ESWAR
COLLEGE OF ENGINEERING
Approved by AICTE, New Delhi & Affiliated to JNTUK Kakinada, Kakinada, AP
Kesanupalli (V), Narasaraopet - 522549. www.eswarcollegeofengg.org

+91 98855 78652
+91 99636 34414
Email: eswarcollegeofengg@gmail.com
Website: www.eswarcollegeofengg.org

Number of research papers per teachers in the journals notified on UGC website in A.Y. 2022-23

S. No	Name of the author/s	Department of the teacher	Title of the paper	ISSN number	Link to article/paper/abstract of the article	Is it listed in UGC Care list/Scopus/Web of Science/other, mention
1	SK.Chand basha subhani	Mechanical	DEVELOPING PROGRAM CODE FOR AUTOMATIC COLOR CODE SENSING PUNCHING MACHINE USING WPL SOFTWARE	2350-0557	https://doi.org/10.55524/ijirem.	UGC
2	SK.Chand basha subhani	Mechanical	TO STUDY THE MECHANICAL PROPERTIES OF SLAG AND FLYASH REINFORCED AS 2024 COMPOSITES	2350-0557	https://doi.org/10.55524/ijirem.	UGC
3	SK.Chand basha subhani	Mechanical	MODELING ,AERODYNAMIC AND CRASH SIMULATION ON CAR USING FLUIENT	2350-0557	https://doi.org/10.55524/ijirem.	UGC
4	SK.Chand basha subhani	Mechanical	MODELLING AND THERMAL ANALYSIS OF FOUR STROKE FOUR CYLINDER IC ENGINE BY USING ANSYS	2455-3778	https://doi.org/10.46501/IJMTS0904020	UGC

PRINCIPAL
ESWAR COLLEGE OF ENGINEERING
Chilakaluripet Road,
Kesanupalli (V), NARASARAOPET-522 549.
Palnadu

International Journal of Innovative Research in Engineering & Management (IJIREM)
ISSN(Online): 2350-0557, Volume-9, Issue-6, December 2022
https://doi.org/10.55524/ijirem.2022.9.6.21
Article ID IJIR-1301, Pages 119-125
www.ijirem.org

Developing Program Code for Automatic Color Code Sensing Punching Machine Using WPL Software

P. Sravani[1], Shaik. Chand Mabhu Subhani[2], and N. Vijay Kumar[3]

[1]Assistant Professor, Department of Mechanical Engineering, Narasaraopeta Engineering College (Autonomous), Narasaraopet, Andhra Pradesh, India
[2]Assistant Professor, Department of Mechanical Engineering, Eswar College of Engineering, Narasaraopet, Andhra Pradesh, India
[3]Assistant Professor, Department of Mechanical Engineering, Pace Institute of Technology& Sciences, (Autonomous), Ongole, Andhra Pradesh, India

Copyright © 2022 Made P. Sravani et al. This is an open-access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

ABSTRACT- This paper presents the idea of developing a logic or program code for an Automatic Color code sensing and punching machine which is driven based on Pneumatic architecture and can be used at the packing section in industries where the end user can punch labels on the objects which are moving on the conveyor based on their color. The program code basically controls the Pneumatic valves present in the system which actuates the Cylinders and helps in clamping and de clamping of moving objects and henceforth achieving the label at required spot, whereas the desired color is acquired from the dedicated color sensor which helps in deciding the labeling process.

This paper uses the advanced industrial controller (PLC) software called WPL Soft which is the most widely used tool in industries. This software requires a dedicated programming language called Ladder diagram, which is the 80% preferred programming language worldwide for programming PLCs. A program has been developed for automatically creating the application for color sensing and punching label on the desired objects based on color.

I. INTRODUCTION

A. Description

The pneumatic system has gained a large amount of importance in last few decades due to its accuracy and cost. This convenience in operating the pneumatic system has made us to design and fabricate in this project. This unit can be operated easily with semi-skilled operators.

The pneumatic press tool has an advantage of working in low pressure, that is even a pressure of 6 bar is enough for operating the unit. The pressurized air passing through the tubes to the cylinder, forces the piston out whose power through the linkage is transmitted to the punch. The work piece thus got is for required dimensions and the piece can be collected through the land clearance provided in the die. The die used in this is fixed such that the die of required shape can be used according to the requirement. This enables us to use different type punch dies resulting in a wide range of products. Different types of punch as requirement can be thus got. According to the work material the operating pressure can be varied.

In this project the image sensors are used to avoiding the mistakes. The system automatically stops; when the image sensor detecting the any color difference of the component inside the machine [1].

