



भारत सरकार
विज्ञान और प्रौद्योगिकी मंत्रालय
विज्ञान और प्रौद्योगिकी विभाग
GOVERNMENT OF INDIA
Ministry of Science and Technology
Department of Science and Technology
Technology Bhavan, New Mehrauli Road
New Delhi - 110016



BIHAR COUNCIL ON SCIENCE AND TECHNOLOGY FORMAT FOR STUDENT PROJECT PROPOSAL FOR THE 2nd SERIES OF STUDENT PROJECT PROGRAMME

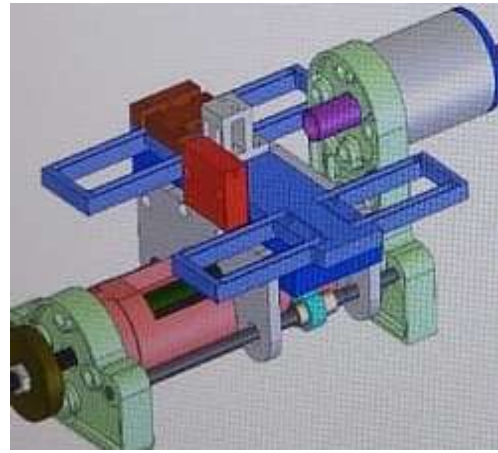
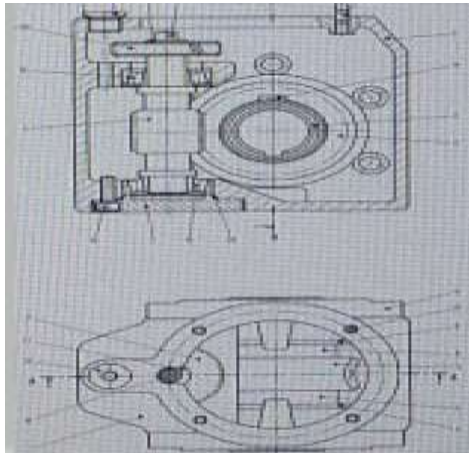
(Hand written proposals will not be accepted, please fill all the details in this MS word file as per the following format and mail scan copy of completely filled project proposal along with filled up the Google Forms to tospp.bcst@gmail.com)

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| 1 | Name of the College: Katihar Engineering College |
| 2 | Project Title : Design and Development of a Cost- Effective Combined Mechanical Harvester with Stubble Removing Facility |
| 3 | Branch: Mechanical Engineering |
| 4 | Degree/ Diploma(Engg.): Degree (B.Tech) |
| 5 | Name(s) of project guide(s): 1. Name: Dr. SURYA KUMAR Email Id: suryakumar@keck.ac.in Contact no: 8650301056 |
| 6 | Name of Team Members (Strictly not more than four students in a batch): (Please paste the latest passport size photograph adjacent to your respective names) Name: ARSALAN AHMED KAMAL AKU Reg. No: 17102129038 Email id: arsalan.nna@gmail.com Mobile No.: 8677824456 |

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| | <p>Name: AKHILESH KUMAR SINGH AKU Reg. No: 17102129021 Email id: singhkakhi009@gmail.com Mobile No.: 7488187132</p> <p>Name: RAUSHANKUMAR AKU Reg. No: 17102129035 Email id: raushankumar20498@gmail.com Mobile No.: 7667036201</p> <p>Name: RAM PUKAR KUMAR AKU Reg. No: 18102129907 Email id: rockingrampukar26@gmail.com Mobile No.: 7631328257</p> |
| 7 | <p>Team Leader of the Project: Name: ARSALAN AHMED KAMAL AKU Reg. No: 17102129038 E-mail id: arsalan.nna@gmail.com Mobile No: 8677824456</p> |
| 8 | <p>Date of commencement of the Project : December-2020</p> |
| 9 | <p>Probable date of completion of the project :April-2021</p> |
| 10 | <p>Scope/Objectives of the project (100 Words): Mechanical harvester used in India normally leaves the crop root with stem in the fields. Majority of farmers in India burn the stubble (commonly known as <i>parali</i> burning) in their fields due to higher labour cost involved in stubble removal. In- field stubble burning is nowadays becoming a major environmental challenge. Stubble burning directly contributes to environmental pollution and also responsible for the haze in Delhi and NCR and melting of Himalaya glacier has also been linked with this events. Harvester in India does not come with stubble removing facility which also accentuates the problem of <i>parali</i> burning.</p> <p>A new prototype will be developed which will have stubble removing facility. The working of proposed combined harvesting machine is based on field parameters i.e. length and width. Prototype of the harvester is modeled for multi tasks such as seeding, ploughing, harvesting and stubble removing. It is tri-wheeled vehicle which is controlled by ATMEGA328 micro controller as a master controller. In the later stage of prototype</p> |

