SANTULAN SOCIETY

‘ICE MAKING COMMUNITY PROJECT’

At Kukru, Madhya Pradesh

Concise Project Proposal By

SANTULAN SOCIETY

Registration No.: 25608 – 22.08.1992

‘ENERGY TOWER’
64, B-Sector, Kasturba Nagar
Bhopal - 462 023
Madhya Pradesh, INDIA.

30 June 2021

Title

‘ICE MAKING COMMUNITY PROJECT’

AT KUKRU, MADHYA PRADESH

Demonstration Project By

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Village – Kukru, **Tehsil –** Bhainsdehi, **District –** Betul

Madhya Pradesh

About Santulan Society

When a group of conscientious individuals decided to contribute their mite for Rural Development in KUKRU – a tribal village in remote corner of Betul District in M.P. – their guiding factor was the famous saying of Swami Vivekananda: “Nothing can be done with Empty Stomach”.

Therefore, the primary objective of **SANTULAN SOCIETY** was to ensure Income generation – which would be followed by Education and Health – Care. The methodology was to promote sustainable agricultural activities – with which the villagers are accustomed and further they have land resource which however is not so fertile, in view of extreme scarcity of water in semi-hilly terrain.

All the activities of Santulan Society have been funded by members and member organizations till today. Besides others, **Santulan Society initiated several activities such as:**

- **Construction of Dug-wells** to store rain water for consumption of human beings and cattle – 8 wells dug; wells are still useful
- **Development of Goatary** by giving 5 goats to each family
- **Cultivation of Medicinal Plants** – for the benefit of local inhabitants
- **Cultivation of CITRONELA**, an Aromatic Grass used as mosquito repellant, under guidance of Regional Research Laboratory of CSIR in Jammu – There was bumper crop from second year
- **Fruit Plantation** – Lemon (Neemboo), Mango (Aam), Bengal Currant (Karonda), Guava (Amrood), Indian Gooseberry (Amla), Indian Lilac (Neem), Wild Cherry, Black Plum (Jamun), Spanish Cherry (Bakul), Indian Beech (Karanja), Bengal Quince (Bel Patra), Indian Jujube (Ber), Jackfruit (Kathal), Mulberry (Shahatoot) and Almond (Baadaam)

Total 255 saplings planted in last 2 years. About 130 Lemon plants will yield sufficient fruits to enable tribal women to make pickles.

The Proposal

The Preface

The tribal population is an integral part of India's social fabric and has the second largest concentration after that of the African continent.

Santulan Society, www.santulanindia.org, is an NGO formed in 1992 with the objective of ensuring income generation, education and healthcare for tribal villagers in Kukru, Madhya Pradesh, India. Kukru, as identified by Consolidated Energy Consultants Ltd., is a prime high wind area and has almost 200 MW of large wind turbines operating. Though the village is electrified, the supply is erratic and rectification of supply takes months, leaving villagers in darkness.

Being a prominent milk producing area, a large portion of the villagers at Kukru rely on sale of milk for their daily income. However, due to lack of refrigeration facilities, a lot of the milk goes bad every day and is wasted. A wind-solar hybrid prototype will generate enough electricity to power an ice making plant to supply ice cubes / ice blocks to villagers to enable them to stock their produce for longer periods of time.

The Hybrid Renewable powered cold storage Project aims to:

i. Enable cold storage of Milk and milk produce, Generate local employment and create additional sources of income
ii. Promote and demonstrate concept on PAN India basis

Immediate Action Plan

Before taking up Large Scale Deployment, a Demonstration Project needs to be established on suitable area, with scientific guidance.

About CECL

CECL and Hybrid Systems

An ISO 9001:2015 certified company with demonstrated expertise, Consolidated Energy Consultants Limited (CECL) stands as one of the most experienced, avant garde organization delivering diversified spectrum of management and technology consulting services in the field of Wind Power, since 1986. We are the preferred service provider of Public Sector Undertakings (PSUs). **Incorporation of M P Windfarms Limited (MPWL) as a Joint Sector Company is a token of enduring trust from Central and State Governments, in our organization**.

