you for sharing your valuable time. The insights you shared during your guest address to the students was touching and inspiring.

Thank you again and we hope that you will oblige us in other occasions.

NEHRU INSTITUTE OF ENGG. & TECHNOLOGY
T.M. Palayam, Coimbatore-105

Principal
Dr. P. MANIARASAN
Principal 15/7/2021
Nehru Institute of Engg. & Technology
T.M.Palaya m, Coimbatore - 641 10!

www.nehrucolleges.com

OUR VISION
Our Vision is to mould the youngsters to acquire sound knowledge in technical and scientific fields to face the future challenges by continuous upgradation of all resources and processes for the benefit of humanity as envisaged by our great leader Pandit Jawaharlal Nehru.

OUR MISSION
To build a strong centre of learning and research in engineering and technology.
To facilitate the youth to learn and imbibe discipline, culture and spirituality.
To produce quality engineers, dedicated scientists and leaders.
To encourage entrepreneurship.
To face the challenging needs of the global industries.