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| | development, we are intended to use solar power to drive the harvester. It will make our harvester environmental friendly. |
| 11 | <p>Literature Survey (At least two/ Within Five Years) :Saravanan et.al [1] have focused on the benefits of using automatic seed sowing Robot for agricultural field .It is used for chickpeas seed. The basic objective of sowing operation is to put the seed and fertilizer in rows at desired depth and spacing, cover the seeds with soil and provide proper compaction over the seed. It saves farmers time and effort. Since it is a remote controlled it can be easily driven by a single person as well as it can be driven manually</p> <p>Anirudh Autade et al [2] have focused on the benefits of using multi-purpose agriculture vehicle on small scale lands. They described about the various operations that can be incorporated in agriculture-based vehicles like cutting, land levelling and ploughing. It also gives us an idea for a compact and efficient design. This multipurpose system gives an advanced method for many operations like cutting the crops with minimum man power and labor making it an efficient vehicle. The machine will do the multiple operations the farm by considering particular rows and specific column at fixed distance depending on crop.</p> <p>References:</p> <p>[1] K Saravanan , S.P. S. S Sivam , S. R. Kumar ,K. S. Moorthy (2018), ‘Design and Fabrication Of Automatic Seed Sowing Robot For Agricultural Field’, International Journal of Pure and Applied Mathematics, 120, 6, pp. 11749-11766.</p> <p>[2] Aniruddha Autade, Rahul Bodkhe , Akshay Surwase and Abhijeet Ghuge (2015) 'Development and Fabrication of Multipurpose Agricultural Vehicle'-The International Journal Of Engineering And Science Vol. 3,Issue 3, pp.400-411.</p> <p>Patent Survey(Optional):</p> |

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| 12 | <p>Methodology (500 Words):</p> <p>We identify the problem related to stubble burning which responsible for the environmental pollution. This vehicle uses a grabber mechanism to uproot the leftover crop stubble. It will have a solar panel to run the harvester which would give zero emission and will be eco-friendly to the environment. This is a next generation vehicle which is very much needed in our current energy crisis situation.</p> <p>Project Development Stages: -</p> <ul style="list-style-type: none"> • Finalizing mechanism • Project design • Parts procurement • Parts fabrication • Parts assembly • Testing <p>➤ Finalizing Mechanism: -</p> <p>Step 1: -Firstly we make a list of required outputs Step 2: - Examine the mechanism architecture Step 3: - Select the architectures Step4:- Identify Motion needs Step5:- Start searching for mechanism & parts Step 6:- Examine Costs and Power Constraints Step 7:- Check part availability Step 8:- Calculate Sizrs Step 9:- Fabricate parts</p> <p>➤ Project Design: -</p> <p>To understand what exactly machine will be, firstly we make project design with the help of machine design or mechanical design like gear box, The gear box transmits the motion and power of the engine to the wheels of the vehicle. The gear box comprises group of gears which are not only motion but also the load of the vehicle. For the gear to run a desired speed and take desired loads it is important they should be designed.</p> |
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➤ **Project Procurement: -**

Once the design is complete parts are to be procured so that project development may proceed. Mechanical parts can be procured from the local store.

➤ **Parts Fabrication: -**

In this process we create machine parts and structure from various raw materials. A fabrication shop will bid on a job usually based on an engineering drawing and if awarded the contract will build the product.

Fabrication Process: -

- Turning
- Welding
- Drilling
- Boring
- Cutting
- Threading
- Metal Cutting

➤ **Parts Assembly: -**

It is the process used in the line of assembly production. As Products are moved through the chain, parts are added at certain point of the line.