The press is the automatic punching machine tool designed to punch letter or rivet metal by applying mechanical force or pressure. The metal is punched or riveted to the desired requirement. The presses are exclusively intended for mass production and they represent the fastest and more efficient way to form a metal into a finished punched or riveted product. Press tools are used to form and cut thin metals. There are Nemours types of presses in engineering field, which are used to fulfill the requirements. We are interested to introduce pneumatic system in presses. The main function of pneumatic press is to form or cut thin sheet metals or non-metals using pneumatic power. In this project we have used to punching process for simple application.

B. Working Principle

The compressed air from a compressor is used to press the work by means of the piston and piston rod, cylinder through a solenoid valve. The high pressurized air striking against the piston tends to push it upwards. This force is transmitted to a punch by means of a valve by its mechanical advantage. The punch forced downward pierces the work material. This is the main principle of the unit.

The compressed air from the compressor at the pressure of 2 to 7 bar is passed through a pipe connected to the Solenoid Valve with one input when the image sensor unit in normal condition. The DC valve (Solenoid Valve) is actuated with input power. The 5/2 Solenoid Valve has one input port, two output ports and two exhaust port. This solenoid valve is controlled by the electronic control timing unit.

The solenoid valve is in ON position; the compressed air pushes the pneumatic cylinder piston downward to punch the work piece forcedly. The solenoid valve in OFF position, the compressed air pushes the pneumatic cylinder piston upwards due to the high air pressure at the bottom of the piston. This solenoid valve ON/OFF signal is controlled by the control unit

The die used in this is fixed such that the die of required shape can be used according to the requirement. This enables us to use different type punch dies resulting in a wide range of products. Different types of punch as

PRINCIPAL
ESWAR COLLEGE OF ENGINEERING
NARASARAOPET-522 601, Guntur (Dt.)

International Journal of Innovative Research in Engineering & Management (IJIREM)
ISSN(Online): 2350-0557, Volume-9, Issue-6, December 2022
https://doi.org/10.55524/ijirem.2022.9.6.19
Article ID IJIR-1299, Pages 111-113
www.ijirem.org

To Study the Mechanical Properties of Slag and Fly Ash Reinforced As 2024 Composites

D.V. Rao[1], Shaik. Chand Mabhu Subhani[2], N. Vijay Kumar[3], and Ch. Naveen Kumar[4]

[1]Professor, Department of Mechanical Engineering, KHIT, Guntur, Andhra Pradesh, India
[2] Associate Professor, Department of Mechanical Engineering, Eswar Collage of Engineering, Narasaraopet, Andhra Pradesh, India
[3]Assistant Professor, Department of Mechanical Engineering, PACEITS, Ongole, Andhra Pradesh, India
[4]Student, Department of Mechanical Engineering, KHIT, Guntur, Andhra Pradesh, India

Correspondence should be addressed to D.V. Rao; naveenhari0412@gmail.com

Copyright © 2022 Made D.V. Rao et al. This is an open-access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

ABSTRACT- Metal matrix composites (MMCs) possess significantly improved properties compared to unreinforced alloys. There has been an increasing interest in composites containing low density and low cost reinforcements. In view of the generation of large quantities of solid waste by products like fly ash and slags, the present study is discarded, new methods for treating and using these solid wastes are required. Hence, composites with fly ash and Granulated blast furnace slag as reinforcements are likely to overcome the cost barrier for wide spread applications in automotive and small engine applications. In the present investigation, AA 2024 alloy – 5 wt. % fly ash and slag composites separately were made by stir casting route. Phase identification and structural characterization were carried out on fly ash and GBF slag by X-ray diffraction studies.The hardness and compression tests were carried out on all these alloy and composites. The reinforcement Improved hardness and mechanical properties were observed for both the composites compared to alloy; this increase is higher for AA2024-Fly ash composite than AA2024- Granulated blast furnace slag composite.

KEYWORD- Aluminium alloys; MMCs; Fly Ash; slag; Stir casting.

I. MATERIALS AND METHODS

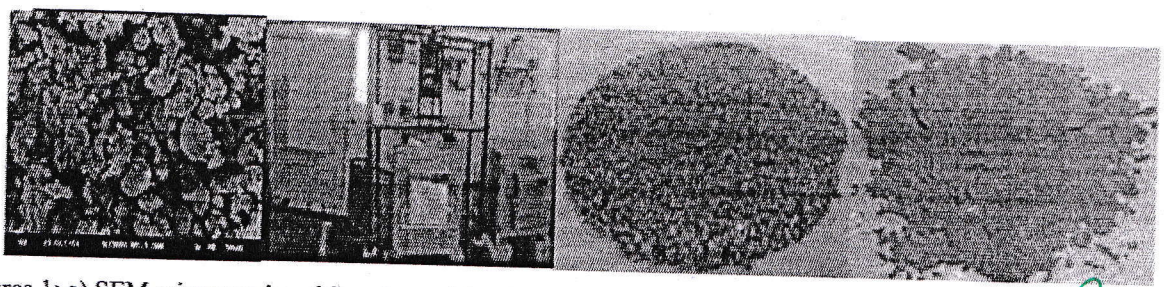
In the present study AA 2024 alloy was chosen as matrix material because of its wider applications in the family of aluminium-copper alloys. This alloy has a higher tensile and yield strength with lower elongation. Typical uses of this alloy are aircraft structures, rivets, hardware, truck wheels and screw machine products. At present very limited information is available on the GBF slag reinforced AA 2024 alloy composites. Therefore, the present work makes an attempt to the fly ash and GBF slag reinforced AA 2024 alloy composites by stir casting route; later these composites were characterized in terms of their microscopic studies, density and Mechanical properties.

