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A REVIEW ON "TORSIONAL BEHAVIOR OF RECTANGULAR REINFORCED CONCRETE BEAMS WITH ENCASED WELDED WIRE MESH FIBER."

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Abstract

It is well known that there are four structural actions like axial force, shear, bending and torsion are developed with respect to their nature of loading on the structure. Torsion is always considered as a secondary effect up to 1960's. After that we proceed from working stress method to limit state method and shall go to ultimate load one to reduce the factor of safety. Also the novel structures are designed by Architects, designers having attractive overhanging components prone to torsion effect in the structures. Concrete is probably the most used man made construction material in the world. Concrete is homogenous in nature and strong to resist compression but poses Quasi brittleness in tensile strength such deficiency can overcome by introduction of fibers in the body of concrete. Since from last three decades a lot of research has been done on fiber reinforced concrete subjected to pure torsion but if fibers proportion is more, then difficulties in proper concreting get increased and chances of producing balling effect of fibers which affects the homogeneity of concrete. In other hand the considerable studies laid on FRP techniques by using Glass fibers, Carbon fibers and recently ferrocement jacketing utilized for strengthen the existing structures subjected to predominant torsion effect. Although such techniques are very effective for existing structures but requires more additional cost for FRP materials with adhesive and also tend to fire except ferrocement jacketing. But such FRP techniques not overcome the inherent weakness of concrete. However there is also way to utilization of encased Welded Wire mesh in the concrete due to its high tensile strength and can produced the micro cracks behaviour like fiber reinforced concrete for proposed new construction. Here is an attempt to study the behaviour of encased Welded Wire mesh in the concrete subjected to pure torsion.

Keywords: Quasi brittleness, Polymer fiber jacket, ferrocement jacket, WWMF.

1. Introduction

1.1 Concrete

Concrete is probably the most used man made construction material in the world. Concrete is homogenous in nature and also strong in compression. In spite of this, it has some serious deficiencies with respect to tensile strength, flexibility, resilience and ability to redistribute stresses. Generally such deficiency like low tensile strength of the concrete material is overcome by introducing the systems like reinforced concrete and pre-stressed concrete systems. But these systems can counter balance the tensile resistance by introduction of reinforcement and tendons in

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Geographic Multipath Routing based on Triangle Link Quality Metric with Minimum Inter-path Interference for Wireless Multimedia Sensor Networks

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ABSTRACT

Wireless Multimedia Sensor Networks (WMSNs) have emerged as the new class of wireless sensor networks (WSNs) to meet the stringent Quality of Service (QoS) requirements of emerging applications. Multipath routing with cross-layer approach appears to be a potential solution for supporting the distinct characteristics of WMSNs. However, due to the broadcast nature of the underlying medium, multiple paths are exposed to inter-path interference. In addition, low-power wireless links are asymmetric, error-prone and unreliable in nature. Consequently, an accurate and stable link quality estimation is essential to guarantee the performance of routing protocol. This paper proposes Triangle link quality metric and minimum inter-path interference based Geographic Multipath Routing (TIGMR) protocol which finds multiple node-disjoint paths in IEEE 802.15.4 compliant network. This cross-layer routing protocol selects forwarding node based on a triangle link quality metric, remaining energy, and distance while anticipating minimum adjacent path interference effect. In addition, TIGMR protocol avoids Hidden Node Problem (HNP) at the sink node without using Request-To-Send/Clear-To-Send (RTS/CTS) hand-shake mechanism. Simulation results indicate TIGMR protocol optimizes overall performance and improves network lifetime as compared with state-of-the-art Two-Phase Geographic Forwarding (TPGF) and Link Quality and Energy-Aware Routing (LQEAR) protocols.

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1. Introduction

The promising pace of technological research growth has led to the development of sensors capable of sensing and transmitting multimedia data along with scalar data. Wireless Multimedia Sensor Network (WMSN) is a paradigm for the next phase of evolution in Wireless Sensor Network (WSN). A WMSN is a network of interconnected heterogeneous wireless sensors that enables retrieval of video and audio streams, still images, as well as scalar sensor data. WMSN is an exciting new technology with huge potential for reinforcing the traditional WSN applications, as well as creating a ser-

ies of new multimedia applications such as smart surveillance, visual target tracking, traffic monitoring, environmental monitoring, advance health care delivery, disaster management in Internet of Things (IoT) (Akyildiz et al., 2007, 2008; Al-Turjman, 2017; Alvi et al., 2015).

Quality of Service (QoS) is the ability to deliver a guaranteed level of service to potential applications. The main objective of WMSN is to deliver multimedia content with the predefined level of QoS. The transmission of multimedia data requires careful handling in order to ensure that there is a low packet loss rate, end-to-end delay remains within an acceptable range, and jitter is adequate for the perceived video quality. However, due to limited network resources, it is a challenging task to achieve the desired level of QoS for wide range of real-time multimedia applications in WMSN (Al-Turjman, 2018). In fact, multimedia data transmission with QoS guarantee in WMSNs depends on the design and implementation of routing protocol (Aswale and Ghorpade, 2015; Ehsan and Hamdaoui, 2012; Shen and Bai, 2016).