➤ **Testing: -**

Mechanical testing includes testing each parts of the machines individually followed by the complete testing after which project is ready to be used.

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| | <p>This machine will work in both directions when it is pushed forward it ploughs. The height of the plough can be adjusted, with the help of screw arrangement and the seed feeder is mounted directly to the motor. The motor rotates and the shaft attached to it has holes. The motor is directly attached to the shaft with holes. When we push the agriculture machine in a backward direction, we can pick the plough up from the ground and the pump which is attached to the front shaft will start pumping the water from the tank and it will sprinkle water over the field.</p> |
| 13 | <p>Expected Outcome of the project (200 Words):</p> <p>The main outcomes are as follows-</p> <ul style="list-style-type: none"> • Generally, cultivation of any crop involves various steps like ploughing, harvesting, sowing, and irrigation. Farmer has to use various agricultural equipment's and labors for caring out these steps, our purpose is to combine all the individual tools to provide farmers with multipurpose equipment which implements all the scientific farming techniques and specifications, suitable for all type of seed cultivation with minimum cost. • This machine will play a vital role to stop the stubble burning which is major cause of air pollution in North Indian. • The machine requires less manpower and less time compared to traditional method. • Power supply is given by solar panel thus reducing the used of petroleum products and hence it is eco-friendly. • Tractor is running on the fossil fuel which emits carbon dioxide and other pollution every second. This evident has led to widespread an water and noise pollution and most importantly has led to a realistic energy crisis in the near future, in order to make the development of our farmers as well as nation sustainable and cause less harm to the environment. • We can use uprooted stubble in making composite materials. |

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| 14 | <p>Is the project proposed relevant to the Industry or Institution? : Yes/No: Yes</p> <p>If Yes, Please provide details of the Industry / institution and contact details:</p> <ol style="list-style-type: none"> 1. Bihar Agricultural University, Sabour Bhagalpur, Bihar-813210 Contact: 0641-2452614 Email: registrarbau2015@gmail.com 2. Gujraty Tractors Limited Vishwamitra Near Railway Overbridge, Vadodra-390011 Contact: 0265-2339547 |
| 15 | <p>Can the product or process developed in the project be taken up for filing a Patent?</p> <p>Yes/No : Yes</p> <p>Prior Art search done?</p> <p>Yes/No : Yes</p> <p>Note: If Yes, you may contact Patent Information Centre of BCST for more details Email : pd@bcst.org.in</p> |

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Budget details (break-up details should be given) :

| Budget | Amount |
|----------------------------|--------------|
| a) Materials / Consumables | 8000 |
| b) Labor | 0 |
| c) Travel | 0 |
| d) Report | 500 |
| e) Miscellaneous | 1500 |
| Total | 10000 |

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| 17 | Any other technical details (Please specify) : |
| 18 | <p>SPP Coordinator (Identified by the college):</p> <p>Note: To be identified by the Principal of the institution. The project proposals must be submitted to BCST through SPP coordinator designated by the Principal</p> <p>Name: Prof. / Dr. / Mr. / Mrs. Email id: Contact No.:</p> |

(Name &Signature of Project Guide with Seal)(Name &Signature of HOD with Seal)

Email Id:

Email Id:

Contact No:

Contact No:

DECLARATION

(From Project Students)

We, the project team hereby declare that the details enclosed in the project proposal are true and correct to the best of our knowledge and belief and we undertake to inform BCST of any changes therein in the project tile, students name will be intimated immediately. In case any of the above information is found to be false or untrue or misleading, we are aware that we may be held liable for it. We hereby authorize sharing of the project Information with this project proposal with the Bihar State Council on Science and Technology, Patna.

We are aware that the project team has to exhibit / demonstrate their project in the nodal Center and interact regarding project with the experts and to exhibit the project in the State Level Seminar and Exhibition (if selected). If the student team fails to attend the evaluation in nodal Centre or fails to attend the State Level Seminar and Exhibition, the supported project amount will be returned back to BCST.

We also hereby, enclose the endorsement form to BCST, Patna.

Name of the students

Signature with date

1. ARSALAN AHMED KAMAL
2. AKHILESH KUMAR SINGH
3. RAUSHAN KUMAR
4. RAM PUKAR KUMAR