Table 1: Chemical composition of Al - 4.5% Cu – 2 Mg alloy, wt. %(AA2024)

Cu	Mg	Si	Fe	Mn	Ni	Pb	Sn	Ti	Zn	Al
4.52	1.938	0.066	0.663	0.131	0.075	0.029	0.021	0.013	0.118	balance

Table 2: Chemical composition of as received Granulated Blast furnace slag, wt. %

SiO_2	CaO	FeO	Al_2O_3	MgO	MnO	TiO_2	CaS
34.2	34.34	0.37	18.9	9.67	0.34	0.72	1.46



Figures 1: a) SEM micrographs of fly ash particles SEM of AA 2024 alloy -% fly ash b) Stir Casting Set-up used for fabrication of Composites and the fly ash powder of pre heat condition GBF) slag powder and fly ash

PRINCIPAL
ESWAR COLLEGE OF ENGINEERING

International Journal of Innovative Research in Engineering & Management (IJIREM)
ISSN: 2350-0557, Volume-9, Issue-6, December 2022
https://doi.org/10.55524/ijirem.2022.9.6.20
Article ID IJIR-1300, Pages 114-118
www.ijirem.org

Modeling, Aerodynamic and Crash Simulation on Car Using Fluient

Sheik Chand Mabhu Subhani[1], D. V Rao[2], N. Vijay Kumar[3], and M. GunaSekhar[4]

[1]Associate Professor, Department of Mechanical Engineering, Eswar Collage of Engineering, Narasaraopet, Andhra Pradesh, India
[2]Professor, Department of Mechanical Engineering, KHIT, Guntur, Andhra Pradesh, India
[3]Assistant Professor, Department of Mechanical Engineering, PACEITS, Ongole, Andhra Pradesh, India
[4]Student, Department of Mechanical Engineering, KHIT, Guntur, Andhra Pradesh, India

Correspondence should be addressed to Sheik Chand Mabhu Subhani; gunas8114@gmail.com

Copyright © 2022 Made Sheik Chand Mabhu Subhani et al. This is an open-access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

ABSTRACT- Aerodynamics plays a crucial role while designing any automobile components. Due to the aerodynamics the entire performance of the automotive will be changed. With an improvement in computer technology, manufacturers are looking toward computational fluid dynamics instead of wind tunnel testing to reduce the testing time and cost. In this paper a car model considered and it is modeled using solid works modeling software. The car material is stainless steel. The lift and drag of production vehicle are determined by the analysis of flow of air around it using Ansys. The aerodynamic analysis of the design parameter of car will be performed by using a suitable turbulence model and to compare the drag coefficient of design of car model by using CFD software result and experimentally result and the results will be validated by CFD analysis/experimental studies. The result of software analysis has agreed excellently with field experimentally results. The aerodynamic and crash analysis on car with of material Al 6061&AISI 4130 with wall and vehicle is considered The given model is tested under frontal collision conditions and the resultant deformation and stresses are determined with respect to a time of 80 Mille sec for ramp loading using ANSYS software. The crash analysis simulation and results can be used to assess both the crashworthiness of current frame and to investigate ways to improve the design. This type of simulation is an integral part of the designcycle and can reduce the need for costly destructive testing program.

KEYWORDS- CAD, CFD, Pro-E, Drag Coefficient, Drag Force, Aerodynamic, ANSYS, Crash

I. INTRODUCTION

All The choice of car is often mode on the basis of fuel efficiency cost & comfort. However, for general purpose fuel efficiency is the most important factor that is responsible for the overall popularity of a car of any make fuel efficiency is depend upon the performance of internal combustion engine & also on the aerodynamic design body of thecar.

In terms of vehicle efficiency, drag is an important factor which is why vehicle aerodynamics is such an active area of research for automobile manufacturers. While wind tunnel testing was the most profound way of testing vehicle aerodynamics in the 20th century, recent growth in the available computational power has led to more and more adaptation of numerical simulations.