Over about a decade, several empirical studies are being carried out on characteristics of the low-power wireless links. The low-

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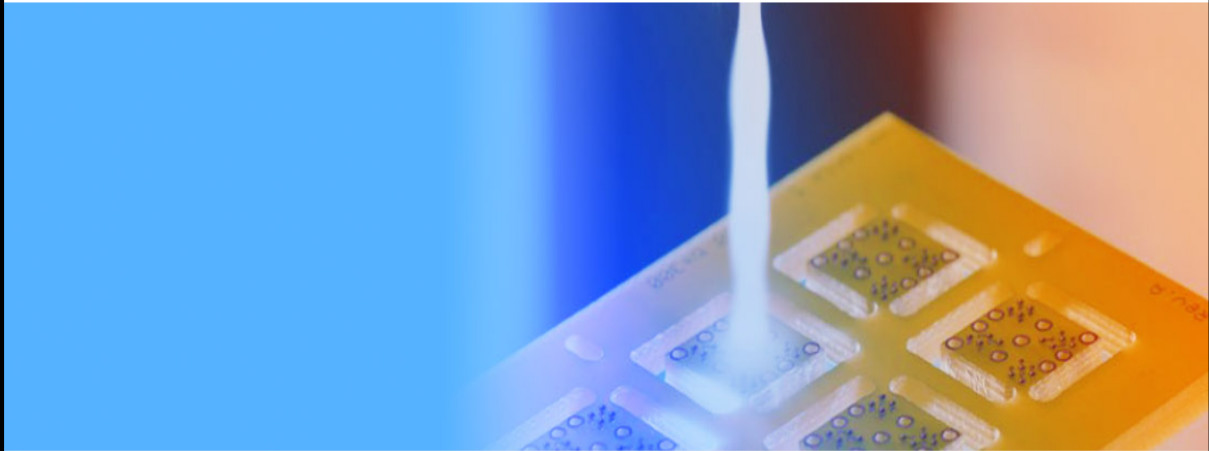


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Manufacturing Review

The aim of the journal is to stimulate and record an international forum for disseminating knowledge on the advances, developments and applications of manufacturing engineering, technology and applied sciences with a focus on critical reviews of developments in manufacturing and emerging trends in this field.

MQL Machining with nano fluid: a review

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Abstract. In any metal cutting machining operation, the cutting fluid plays important role by cooling the cutting tool and the surface of the work piece, also chips are removed from heat affected zone. However, misuse of the cutting fluid and wrong methods of its disposal can affect human health and the environment badly. This paper presents a review of the important research papers published regarding the MQL-based application of mineral oils, vegetable oils and nano fluid-based cutting fluids for different machining processes, such as, drilling, turning, milling and grinding, etc. Most of the experimental studies have shown that application of MQL produces surface better than the flood and dry machining. In turning operation, parameters such as cutting speed, depth of cut, feed rate and tool nose radius have great impact on the surface finish. During high speed turning of steel inherently generates high cutting zone temperature. Such high temperature causes dimensional deviation and failure of cutting tools, surface and subsurface micro cracks, corrosion etc. Therefore, with proper selection of the MQL system and the cutting parameters, it is possible for MQL machining with minimum cost and less quantity of coolant to obtain better conditions, in terms of lubricity, tool life, cutting temperature and surface finish. The findings of this study show that MQL with nano fluid can substitute the flood lubrication for better surface finish.

Keywords: Minimum quantity lubrication / nano fluid / machining / surface roughness etc.

1 Introduction

In recent times, modern machining industries are trying to achieve high quality, dimensional accuracy, surface finish, high production rate and cost saving along with reduced environmental impact. In the machining process, one of the commonly carried out operations is a turning. It can be carried out on variety of machines like lathe, special purpose machine or CNC machine. The quality of turning is measured in terms of tolerances and roughness of surface. Surface finish is a quality specified by customer for machined parts [1]. There are many parameters that affect surface roughness, but most are difficult to quantify adequately. In turning operation, parameters such as cutting speed, depth of cut, feed rate and tool nose radius have great impact on the surface finish [2]. The turning operation seems very simple; through high speed turning of steel inherently generates high cutting zone temperature. Such high temperature causes dimensional deviation and premature failure of cutting tools. It also impairs the surface integrity of the product by inducing tensile residual

stresses and surface and subsurface micro cracks in addition to rapid oxidation and corrosion [3].

A cooling lubricant is used in turning operation to reduce friction at tool chip and work piece interface. However, in high speed machining, conventional cutting fluid application fails to penetrate the chip tool interface and thus cannot remove heat effectively. The lubricant has a strong effect on machined surface quality and tool wear. The costs related to cutting fluid represent a large amount of total machining cost; also cause health of machining operator and correct disposal [4]. However, at present complete elimination of cutting fluid is not possible. An alternative to conventional flood machining is the application of cutting fluids, in very small quantities to the small area where actual machining takes place. This technique is known as minimum quantity lubrication (MQL). In MQL the heat removal can be done and it also provides sufficient lubrication to prevent the generation of heat and reduces environmental impact [5].

The recent development of nano fluids provides alternative cutting fluids which can be used in MQL machining. The advanced heat transfer and tribological properties of nano fluids can provide better cooling and lubricating in the MQL machining process, and make it production-feasible.

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Design Optimization of Frame of Mechanical Press Machine

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Abstract - Power presses are used for the simple, accurate, and economical production of large quantities of articles quickly, accurately, and economically from the cold working of mild steel and other ductile materials. The components produced range over an extremely wide field and are used throughout the industry. Sometimes the pressings may be complicated and more than one pressing operation may be required. The press purpose is to shift one or more sources and movements to a tool or to die to shape or blanch a piece of work. Press design calls for the application of special knowledge about the production process. The press is designed either to perform a specific process or for primarily universal use. The manufacturing process for the metal formation is almost chip less. To perform these tasks Press tools are used. Job component deformation to the desired size is achieved by applying pressure. Presses are regarded as the best and most efficient way of shaping sheet metal into finished products. Pneumatic presses are widely used for operations such as punching, grinding, molding, clinching, blanking, deep drawing, and metal shaping.

Keywords: Frame of Mechanical Press Machine, Press Design Press Tools

I. INTRODUCTION

We recognize there are three types of electric, hydraulic and pneumatic power presses. These may have mechanical or electro-mechanical control systems. Through these three main types of power presses share many common features, the mechanical power press is the most widely used and researched. Mechanical power press works on the principle of reciprocating motion and the flywheel, and crankshaft, clutch are the main components for power transmission. A motor gives flywheel rotational motion and a clutch is used to couple the flywheel rotation to the crankshaft. The crankshaft transforms the flywheel's rotational motion into the press rams down and upward motions. A piece of work is fed, either automatically or manually, into the lower die and the system process is started. The ram (with an upper die) on the down stroke travels towards the area of operation. A re-formed piece is produced when the upper and lower dies press together onto the stock material. Once the down stroke is complete, the work piece created is removed and a new work piece is fed into the machine and process again [1].

