



Form A

STARTUP CENTRE
INDIAN INSTITUTE OF TECHNOLOGY BHUBANESWAR

Application Form for Opening Startups by Registered Firms and Subsidiaries/Ancillaries of Established Firms

1. **Name of the Startup:** Wind Driven Water Pump For Small Scale Irrigation and Domestic Purpose

2. **Name of the Applicant/CEO:** Prof. Sudhansu Bhusan Panda

3. **Permanent Address of the Applicant:** Asst. Professor, Department of Mechanical Engg.

Gandhi Institute for Education and Technology, Baniatangi

Bhubaneswar, Dist : Khordha, Odisha

E-mail : sbpanda@gietbbsr.com

Telephone Number: 9777852485

Nationality: Indian

Category of the Applicant: (Tick) GEN SC ST

Qualification: M.Tech(Mechanical Engg.), Ph.D.(Contd.)

Present Occupation/Engagement: Asst. Professor Work Experience (if any): 11 years

Date of Birth 14-07-1974 Sex Male

4. **Father's Name of the Applicant :** Shri RajKishore Panda

Permanent address: At/Po : Badaberana

Dist : Khordha

Phone : 9777852485 Email: sbpanda@gietbbsr.com

5. **Are you a registered company?** Yes / No

6. **If you are registered company,**

(a) **How long have you been in business?**

< 1 year

1 – 5 years

> 5 years

(b) **To which category does your unit belong:**

Proprietorship

Partnership

Pvt. Limited

Other (Please specify)

7. If you are a subsidiary/ancillary unit of an established firm

(a) Name and address of the firm sponsoring the startup

(b) Nature of relationship with the parent firm

Subsidiary unit Ancillary unit Other (please specify)

(c) Nature of arrangement with the parent firm

- a. Financial:
- b. Organizational:
- c. Physical:
- d. Flow of product/service:
- e. Any other (please specify):

8. Details of the other members of the team:

1. Name of the member: Prof. Rajdeep Paul

Educational qualification: M.Tech.(Mechanical Engg.)

Nationality: Indian

Category: GEN SC ST

Father's Name Shri Manoranjan Paul

Permanent address: Kailashar, Tripura

Phone : 9402341985 ,8800408548

Email: prajdeep@gietbbsr.com

2. Name of the member: Prof. Padmalochan Prusty

Educational qualification: M.Tech.(Mechanical Engg.) (Gandhi Institute for Education & Technology, Baniatangi)

Nationality:

Category: GEN SC ST

Father's Name Shri Narayan Prusty

Permanent address: Odogaon, Nayagarh, Odisha

Phone : 9437781566

Email: pprusty@gietbbsr.com

3. Name of the member: Prof. Laxman Kumar Sahoo

Educational qualification: M.Tech.(Mechanical Engg.), Ph.D.(contd.)

Nationality:

Category: GEN SC ST

Father's Name Shri Dhruba Charan Sahoo

Permanent address: Department of Mechanical Engg., Gandhi Institute for Education & Technology
Baniatangi, Dist : Khordha

Phone : 9438857504 Email: lksahoo@gietbbsr.com

9. Your Startup is related to:

Product Service Technology Other (Please Specify)

10. Do you have a novel technology idea/ concept? Yes / No

11. Do you represent a 1st generation start-up company? Yes / No

12. Do you or team members have any previous business experience? Yes No

If Yes, briefly mention how the past experience is going to help you in this new venture?

13. Is this Startup related to your or any team members family business? Yes No

14. How many employees will be working in the startup?

a. Full Time: 04

b. Part Time : 04

15. What is the expected time to develop a working prototype or concept?

Maximum 5 to 7 months

16. Why do you want to locate in IIT Bhubaneswar Startup Centre?

The main objective is to promote emerging technological and knowledge-based innovative thoughts by our undergraduate Engineering students along with the faculty members to nurture their ideas beyond the traditional activities. These types of entrepreneurial ideas are required to be fostered and developed in a supportive environment. Therefore we are eager to locate start up centre at IIT Bhubaneswar to promote and support our students as well as faculty members and assist them to become technology based entrepreneurs.

17. Specify requirements(Mentoring/Equipment/Workshop facility) from IIT Bhubaneswar(if any)

18. If you are selected as aStartup in IIT Bhubaneswar, time required to initiate the activity:

Maximum within a month time

19. Write a brief note about your product/service/technology

India is a country where 80% of people are farmers. A lot of research is being going on to equip them with new technology. In the current work we have proposed a model for wind mill driven water pump for small scale irrigation. This project is made to help the farmers in small scale irrigation purposes which can be constructed at any relevant height for a small scale of irrigating land. It simplifies the work of the farmers as the process of the machine is very simple. The key words for this project are simple and cost effective. To develop a windmill driven water pump equivalent to 1HP motor and for a output of 20,000L/day with 30m head, the windmill should be 24ft height for catching the air properly and others details are as below:

Blade length: 1.5m

Total rotor length: 4m

Number of required blade = 20

Solidity=1.2 (which is >0.8 i.e. wind blade interaction will maximum)

20. Give a Summary of the Business Plan for the Startup:

A. Product Description, Design, IPR issues, and Stage of development

This project is made to help the farmers in small scale irrigation purposes which can be constructed at any relevant height for a small scale of irrigating land. It simplifies the work of the farmers as the process of the machine is very simple. The key words for this project are simple and cost effective. Calculations have been made on the energy available in the wind and an energy analysis was then performed to see what wind speed is required for the system to work. If wind speed is low, the windmill can be adjusted by placing the connecting rod closer to the rotation centre where it requires less work to function.

