Karnataka State Council for Science and Technology
(An autonomous organisation under the Dept. of Science & Technology, Govt. of Karnataka)
Indian Institute of Science Campus, Bengaluru – 560 012
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Dr. U T Vijay
Executive Secretary

Ref: 7.1.01/SPP/33

24th April, 2023

To,
The Principal,
Alva's Institute of Engineering and Technology,
Shobavana Campus, Mijar,
Moodbidri - 574 225.

Dear Sir/Madam,

Sub : Sanction of Student Project - 46th Series: Year 2022-2023

Project Proposal Reference No. : **46S_BE_3887**
Ref : Project Proposal entitled **AUTOMATIC,HYDRAULIC 3 ROLLER PIPE AND ROD BENDING MACHINE**

We are pleased to inform that your student project proposal referred above, has been approved by the Council under "Student Project Programme - 46th Series". The project details are as below:

Student(s)	Mr. CHIRANTH P	**Department**	MECHANICAL ENGINEERING
	Mr. KARTHIK POOJARY		
	Mr. SATHWIK		
	Mr. LOHIT A	**Sanctioned Amount (in Rs.)**	8,000.00
Guide(s)	Prof. KIRAN C H		

Instructions:

a) The project should be performed based on the objectives of the proposal submitted.
b) Any changes in the project title,objectives or students team is liable for rejection of the project and your institution shall return the sanctioned funds to KSCST.
c) Please quote your project reference number printed above in all your future correspondences.
d) After completing the project, 2 to 3 page write-up (synopsis) needs to be uploaded on to the following Google Forms link https://forms.gle/nWTaJjvrwzp3Wmvt6. The synopsis should include following:
   1) Project Reference Number
   2) Title of the project
   3) Name of the College & Department
   4) Name of the students & Guide(s)
   5) Keywords
   6) Introduction / background (with specific reference to the project, work done earlier, etc) - about 20 lines
   7) Objectives (about 10 lines)

PRINCIPAL
Alva's Institute of Engg. & Technology,
Mijar, MOODBIDRI - 574 225, D.K

8) Methodology (about 20 lines on materials, methods, details of work carried out, including drawings, diagrams etc)
9) Results and Conclusions (about 20 lines with specific reference to work carried out)
10) Scope for future work (about 20 lines).

e) In case of incompeted projects, the sanctioned amount shall be returned to KSCST.
f) The sanctioned amount will be transferred by NEFT to the bank account provided by the College/Institute.
g) The sponsored projects evaluation will be held in the Nodal Centre/Online Mode and the details of the same will be intimated shortly by email / Website announcement.
h) After completion of the project, soft copy of the project report duly signed by the Principal, the HoD, Guide(s) and studetn(s) shall be uploaded in the following Google Forms Link https://forms.gle/YWz56TrGg7fnSQgc7. The report should be prepared in the format prescribed by the university.

Please visit our website for further announcements / information and for any clarifications please email to spp@kscst.org.in

Thanking you and with best regards,

Yours sincerely,

(U T Vijay)

Copy to:

1) The HoD
MECHANICAL ENGINEERING
ALVA'S INSTITUTE OF ENGINEERING AND TECHNOLOGY, MOODBIDRI

2) Prof. KIRAN C H
MECHANICAL ENGINEERING
ALVA'S INSTITUTE OF ENGINEERING AND TECHNOLOGY, MOODBIDRI

3) THE ACCOUNTS OFFICER
KSCST, BENGALURU

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Mijar, MOODBIDRI - 574 225, D.K

VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI 590018

A project report on

"HYDRAULIC THREE ROLLER ROD BENDING MACHINE"

Submitted in partial fulfillment of the requirements for the degree of

BACHELOR OF ENGINEERING

in

MECHANICAL ENGINEERING

By

CHIRANTH P	4AL18ME009
LOHIT V ARKACHARI	4AL20ME401
SATWIK V GUNAGA	4AL19ME026
KARTHIK	4AL18ME018

Under the Guidance of

Mr. KIRAN C H

Assistant Professor of Mechanical Department

ALVA'S Education Foundation

Department of Mechanical Engineering

ALVAS INSTITUTE OF ENGINEERING AND TECHNOLOGY

MOODBIDRI-574225, KARNATAKA

2022 – 2023

ALVA'S INSTITUTE OF ENGINEERING AND TECHNOLOGY

Mijar,Moodbidri, D.K. -574225 – Karnataka

ALVA'S
Education Foundation®

DEPARTMENT OF MECHANICAL ENGINEERING

CERTIFICATE

Certified that the project work entitled **"HYDRAULIC THREE ROLLER ROD BENDING MACHINE** "is a bonafide work carried out by

CHIRANTH P	**4AL18ME009**
LOHIT	**4AL20ME401**
SATWIK V GUNAGA	**4AL19ME026**
KARTHIK	**4AL18ME018**

Arebonafide student of mechanical engineering, Alva's Institute of Engineering and Technology inpartial fulfillment for the award of BACHELOR OF ENGINEERING in **MECHANICAL ENGINEERING**of the **VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI** during the year 2022–2023. It is certified that all corrections/suggestions indicated for Internal Assessment have been incorporated in the report deposited in the departmental library. The project report has been approved as it satisfies the academic requirements in respect of Project work prescribed for the Bachelor of Engineering Degree.

Mr. Kiran C H **Project Guide**	**Dr. Satyanarayana** **Head of the Department** Dept. Of Mechanical Engineering Alva's Institute of Engg. & Technology Mijar, MOODBIDRI - 574 225	**Dr. Peter Fernandes.** **Principal** PRINCIPAL Alva's Institute of Engg. & Technology, Mijar, MOODBIDRI - 574 225, D.K

External Viva

Name of the Examiners	**Signature with Date**
1. Dr. G.B. Nagger	24/05/23
2.	

ABSTRACT

The three-roller machine is used for bending pipes, rods, plates, and other ductile materials into circular. The motivation behind this project is to provide an affordable bending machine solution, as many industries face high costs when purchasing such equipment. Additionally, the need for bending roll cages for Formula 3 cars has also contributed to the motivation behind this project. The objectives of this project are to create a highly efficient machine capable of producing large-radius bends, and provide a low-cost alternative for small-scale industries. The machine utilizes hydraulic power and consists of three rolls, with one fixed and two adjustable rolls. The material to be bent is inserted into the machine, and the rolls rotate until the circular shape is achieved. The proposed machine offers several advantages over manual bending methods. It improves the quality of radius of curvature and allows for the bending of tubes, flat plates, construction rods, and box pipes. Stiffer and thicker materials can be bent with less effort. Current focused study on the developed Catia model of base, horizontal, vertical frames are static and structural analyzed by ANSYS 2019 software and is conducted using static structural analysis for maximum load of 5 ton. Shear stress, normal elastic strain, deformation direction, and normal stress are also examined. The deformation stress and strain result obtained for horizontal, vertical and base frame from as 0.417 mm, 0.417 mm. 7.20×10^{7} pa, 128.59mpa, 128.59mpa,2.83×10^{-4}, 5.74×10^{-4}, 5.77×10^{-4}

Key words: Bending machines, hydraulic jack, 3 rollers, rod bending.