A mechanical power press is a machine used to provide force to a die used to shape, blank, or shape metal or non-metallic material. Thus, a press is a component of a

manufacturing system that combines to produce a part the press, die, material, and feeding method. The production system designer must also provide sufficient point-of-service guards for safeguarding the staff in the press room. Every part of this production system is important and will be discussed later in this article.

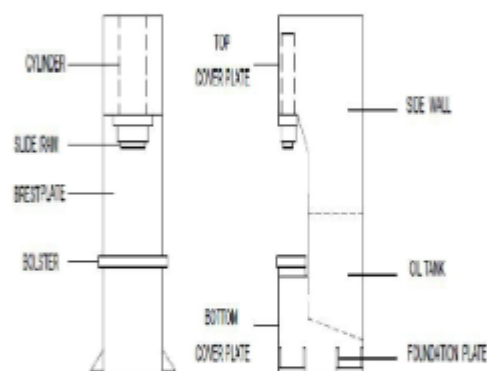


Fig. 1 Block Diagram of Hydraulic Press

A mechanical power press is a machine used to provide force to a die used to shape, blank, or shape metal or non-metallic material. Thus, a press is a component of a manufacturing system that combines to produce a part the press, die, material, and feeding method. The production system designer must also provide sufficient point-of-service guards for safeguarding the staff in the press room. Every part of this production system is important and will be discussed later in this article.

II. THEORY

The various hydraulic and pneumatic presses are designed from all the various articles. We are working on the mechanical press inside my group. Here we focus primarily on reducing low-charged components such as frame and other low-charged components.



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Response Spectrum Analysis of G+ 15 Story Building with and without Base Isolation System

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Abstract: In the study, three dimensional analytical models of G+ 15 story buildings have been generated and analysed using CSI ETABS software version 2016. The earthquake zone III in India is considered for buildings during analysis. The foundation of a building is a substructure through which the entire load of structure is transmitted to its underneath soil. Here, the analysis and design is done of G+15 story building with and without base isolation system. For the analysis in this paper, base isolation system lead rubber bearing (LRB) is used as it is most widely used as isolation system for buildings. Comparison of various parameters like story drift, story shear, story displacement, story stiffness and time period is done. The study shows that maximum story drift is observed at first story for isolated base as compared to fixed base; story displacements is observed linearly increasing with height of the building.

Keywords: Lead Rubber Bearing (LRB), Base Isolator, ETABS 2016 Response spectrum analysis, story displacement, story shear, story stiffness.

I. INTRODUCTION

About 60% of portion of India is susceptible to damaging the structure levels of seismic hazards. The structure which do not withstand the seismic pressure might endure extensive damages, break or even collapse. In this study, the structural analysis of G+15 story reinforced concrete frame building with and without base isolation is done with the help of ETABS software. A response spectrum is simply a plot of the peak or steady-state response (displacement, velocity or acceleration) of a series of oscillators of varying natural frequency that are forced into motion by the same base vibration or shock. This approach permits the multiple modes of response of a building to be considered. Base isolation decouples the structure from ground motion by decreasing the fundamental frequency when compared to fix-based structure. This concept of base isolation makes the structure to remain elastic during an earthquake.

The present study is discussing that the dynamic response of the structure is provided by isolators in the base of the structure in hard soil(I) and discuss the seismic response such as story displacement, story stiffness, story drift, story force and time period. Analysis is been carried out as per the IS 1893:2002[6], IBC 2000[11] and UBC 1997 Volume 2[12] code is used to calculate the design parameters of LRB base isolator.

A study on Design and Time History Analysis of High-Rise Building with Different Structures by M Babybai et.al is done using ETABS software. In this paper it is found that story drift is maximum at first floor and zero at base and minimum at the top of the building.[1]

The research study on Seismic Analysis Of High Rise Buildings With Plan Irregularity by Albert Philip et.al is done using ETABS software. In this paper it is found that Storey displacement is linearly increasing (approx. by 2%) from bottom to top for both the structures and is more for irregular structure.[2]

A research study of Comparison of analysis and design of regular and irregular configuration of multi-story building in various seismic zones and various types of soils using ETABS and STAAD by S.Mahesh et.al is done using ETABS and STAAD.

The conclusion drawn out from this paper is that Base shear value is more in the zone 5 and that in the soft soil in irregular configuration.[3]

A Study on seismic analysis of high-rise building by using software by B.P. Alone et.al. is done using STAAD pro v8i software. In this paper it is concluded that due to unsymmetrical of building geometry modes are not resisting 90 % as its satisfying in X direction successfully after carried out 300 iteration of analysis in such case cut off mode must be add in it & need to check either stiffness of building shall be increase or not.[4]

A Comparative Analysis of RCC and Steel-Concrete-Composite (B+G+ 11 Storey) Building is done by N.A.Mohite et.al. using ETABS software. The conclusion drawn out of this paper is that Still roof displacement and drift with earthquake in X and Y direction are less in Composite framed structure as to R.C.C. framed structure. This may be due to more ductility in case of Composite structure as compared to the R.C.C. which is best suited under the effect of lateral forces.[5]



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Comparative seismic analysis study of G+ 20 story building with flat slab and conventional slab using ETABS

Mr. Nitish A. Mohite¹, Mr. Mayur M. More², Mr. Vidyanand S. Kadam³, Mr. Satish S. Kotwal⁴, Mr. Vinayak B. Patil⁵
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Abstract: In the study, three dimensional analytical models of G+20 story buildings have been generated and analysed using CSI ETABS software version 2016. The earthquake zone III in India is considered for buildings during analysis. Here, the analysis and design is done of G+20 story building with flat slab (with drops) and conventional slab system. In earthquake zone the displacement and drift of the structures will be more so to have more stiffness to the structure shear wall is to be provided therefore a study is made by comparing between conventional slab & flat slab (with drops) building. Comparison of various parameters like story drift, story displacement, story stiffness and time period is done. The equivalent static method is used to design and analyze the structures, as categorized by Indian Standard Code for earthquake resistant structures. The study shows that story drift is 10% more in conventional slab as compared to flat slab; story displacements is observed linearly increasing with height of the building and is 11% more in conventional slab as compared to flat slab.