B. Machinery and capital needs (if any)

Name of Equipment	Age and condition of equipment
Compressor	Year of Purchase- 2010-2011
Slotting Machine	Year of Purchase- 2010-2011
Drilling Machines	Year of Purchase- 2010-2011
Welding Machines	Year of Purchase- 2010-2011

(Arc , Gas, TIG)	
Lathe Machines	Year of Purchase- 2010-2011
Three Phase Power Supply	Year of Purchase- 2010-2011
Shaper Machine	Year of Purchase- 2010-2011
Milling Machine	Year of Purchase- 2010-2011
Universal Testing Machine	Year of Purchase- 2010-2011
Izod and Charpy Testing Equipment	Year of Purchase- 2010-2011
Hardness Testing(Rockwell and Brinell) Machine	Year of Purchase- 2010-2011
Universal Testing Machine	Year of Purchase- 2010-2011
Bench vices	Year of Purchase- 2010-2011
Different Files(Finish cut, Double Cut etc.)	Year of Purchase- 2010-2011
Sheet Cutting Machine	Year of Purchase- 2010-2011
Power Hacksaw	Year of Purchase- 2010-2011
Surface Grinding Machine	Year of Purchase- 2014-2015
Cylindrical Grinding Machine	Year of Purchase- 2014-2015

C. Competitor analysis

To develop a windmill driven water pump equivalent to 1HP motor and for a output of 20,000L/day with 30m head, the windmill should be 24ft height for catching the air properly and others details are as below:

Blade length: 1.5m

Total rotor length: 4m

Number of required blade = 20

Solidity=1.2 (which is >0.8 i.e. wind blade interaction will maximum)

D. Market analysis

Calculations have been made on the energy available in the wind and an energy analysis was then performed to see what wind speed is required for the system to work. If wind speed is low, the windmill can be adjusted by placing the connecting rod closer to the rotation centre where it requires less work to function. So this product will be beneficial for small scale irrigation as well as domestic purpose.

E. Equipment, Accessories, and Software Required

Name of Equipment	Age and condition of equipment
Compressor	Year of Purchase- 2010-2011
Slotting Machine	Year of Purchase- 2010-2011
Drilling Machines	Year of Purchase- 2010-2011
Welding Machines (Arc , Gas, TIG)	Year of Purchase- 2010-2011
Lathe Machines	Year of Purchase- 2010-2011
Three Phase Power Supply	Year of Purchase- 2010-2011
Shaper Machine	Year of Purchase- 2010-2011
Milling Machine	Year of Purchase- 2010-2011

F. Break-up of the estimated project cost

Prototype Development and Testing:	Rs. 1,50,000/-
Working Capital:	Rs. 1,50,000/-
Test Marketing:	Rs. 1,00,000/-
Legal Expenses:	Rs. 50,000/-
Contingency:	Rs. 50,000/-
Any other expenses: (Pls specify)Rs.	

Total Project Cost:	Rs.5,00,000/-
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G. Expected revenue during the first three year of commercialisation

Approximtely 25 to 30% profit

H. Have you received any financial support for your proposed/present work? If yes, give detailsNo

I. Other expected sources of funds No

J. Potential users of the end product

- (i) **Small scale irrigation**
- (ii) **Domestic use**

K. Time schedule/progress plan (preferable in chart/diagram)

At first the frame is required to be made by welding the mild steel bars with criss-cross sections up to a height of 4ft. In the middle of top of the frame, a housing is made to install the bearing & flywheel arrangement. Two bearings are placed in the either side of the flywheel so that the axle can rotate smoothly. One end of the axle is connected to the Fan & the other end is provided with a handle so that the system can also be used manually. The fan contains 4 blades having 1.2mm thickness & each of them are 20inch long. The flywheel is connected along with the crankshaft which is further connected to a connecting rod with piston. The rotary motion of the axle is converted to vertical motion using the crankshaft & is transmitted to the piston through the connecting rod. The piston is placed inside a piston cylinder which provides a housing for the movement of piston, whose upward & downward motion gradually helps to pump the water out of the source.

L. How will you promote/advertise your product?

By proper demonstration in the rural and village area, and as well as inviting people to the demonstration, we may be able to promote our product.

M. Have you interacted with any faculty of IIT Bhubaneswarfor colloboaration?

21. What are the financial strengths of your team member?

The members of the team are well qualified Engineers and having the technical skills.

22. Any other information which would help in evaluating your proposal.

The windmill driven water pump reduces the need for a diesel driven pump. A diesel pump fills the water tank quickly, but a windmill will instead produce a continuous flow of water, as long as it is windy, and does not need fuel. It is therefore a more eco-friendly solution.

23. Give names, designations,affiliations, and addresses (contact and email) of two references:

Reference 1

Dr. Mohan Charan Panda
Dean(Academics)

Reference 2

Dr. Jibanannda Jena
Dean(Planning & Coordination)

Gandhi Institute for Education& Technology **Gandhi Institute for Education & Technology**

Mobile No. 9556041223

Mobile No. 9937578679

I certify that the information set provided above is correct. Further,our entity

- has not exceeded turnover of INR 25 crore for any of the financial years; and
- is working towards innovation,development, deployment or commercialisation of new products, processes or services driven by technology or intellectual property; and
- is not formed by splitting up or reconstruction of a business already in existence.

Applicant'sName & Signature (Team Leader)

Mentor's Signature & Affiliation (if any)

Name & Signature of Member

Name & Signature of Member

Send the soft copy of the application form to **office.startupcentre@iitbbs.ac.in** and hard copy by post, to:

Startup Centre

IIT Bhubaneswar

Samantapuri

Near Swosti Premium Hotel

Bhubaneswar, Odisha Pin: 751013