Better automotive aerodynamics lead to a reduction in fuel consumption, helping drivers save money and lowering carbon dioxide emissions. One important consideration that modern vehicle engineers take into account while designing a car is aerodynamics. Aerodynamics is the study of both the motion of air and the forces created on an object moving through air. When an automobile is in motion, a large amount of air is displaced and must flow around the vehicle

II. AERODYNAMICS FORCES AND MOMENTS

Among the most important results obtained from wind tunnel experiments supporting design programs are the aerodynamic forces and moment ts acting on the test vehicle in a controlled and repeatable environment. Force and moment measurements are important for all ground vehicles

The drag and lift forces generated on a high-speed train. for instance, are fundamentalin determining its safety, the maximum cruise speed, and all the consequent issues (e.g.,the time of travel and the fuel efficiency)that eventually affect ticket prices.

The lift forces is of extreme importance in determining controllability for performance cars and race cars, becoming more critical as the speed increases. lift is often considered in terms of front lift and real lift. This is equivalent to considering total lift and pitching moment. Other aerodynamic force and moment components also play major roles in the controllability of ground vehicles at high speeds. Side force, yawing moment, and rolling moment under side wind conditioned or due to passing of another vehicle are important determinants of the safety and comfort of a passenger vehicle or the capability of a race carin competition.

PRINCIPAL
ESWAR COLLEGE OF ENGINEERING
NARASARAOPET-522 601, Guntur (Dt

III. OBJECTIVES

As per UGC guidelines an electronic bar code is provided to seure your paper

International Journal for Modern Trends in Science and Technology, 9(04): 120-125, 2023
Copyright © 2023 International Journal for Modern Trends in Science and Technology
ISSN: 2455-3778 online
DOI: https://doi.org/10.46501/IJMTST0904020
Available online at: http://www.ijmtst.com/vol9issue04.html

Check for updates

Modelling and Thermal Analysis of Four Stroke Four Cylinder IC Engine by using ANSYS

Singu Srinivas[1], Rangu Mohan[1], Shaik Mahaboob Subhani[1], Devarapu Ganesh[1], Podili venkata veera vasu[1], Shaik Chand Mabhu Subhani[2]

[1]Department of Mechanical Engineering, Eswar College of Engineering, Narasaraopet, AP.
[2] Assistant Professor, Dept of Mechanical Engineering, Eswar College of Engineering, Narasaraopet, AP.

To Cite this Article
Singu Srinivas, Rangu Mohan, Shaik Mahaboob Subhani, Devarapu Ganesh, Podili venkata veera vasu and Shaik Chand Mabhu Subhani, Modelling and Thermal Analysis of Four Stroke Four Cylinder IC Engine by using ANSYS. International Journal for Modern Trends in Science and Technology 2023, 9(04), pp. 120-125. https://doi.org/10.46501/IJMTST0904020

Article Info
Received: 28 February 2023; Accepted: 23 March 2023; Published: 27 March 2023.

ABSTRACT

A cylinder engine body is an integrated structure comprising the cylinder(s) of a reciprocating engine and often some or all of their associated surrounding structures. The present aim of the project is to study the effect of the materials being used for the Piston, Connecting rod and Crank Shaft assembly for an engine of a four wheeler vehicle. The engine speed was desired to be increased. The effect of the materials used for the assembly and its behavior was required to be studied. The parts piston, connecting rod and crankshaft are designed using theoretical calculations. The designed parts are modeled and assembled in 3D modeling software (Catia). The Finite Element Analysis is done in Ansys.

The FE Analysis involves structural and analysis of the assembly. The parts of the assembly should be rigid. And, when they are connected together, they should perform as a mechanism. This requires calculation of the forces acting on the components and the dynamic stresses. As the assembly will be working under high temperatures, so thermal analysis also has to be done.

From the results, it is observed that a change in the piston material will allow the engine to operate at the new high speed. Modelling assembly of 4-stroke 4-cylinder IC Engine components took place in Catia V5 R19 and thermal analysis of Engine is in ANSYS WORKBENCH 2019 R3. In this thermal analysis thermal stresses and heat flux were determined. Basic materials used are Aluminum alloy, Titanium alloys, magnesium alloys and stainless steel for I.C. engine components. The comparison of a study among those materials was taken place.

KEYWORDS: Engine components, IC engine, CATIA v5, ANSYS, Thermal analysis

1. INTRODUCTION

An **internal combustion engine (ICE)** is a heat engine where the combustion of a fuel occurs with an oxidizer (usually air) in a combustion chamber that is an integral part of the working fluid flow circuit. In an internal combustion engine, the expansion of the high-temperature and high- pres-sure gases produced by combustion applies direct force to some component of

PRINCIPAL
ESWAR COLLEGE OF ENGINEERING
NARASARAOPET-522 601, Guntur (Dt.)