Keywords: Equivalent Static Method, Flat Slab, ETABS 2016, story displacement, story stiffness, story drift, time period

I. INTRODUCTION

About 65% of portion of India is susceptible to damaging the structure levels of seismic hazards. The structure which do not withstand the seismic pressure might endure extensive damages, break or even collapse. In this study, the structural analysis of G+20 story reinforced concrete frame building with flat slab (with drops) and conventional slab system is done with the help of ETABS software. To cope with the situation maximum utilization of space vertically calls for construction of multi-storey building (High rise building) in large number is taken place. In high rise buildings lateral loads like wind loads, earthquake loads and blast forces are attaining importance and every designer is facing with the problems of providing stability and adequate strength against lateral loads. Therefore, it is very important for the structure to have sufficient strength against vertical loads together with adequate stiffness to resist lateral forces. A flat slab could be a reinforced concrete slab supported directly by concrete column without usage of beam.

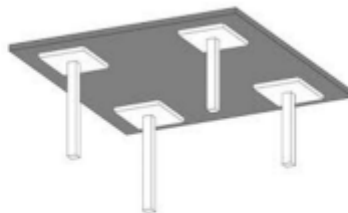


Fig -1: Typical shape of Reinforced Concrete Flat Slab with drop panel

In the present paper, an attempt is made to study and compare the effects of earthquake on a multi storied building comparing between conventional slab & flat slab (with drops) building for various parameters such as story drift, story displacement, story stiffness and time period. Analysis is been carried out as per the IS 1893:2002[6], IS 456:2000[9] and using ETABS v2016 software.

A Analysis And Design Of Flat Slab By Using Etabs Software by B.Anjaneyulu et.al is done using ETABS software. In this paper it is found that Flat plate/slab construction is a developing technology in india flat slabs has manyadvantages over conventional slabs and hence it can be a very good option for modern constructions.[1]

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Signal Processing Techniques Used in Digital Hearing-Aid Devices: A Review

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Date Written: March 4, 2019

Abstract

Hearing impairment is a commonly observed human health problem across the world. In "hearing loss", hearing sensitivity is reduced. To treat hearing loss problem, hearing assistive devices are used. Hearing aids restore hearing ability for those having hearing problems. But with today's most advanced technologies in hearing aids, patients still have some difficulty in understanding speech in crowded areas. Hearing aid has hearing loss match up and adjustment of the hearing aid characteristics according to an individual patient. Digital hearing-aid device amplifies sound selectively by use of digital filters and the processed signal is transferred to the ear. Hearing-aid designers are continuously trying to minimize background sounds and noise with these additional directional microphones, adaptable noise reduction filters and uses of binaural hearing aid technologies to improve localization. Lots of studies have been already done to design digital filters for selective amplification. Most of the available hearing-aid designs have digital filter bank and fixed sub-band structure. Previous research aims at creating band decomposition, and the research is focused on using less complex algorithms for accomplishment of the decomposition of signals. The paper reviews available designs and reconfigurable digital filter banks to achieve the best fitting to audiogram.

Keywords: Hearing loss, Digital hearing aids, Digital filters, Reconfigurable filter

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Design Optimization of Frame of Mechanical Press Machine

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Keywords: Frame of Mechanical Press Machine, Press Design Press Tools

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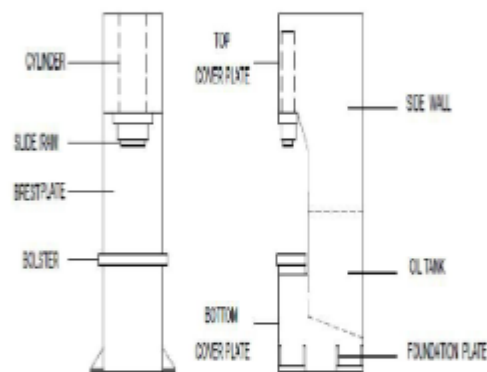


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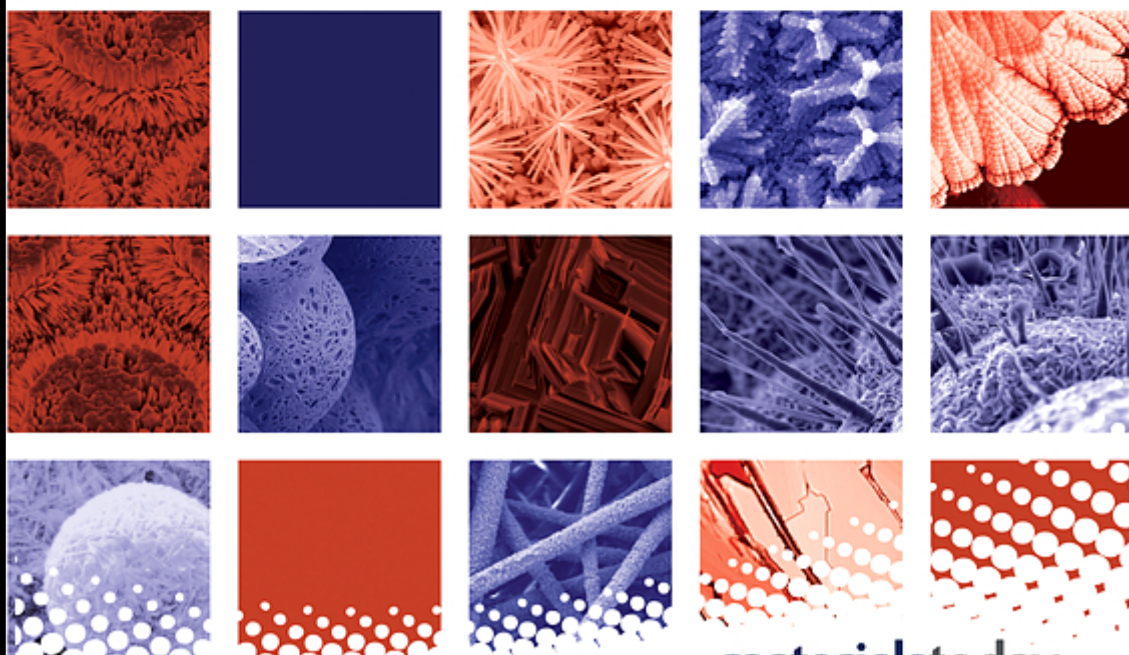
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Analysis of surface roughness and cutting force under MQL turning using nano fluids

