Reference No. :- **IDEAAP011597**

1. Details of Incubatee:			
1.1 Details of the Host Institute (HI)	QIS College of Engineering and Technology , Ponduru Road, Vengamukkapalem, Ongole, Prakasam District, Andhra Pradesh , 08592281023 , principal@qiscet.edu.in , 9246419542	**1.2 Name of the Business Incubator (BI)**	Dr.A.Prakash , Associate Professor, Department of Electrical and , prakash.a@qiscet.edu.in , 7200585852
1.3 Category of the Incubatee	Student	**1.4 Incubatee Name**	Thammishetty Sirisha
1.5 State	ANDHRA PRADESH	**1.6 District**	PRAKASAM
1.7 Email Id	sirishasirisha2852@gmail.com	**1.8 Mobile Number**	6309434025
1.9 Category	OBC	**1.10 Gender**	Female
1.11 Address	8/74A Tank Road,MPP Schools(VS),Vadderapalem,Santhanuthala Padu,AP-523225.		
2. Details of Idea:			
2.1 Title of proposed idea/innovation	Development of Chillies drier with Solar Evacuated Tube Collector		
2.2 Whether the idea involves use of existing intellectual property or not, give brief detail there of	The patent of the proposed innovation is not filed.		
2.3 Briefly explain newness/uniqueness of the innovation	The novelty of this innovation are (1) Improves the quality of the dried chilies (2) Avoid the mixing of unwanted foreign material into the chili (3) It is not utilizing any fuels or electrical energies, so it is a green technology (4) The process can be controlled using IoT technologies (5) Easy to operate. (6) These innovations can be used for other drying of agricultural products and meats.		
2.4 Concept & Objective	Solar energy is used for the drying of chilies. In this method, a solar thermal collector is attached to a drying chamber. The atmospheric air is heated up in the thermal collector and further sent to the drying chamber. The hot air flows over the product to be dried when it transfers the heat to the substance by convective heat transfer for evaporation. All electric and electronic equipment is operated by tacking electric energy from solar PV panels. This system is incorporated with thermal storage, so this system would work in non-sunny times. Objectives • To improve the quality of the chilies • To use green energy for drying • To avoid localized heating during open sun drying		
2.5 Specify the potential areas of application in industry/market in brief	Potential areas are used for drying agriculture products, seeds, medical herbs, and meats.		
2.6 Briefly provide the market data for the potential idea/ innovation	This innovation can be used broadly in the drying of agricultural products, seeds, medical herbs, and meats. Also, it can be used in the textile industry.		
2.7 Name and details of Mentors	Mentors 1 Nandakishora Y Assistant Director Directorate of Project and Research QIS College of Engineering and Technology, Ongole, Vegamukkapalem, Ongole, Prakasam , Andhra Pradesh, 523272 Mentors 2 Dr. K V J Bhargav Deputy Director Directorate of Project and Research QIS College of Engineering and Technology, Ongole, Vegamukkapalem, Ongole, Prakasam , Andhra Pradesh, 523272	**2.8 Experience and Qualification of Mentors**	Menter 1 Total experience-3.5 years (industry and teaching) Qualification MTech, PhD.
2.9 Contact Details of Mentors	Email: nandakishora.yqiscet.edu.in, nandakishora1992gmail.com Ph. 8762793589	**2.10 Current Development Status of innovation**	The literature study is completed. Required materials are identified.
2.11 Expected time of completion of idea	One year	**2.12 Idea Sector**	Agriculture, Rivers & Ocean Produce based industries, fertilizers, Agricultural Implements & Agro processing and any related sub-sector
3. Financial requirements:			

3.1 Activity-wise break

Particular/Item	Total idea project cost (Rs. In lakh)	Amount GOI assistance (Rs. In lakh)	Incubatee share (Rs. In lakh)
Technology related Expenditure towards machine usage charges etc., Electricity charges, Procurement of raw material , testing/Calibration charges, other charges essential for development of idea **Max (10.00) lakh.**	9.400	9.400	0.000
Charges for mentor/handholding supporting team **Max (3.00) lakh.**	2.800	2.800	0.000
Travelling Expenses or any other item not coverd as above may be allowed as per need for development of the idea **Max (2.00) lakh.**	1.800	1.800	0.000
Total	14.000	14.000	0.000

Approved Activity-wise break

Approved By	Approved Date
PMAC	12/03/2024

Particular/Item	Total idea project cost (Rs. In lakh)	Amount GOI assistance (Rs. In lakh)	Incubatee share (Rs. In lakh)
Technology related Expenditure towards machine usage charges etc., Electricity charges, Procurement of raw material , testing/Calibration charges, other charges essential for development of idea **Max (10.00) lakh.**	9.400	9.400	0.000
Charges for mentor/handholding supporting team **Max (3.00) lakh.**	2.800	2.800	0.000
Travelling Expenses or any other item not coverd as above may be allowed as per need for development of the idea **Max (2.00) lakh.**	1.800	1.800	0.000
Total	14.000	14.000	0.000

4. Other students/Entrepreneurs associated with this project/idea

Name	Aadhar No/Udhyog Aadhar No/Udyam Registration
YARRABALLI VENKATA VISHNU VARDHAN	353611XXXXXX
KONAKALLA SAI VENKATA SUDHEER	637823XXXXXX
MEESARAGANDLA ANAND	778138XXXXXX