P.B. Patole  , G.J. Pol, A.A. Desai, S.B. Kamble

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Abstract

An experimental investigation was carried out to analyze the effects of cutting conditions, and nano coolant on the cutting force and surface roughness in the minimum quantity lubrication turning of the alloy steel AISI 4340. In the present research work, a curve fitting technique is used for the prediction of cutting force and surface roughness in MQL turning process using nano fluids. The developed model may be used for predicting cutting force and surface roughness for given cutting variables. The model is helpful while understanding the behavior of the cutting process. The performance of the developed model is studied with the experimental data of MQL turning of alloy steel AISI 4340 material. The values obtained from the model and experimental for cutting forces are very nearer to each other. Also it is concluded that, in case of surface roughness, estimated equation is not appropriate for accurate prediction but could be used only for limited manner.



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Comparative seismic analysis study of G+ 20 story building with flat slab and conventional slab using ETABS

Mr. Nitish A. Mohite¹, Mr. Mayur M. More², Mr. Vidyaranand S. Kadam³, Mr. Satish S. Kotwal⁴, Mr. Vinayak B. Patil⁵

^{1,2,3,4,5} Assistant Professor, Department of Civil Engineering, BVCOE, Kolhapur

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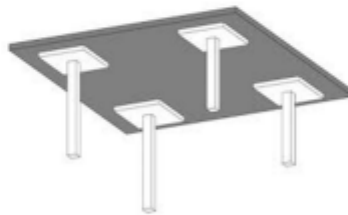


Fig -1: Typical shape of Reinforced Concrete Flat Slab with drop panel

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Analysis of effect of cutting parameters on surface roughness and cutting force during turning of aluminum alloy (AlSi5Cu3)

P. B. Patole*, G. J. Pol, A. A. Desai, S. B. Kamble

Bharati Vidyapeeth's College of Engineering, Kolhapur, Maharashtra, India

ABSTRACT

KEYWORDS

Turning,
Surface Roughness,
Cutting Force,
Cutting Parameters

The aim of this research work is focused on analysis of process parameters during turning of aluminium alloy (AlSi₅Cu₃). A study of effect of cutting parameters in turning of Aluminum Alloy (AlSi₅Cu₃) on the cutting force generated and machined surface roughness is carried out. In the experiment conducted, six values of feed rate, three values of depth of cut, and two values of cutting speed respectively, are used. The test pieces were turned on a centre lathe machine with different levels of cutting parameters by using full factorial design of experiment orthogonal array. The surface roughness of the machined surface was measured using surface measurement tester. Taguchi methodology was used to optimize process parameters. The results were analyzed by using Analysis of variance. From result analysis, it was found that, feed rate played a major role in producing lower surface roughness followed by cutting speed whereas depth of cut has least significance in producing lower surface roughness. To achieve better machining performance, the optimum condition parameters for surface roughness and cutting force, are as feed rate (FR = 0.045 mm/min.), the cutting speed (CS = 90 m/min.), depth of cut (DOC = 0.5 mm). From analysis it is also seen that the cutting force equation and surface roughness equations are appropriate for accurate prediction. Thus, with proper selection of cutting parameters, it is possible to achieve good surface roughness, reduce tool wear while maintaining the cutting forces and temperatures at reasonable levels.

1. Introduction

Surface roughness plays an important role in metal cutting industry, as it influences the fatigue strength, coefficient of friction wear rate etc. of the machined parts [1,2]. In actual practice, there are various factors which affect the surface roughness and cutting force, such as tool geometry, work piece material and cutting conditions etc. Tool geometry include tool material, nose radius, cutting edge geometry, tool point angle, rake angle, etc [3,4]. Work piece variables include material, hardness and other mechanical properties. In turning operation, parameters such as cutting speed, depth of cut, feed rate and tool nose radius have great impact on the surface finish. Some of the researchers have developed the predictive model of surface roughness and cutting forces for the conventional turning, but these models may not be useful for hard as well as soft material turning, but such models differs from that of the conventional turning operation [5,6].

This paper deals with the turning of aluminum alloy (AlSi₅Cu₃) with tungsten carbide coated inserts. Taguchi parameter design and orthogonal array can optimize the response characteristics through settings of design parameters. Analysis of variance used to identify the most significant variables and interaction effects [7,8]. This study evaluate how to select the control parameter levels under turning of aluminum alloy (AlSi₅Cu₃) with parameters such as spindle speed, feed rate, depth of cut and tool nose radius that can minimize the effect of nuisance factor on response variable surface roughness. An experimental work is carried out to analyze the effect of cutting parameters on cutting force and surface roughness then select the optimal cutting parameters condition which will enhance the cutting performance and reduce cost during turning process.

2. Experimental procedure

Aluminum specimen piece (LM4) material is selected for experimentation. Before the turning operation, the specimen (LM4 round bar dia. 26 mm) has to be cut into desired dimension of

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Design Optimization of Frame of Mechanical Press Machine

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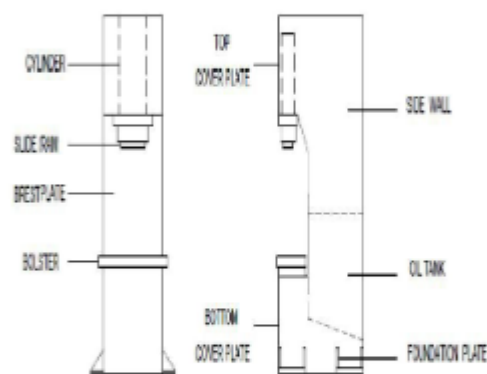


Fig. 1 Block Diagram of Hydraulic Press

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Response Spectrum Analysis of G+ 15 Story Building with and without Base Isolation System

Mr. Nitish A. Mohite¹, Mr. V. B. Patil²

^{1,2} Assistant Professor, Department of Civil Engineering, BVCOE, Kolhapur

Abstract: In the study, three dimensional analytical models of G+ 15 story buildings have been generated and analysed using CSI ETABS software version 2016. The earthquake zone III in India is considered for buildings during analysis. The foundation of a building is a substructure through which the entire load of structure is transmitted to its underneath soil. Here, the analysis and design is done of G+15 story building with and without base isolation system. For the analysis in this paper, base isolation system lead rubber bearing (LRB) is used as it is most widely used as isolation system for buildings. Comparison of various parameters like story drift, story shear, story displacement, story stiffness and time period is done. The study shows that maximum story drift is observed at first story for isolated base as compared to fixed base; story displacements is observed linearly increasing with height of the building.

Keywords: Lead Rubber Bearing (LRB), Base Isolator, ETABS 2016 Response spectrum analysis, story displacement, story shear, story stiffness.

I. INTRODUCTION

About 60% of portion of India is susceptible to damaging the structure levels of seismic hazards. The structure which do not withstand the seismic pressure might endure extensive damages, break or even collapse. In this study, the structural analysis of G+15 story reinforced concrete frame building with and without base isolation is done with the help of ETABS software. A response spectrum is simply a plot of the peak or steady-state response (displacement, velocity or acceleration) of a series of oscillators of varying natural frequency that are forced into motion by the same base vibration or shock. This approach permits the multiple modes of response of a building to be considered. Base isolation decouples the structure from ground motion by decreasing the fundamental frequency when compared to fix-based structure. This concept of base isolation makes the structure to remain elastic during an earthquake.

The present study is discussing the dynamic response of the structure is provided by isolators in the base of the structure in hard soil(I) and discuss the seismic response such as story displacement, story stiffness, story drift, story force and time period. Analysis is been carried out as per the IS 1893:2002[6]. IBC 2000[11] and UBC 1997 Volume 2[12] code is used to calculate the design parameters of LRB base isolator.

A study on Design and Time History Analysis of High-Rise Building with Different Structures by M Babybai et.al is done using ETABS software. In this paper it is found that story drift is maximum at first floor and zero at base and minimum at the top of the building.[1]

The research study on Seismic Analysis Of High Rise Buildings With Plan Irregularity by Albert Philip et.al is done using ETABS software. In this paper it is found that Storey displacement is linearly increasing (approx. by 2%) from bottom to top for both the structures and is more for irregular structure.[2]

A research study of Comparison of analysis and design of regular and irregular configuration of multi-story building in various seismic zones and various types of soils using ETABS and STAAD by S.Mahesh et.al is done using ETABS and STAAD.

The conclusion drawn out from this paper is that Base shear value is more in the zone 5 and that in the soft soil in irregular configuration.[3]

A Study on seismic analysis of high-rise building by using software by B.P. Alone et.al. is done using STAAD pro v8i software. In this paper it is concluded that due to unsymmetrical of building geometry modes are not resisting 90 % as its satisfying in X direction successfully after carried out 300 iteration of analysis in such case cut off mode must be add in it & need to check either stiffness of building shall be increase or not.[4]

A Comparative Analysis of RCC and Steel-Concrete-Composite (B+G+ 11 Storey) Building is done by N.A.Mohite et.al. using ETABS software. The conclusion drawn out of this paper is that Still roof displacement and drift with earthquake in X and Y direction are less in Composite framed structure as to R.C.C. framed structure. This may be due to more ductility in case of Composite structure as compared to the R.C.C. which is best suited under the effect of lateral forces.[5]



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Fig -1: Typical shape of Reinforced Concrete Flat Slab with drop panel

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Effect and Causes of Imbalance in Operating Mix on Shot Blasting Process and Suggested Remedies

Mr. Kadam Arjun Pandurang¹, Rohan Sanjay Varpe²

¹Assistant Professor Bharati Vidyapeeth's College of Engineering Kolhapur

²PG student, Bharati Vidyapeeth's College of Engineering Kolhapur

Abstract - Shot blasting being very common process in foundries, accountable for expenses through number of consumables like abrasive, electricity, wearable parts of machine. Supply as well cost for these consumables are extensively influenced by market conditions, government policies. Inappropriate utilization of these consumables results in heavy economical losses and are generally not recognized by semi or unskilled labor under continuous production. In concern abrasives being working fluid plays vital role to maintain optimum process cost under constraints of output quality and process time

1.1 Introduction

Operating mix is the distribution of sizes of steel abrasive present at any instance in Machine. Every particle completing its life cycle gets gradually decreases in its size. The same should be replaced by new fresh charge of abrasive after predefined instance of time or after defined blasted tonnage. Being working fluid of blasting machine, abrasives are most dominant cause for maintaining process cost. Process cost does include number of costs viz. Abrasive cost, electricity cost, maintenance cost, and Depreciation cost. An imbalance in operating mix causes these costs to vary drastically. Many of semi or unskilled workers do miss this indication of imbalance in Operating mix and do contribute high process cost.(Fig-1)

1.2 Effect on Electricity cost:

Coarse particles being heavy in mass do transfer high kinetic energy to substrate and hence tends high cleaning efficiency. While smaller particles with less mass do transfer lower amount of kinetic energy to substrate and hence possess less cleaning efficiency. Excessive amount of coarse particles will contribute to high surface roughness, while smaller particles cause to fine surface finish. Hence a well balanced operating mix is the one who does play both roles of cleaning with optimum time and surface finish constraints

Apart mass of particle, the traveling velocity of particle on blades also plays vital role on cleaning efficiency and on cycle time. The wearing of particle do changes the size as well shape of particle. Shape of particle determines velocity and direction of particle leaving blades.