Ref. No.	INC23CAP029682	**5. Summary of the idea. This is the section reviewers read to understand the technical solution. Please state the solution clearly. Reviewers may ask: What is the actual technical advancement or improvement provided by this solution?**	Since the drying industry consumes so much energy, a number of researchers have concentrated their efforts on developing solar dryers. This new method utilizes solar energy for a specific purpose: drying chilies. An enclosed space for drying things is connected to a solar thermal collector. The air is warmed in a thermal collector before being piped into a drying chamber. Convective heat transfer occurs when the hot air travels over the product to be dried, warming the substance sufficiently so that it evaporates. The drier works by exploiting the difference in moisture content between the products surface and the air around it.
6 (a) Is it a new concept?	NO	**If no, what kind of competition is existing? What are they offering? How is your product/ service going to be different/ unique?**	The optimization of the solar dryer for higher quality is not carried out. Also, the commercialization of solar driers with evacuated U-tube collectors is not carried out. There is scope for developing a solar dryer with improved thermal performance. IoT-based automated drying systems can be carried
(b) Prior art on the concept, if any	Some research work was carried out in the area of solar drier. But very less work was carried out on the area on the solar drier with an evacuated U-tube collector.	**7. Main Problem Being Addressed in the Project (Every solution targets a certain problem. Please use this section to highlight the specific problem the solution addresses. This section can be as short or as long as needed to describe the precise problem the solution addresses)**	Open sun drying suffers from (i) an increase in internal heat that may spoil the quality of the product, (ii) a Low vapor removal rate resulting in a slow overall drying rate, (iii) a significant color change of a product (iv) Contamination of dust in the dried products. To avoid the above problems and to improve the quality of the dried product, the highly efficient optimized solar drier with an evacuated U-tube collector and thermal energy storage is necessary. In this regard, this study conce
8. Background for getting the idea?			
a. Who is it for?	Farmers use this innovation for drying agricultural products. Also, this innovation can be used for drying (a) food and fruit processing (b) textiles (c) wood (d) paper (d) pharmaceuticals, and (e) herbal products	**b. What will it do?**	Solar thermal energy is used for the drying of chilies. In this method, a solar thermal collector is attached to a drying chamber. The atmospheric air is heated up in the thermal collector and further sent to the drying chamber. The hot air flows over the product to be dried when it transfers.
c. Any unique features? Explain?	The novelty of this innovation are (i) Improves the quality of the dried chilies (ii) Avoids the mixing of unwanted foreign material into the chili (iii) The process can be controlled using IoT technologies and (iv) Applications of machine learning for optimization of process parameters and predict	**9. How simple or complex will the idea's execution or implementation be? What are the risk factors involved in executing the idea?**	This innovation is simple to implement. This process uses renewable solar energy for running of the system, so it is environmentally friendly and has zero CO2 emissions.
10. How soon could the idea be put into operation? (TRL of prototype)	After one year TRL 7 can be achieved	**11. How much investment would you need for prototyping of the Idea?**	Around 14 lakh are required to develop the prototype.

12. (a) How do you intend to protect your idea (i.e. your intellectual property or IP)? Status of IPR (If any)	A design patent on the solar collector was submitted to the Indian patent office. There is still scope is there to submit the patent.	**(b) Related Background This section is used to highlight information that can be used by the reviewers or patent attorney to help put the solution in proper context. You can think of this section as something similar to the introduction section of an academic publication. This section is specifically reserved for other people's work (please include competitive work) as well as your past work that you believe will aid the reviewers in understanding the technical landscape. Data related to or supporting your solution should NOT be in this section, it should be in Section III: "How is this Solution Made and Used."**	Researchers all over the world have done a lot of work in the last 30 years to find ways to use energy that comes from natural sources. This is because there is a lot of use of fossil fuels because people need more energy and the world is getting worse because of greenhouse gases (GHGs). Solar energy is the most popular green energy source because it comes from nature, is easy to get, and doesnt pollute. This product can be patented.
13.How is This Project Made and Used: Please describe in as much detail as possible how the innovation is implemented. This includes details on how you actually make, assemble, synthesize, or build the solution and details on how the solution is used once it is made. Reviewers will ask: How does the technical innovation actually work – or – what is the detailed process to achieve the technical innovation? Please help convince the reviewers with supporting statements using as much of the following that is available: your thoughts, logic, supporting literature, and/or experiments.		In this method, a drying chamber is joined to a sun thermal collector. The thermal collector heats the air in the air and sends it to the drying room. When the hot air flows over the product to be dried, it sends heat to the product through convective heat transfer, which causes the product to evaporate. The blower, sensors, and evacuated tubes are purchased. The fabrication of u tube, drying chamber, and fittings are to be fabricated in the institute IDEA lab.	
Upload Block diagram/ flow chart/ Circuit Diagram/Pictures		View/Download	
Uploaded Minutes of the evaluation Committee		View/Download	
Student ID with duration of course and bonafide certificate by HI certifying that the student is currently enrolled in the course		View/Download	

Application Remarks

Action	Date	Status	Remark
PMAC	12/Mar/2024 12:52:26 PM	Approved By PMAC	The 7th PMAC held on 15/02/2024 has approved this idea for GoI grant. Please check your mail and do the needful as instructed on priority basis. This may be treated as most urgent. View/Download

I declare that:

1. **I have read the entire scheme guidelines and shall abide by all the requirements stipulated therein for seeking financial assistance.**
2. **I hereby declare that information given above is true to the best of my Knowledge and that I have not withheld/distorted any material fact.**
3. **Any information/ documents that may be required to be verified shall be provided immediately before the concerned authority.**
4. **I hereby declare that I have not availed any financial assistance for this purpose from any other scheme from any Central/ State govt. agency.**
5. **In case the Idea is approved, Host Institute would undertake to make facilities available to carry out the development arrange for the submission of periodic progress reports and other information that may be required by the Ministry.**
6. **I certify that the accounts of the funds received and spent will be kept and made available on demand, as per scheme guidelines**
7. **I certify that the funds will be used only for Idea development as per activities defined in Scheme Guidelines & no funds out of this grant will be utilized for any other activity/production purposes.**