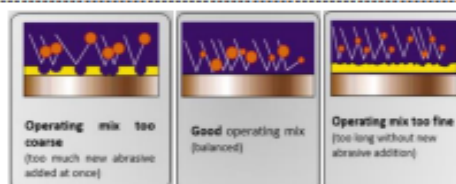


Fig-1: Material removal under different particle size

Smaller particles being worn one have other than non spherical shapes and hence leaves blades at slower velocity by tumbling action and in delayed direction than to desired, while coarse particles being least worn with at most spherical in shape will leaves blades at faster velocity by gliding action in advance direction than to desired. This wrong direction will cause missing the hot spot (Fig-3) and hence less cleaning per indentation, consequently high cycle time. A Balanced operating mix is the one with 40% to 50% particles of nominal size and remaining decreasing gradually in size with 5% of eliminating size.

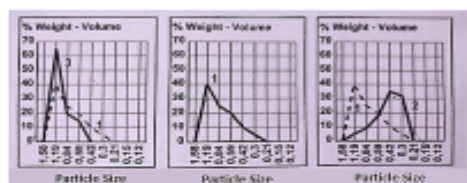


Fig-2: Operating mix under coarse, balanced, fine condition respectively

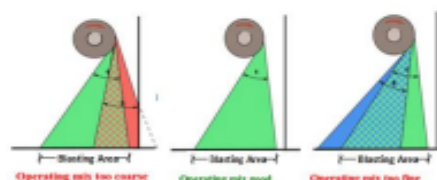


Fig-3: Change in hot spot as per change in operating mix

Following is the example illustrating the severity of change in cycle time.



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Mr. Nitish A. Mohite¹, Mr. Mayur M. More², Mr. Vidyannand S. Kadam³, Mr. Satish S. Kotwal⁴, Mr. Vinayak B. Patil⁵

^{1,2,3,4,5} Assistant Professor, Department of Civil Engineering, BVCOE, Kolhapur

Abstract: In the study, three dimensional analytical models of G+20 story buildings have been generated and analysed using CSI ETABS software version 2016. The earthquake zone III in India is considered for buildings during analysis. Here, the analysis and design is done of G+20 story building with flat slab (with drops) and conventional slab system. In earthquake zone the displacement and drift of the structures will be more so to have more stiffness to the structure shear wall is to be provided therefore a study is made by comparing between conventional slab & flat slab (with drops) building. Comparison of various parameters like story drift, story displacement, story stiffness and time period is done. The equivalent static method is used to design and analyze the structures, as categorized by Indian Standard Code for earthquake resistant structures. The study shows that story drift is 10% more in conventional slab as compared to flat slab; story displacements is observed linearly increasing with height of the building and is 11% more in conventional slab as compared to flat slab.

Keywords: Equivalent Static Method, Flat Slab, ETABS 2016, story displacement, story stiffness, story drift, time period

I. INTRODUCTION

About 65% of portion of India is susceptible to damaging the structure levels of seismic hazards. The structure which do not withstand the seismic pressure might endure extensive damages, break or even collapse. In this study, the structural analysis of G+20 storied reinforced concrete frame building with flat slab (with drops) and conventional slab system is done with the help of ETABS software. To cope with the situation maximum utilization of space vertically calls for construction of multi-storey building (High rise building) in large number is taken place. In high rise buildings lateral loads like wind loads, earthquake loads and blast forces are attaining importance and every designer is facing with the problems of providing stability and adequate strength against lateral loads. Therefore, it is very important for the structure to have sufficient strength against vertical loads together with adequate stiffness to resist lateral forces. A flat slab could be a reinforced concrete slab supported directly by concrete column without usage of beam.



Fig -1: Typical shape of Reinforced Concrete Flat Slab with drop panel

In the present paper, an attempt is made to study and compare the effects of earthquake on a multi storied building comparing between conventional slab & flat slab (with drops) building for various parameters such as story drift, story displacement, story stiffness and time period. Analysis is been carried out as per the IS 1893:2002[6], IS 456:2000[9] and using ETABS v2016 software.

A Analysis And Design Of Flat Slab By Using Etabs Software by B.Anjaneyulu et.al.is done using ETABS software. In this paper it is found that Flat plate/slab construction is a developing technology in india flat slabs has manyadvantages over conventional slabs and hence it can be a very good option for modern constructions.[1]



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Hydrocarbon Emission Analysis of Single Cylinder Diesel Engine for Acacia Nilotica (Babul Seed) Biodiesel

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Abstract - Foremost requirement of population for healthy life is clean air. Tremendous growth in industrial and transport sector is responsible for emission of harmful gases causing prominent effect on human health and environment. Due to recent advancement in technologies, conventional fuel consumption rate has increased rapidly which has contributed multiple times to pollution. Conventional fuel which are based on fossil fuel are limited and are depleting with time. This made researches interest in developing alternative which is sustainable, ecofriendly and economic. Biodiesel is becoming prominent alternative for conventional fuel due to numerous advantages. Following paper represents investigation result carried to study Hydrocarbon emission of single cylinder, four stroke diesel engine using babul bio fuel and blend with diesel. It is observed that for blend 5% Hydrocarbon emission reduces and can be suitable alternative helping in controlling pollution of air.

Keywords- Diesel engine, Babul seed biodiesel, emission, hydrocarbon, Prediction equation

1. INTRODUCTION

From last few decades developing countries are focusing on advancement for faster development. This development may be in various sectors like transportation, industrial etc which intern has increased demand for conventional fuel. Conventional fuel are prominently responsible for increasing pollution and affecting environment adversely and rate of fuel consumption is increased, its demand has also increased causing its depletion. This made researches interest in developing alternative which is sustainable, ecofriendly and economic. Due to similar properties as conventional fuel and numerous advantages biodiesel has become potential alternative. Recent studies and research have made it possible to extract bio-diesel at economical costs and quantities. Major role of biodiesel is to form balanced policy, energy security and increase diesel longevity. The blend of Bio-diesel with fossil diesel has many advantages like it is biodegradable, environmental friendly and economic. It has been seen that if whole lifecycle of biodiesel is considered it almost emits zero percent of sulphates, net small quantities of other pollutant and significantly has reduced emission up to 85% of carcinogenic compound. It is observed that efficiency of engine increases and emission is controlled by use of Bio-diesel making it sustainable energy source.

"Transesterification" method is used for production of biodiesel from vegetable oil. An alcohol and With the oil, alcohol is mixed in presence of catalyst so to crack in esters and glycerin is substituted by alcohol due to catalyst, and from mixture the heavy weight glycerin are to falls, leaving behind alkyl esters. Alkyl esters of fatty acids are left after removal of glycerol that is called as Biodiesel. Babul seeds has potential to extract oil from it and required properties for its use as biofuel and hence is used for making biodiesel.

2. EXPERIMENTAL SETUP AND DESIGN OF EXPERIMENT

2.1. Biodiesel produced from babul seed was tested using a single cylinder, four stroke diesel engine. Through fuel filter, fuel enters in engine. In fuel filter, filtration takes place and particular work is done by combustion at the end of working and from outlet manifold emission is exhausted. Exhaust emission is analysed using AIRREX HG-540 4-GAS EMISSION ANALYSER. Nearly for 20 years this analyzer has been produced and enhanced with time. The airrex hg-540 4-gas emission analyzer is used to measure emission from exhaust like HC, O₂, CO, CO₂, NO_x. In a hard case with all accessories as a complete the analyzer comes and has ready-to-use gas analyzer. Switch on the power, make connection of the hose and probe, push the Zero button. The analyzer is ready for measurement of exhaust emissions gas when the zero is complete. In present paper emission for HC is measured.



AIRREX HG-540 5-gas emission analyzer

2.2 Specifications

AIRREX HG-540 5-GAS EMISSION ANALYSER



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Design Optimization of Frame of Mechanical Press Machine

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Abstract - Power presses are used for the simple, accurate, and economical production of large quantities of articles quickly, accurately, and economically from the cold working of mild steel and other ductile materials. The components produced range over an extremely wide field and are used throughout the industry. Sometimes the pressings may be complicated and more than one pressing operation may be required. The press purpose is to shift one or more sources and movements to a tool or to die to shape or blanch a piece of work. Press design calls for the application of special knowledge about the production process. The press is designed either to perform a specific process or for primarily universal use. The manufacturing process for the metal formation is almost chip less. To perform these tasks Press tools are used. Job component deformation to the desired size is achieved by applying pressure. Presses are regarded as the best and most efficient way of shaping sheet metal into finished products. Pneumatic presses are widely used for operations such as punching, grinding, molding, clinching, blanking, deep drawing, and metal shaping.

Keywords: Frame of Mechanical Press Machine, Press Design Press Tools

I. INTRODUCTION

We recognize there are three types of electric, hydraulic and pneumatic power presses. These may have mechanical or electro-mechanical control systems. Through these three main types of power presses share many common features, the mechanical power press is the most widely used and researched. Mechanical power press works on the principle of reciprocating motion and the flywheel, and crankshaft, clutch are the main components for power transmission. A motor gives flywheel rotational motion and a clutch is used to couple the flywheel rotation to the crankshaft. The crankshaft transforms the flywheel's rotational motion into the press rams down and upward motions. A piece of work is fed, either automatically or manually, into the lower die and the system process is started. The ram (with an upper die) on the down stroke travels towards the area of operation. A re-formed piece is produced when the upper and lower dies press together onto the stock material. Once the down stroke is complete, the work piece created is removed and a new work piece is fed into the machine and process again [1].

A mechanical power press is a machine used to provide force to a die used to shape, blank, or shape metal or non-metallic material. Thus, a press is a component of a

manufacturing system that combines to produce a part the press, die, material, and feeding method. The production system designer must also provide sufficient point-of-service guards for safeguarding the staff in the press room. Every part of this production system is important and will be discussed later in this article.

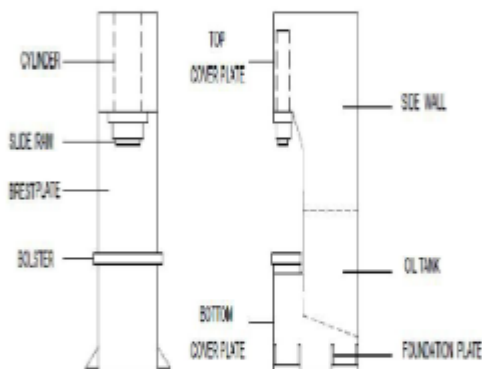


Fig. 1 Block Diagram of Hydraulic Press

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II. THEORY

The various hydraulic and pneumatic presses are designed from all the various articles. We are working on the mechanical press inside my group. Here we focus primarily on reducing low-charged components such as frame and other low-charged components.



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Comparative seismic analysis study of G+ 20 story building with flat slab and conventional slab using ETABS

Mr. Nitish A. Mohite¹, Mr. Mayur M. More², Mr. Vidyanand S. Kadam³, Mr. Satish S. Kotwal⁴, Mr. Vinayak B. Patil⁵
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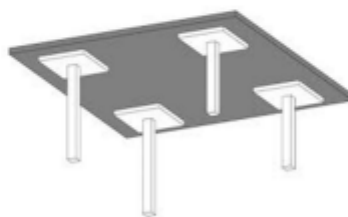


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