MPWL, a joint venture of CECL, GoI and the GoMP, is India's first and the only public-private sector company operating in the Renewable/Wind Energy domain since 1995; **demonstration of new technologies, promotion of innovative RE projects and operational enhancements are at the core of our objectives**.

CECL holds established experience in implementation of Hybrid Systems:

- Feasibility Study Of Wind Solar Hybrid Power System at Mussorie (Uttaranchal) and at Betul (Goa), for ONGC
- Preparation of Wind Resource Map for N-E States Including Sikkim and Ladakh region covering Leh and Kargil - MNRE, New Delhi
- Preparation of 41 Detailed Project Reports (DPRs) for the NE states; 4 are operational - Ministry of New & Renewable Energy, New Delhi
- Design of 5 kW Wind Solar Hybrid System for Sudarshan Chakra Corps., Military Station, Bhopal
- Runs two wind-solar hybrid systems installed at 'Energy Tower' (The office of CECL), Bhopal and Kukru, M.P. (through NGO of CECL)

Santulan Society under the scientific guidance of CECL / MPWL will implement the Ice Making Community Project to pave way for future developments.

The Project

Santulan Society already has preexisting infrastructure to support this project; buildings with a battery storage room and a room for installation of ice making plant and other machinery, are already in place. Land needed to set up a wind-solar hybrid system is also available free of cost at the proposed project site of Santulan Society. Since Santulan Society is supported by Consolidated Energy Consultants Ltd., manpower for operation, maintenance and supervision of the project will be available.

Windistar 4.5 kW wind turbine, coupled with a 5 kW solar PV system and a 25 kWh battery storage would sufficiently power a 500 kg/Day capacity ice making machine throughout the year.

Santulan Society will 'Operate and Maintain' the System.

The locals can then purchase the required quantity of ice cubes / ice blocks on payment of a small amount to Santulan Society, to enable recovery of manpower engaged for Operation and Maintenance of the Plant.

As the literacy and employment rates climb in this rural area, the demand for electricity is also increasing. The Wind-solar hybrid system can be used to provide a mobile charging facility, e-vehicle charging facility, home lighting through lead-acid battery and power for computer / television to enable students to attend online classes, drinking water purification system etc. The running of the project itself will provide employment to a couple of villagers, specifically to the Tribal Women.

To prove efficiency and robustness of the wind-solar hybrid prototype and to showcase the utility of such off-grid systems, it must be installed in a high-wind area under regulated operating conditions, thus making Kukru a prime location for this project.

Wind – Solar Hybrid System For Ice Making Community Project – Schematic

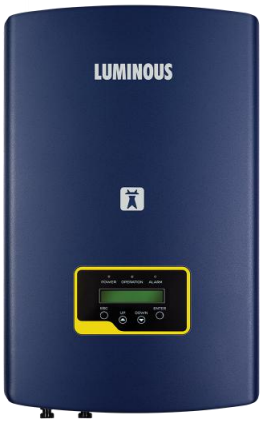
Aero-Generators (4.5 kW)

Solar Panel (5 kW)

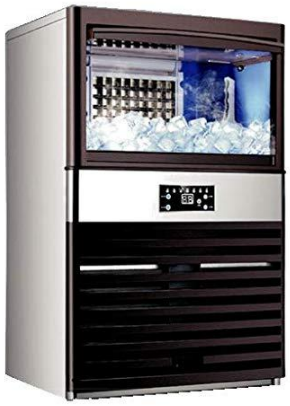
Wind – Solar Hybrid Controller

Battery Bank (25 kWh)

Inverter (8 kVA)



Ice Making Machine (500 kg/Day) – AC Load



DC Load

General Survey

Santulan Society has conducted a general survey for estimation and analysis of various tangible and intangible parameters to facilitate the decision making process for implementation of Ice Making Community Project, covering the following locations:

1. **Gawlidhana**, Post - Khamla, Tehsil - Bhainsdehi, District - Betul, Madhya Pradesh

2. **Badgaon**, Post - Khamla, Tehsil - Bhainsdehi, District - Betul, Madhya Pradesh

3. **Khamla**, Post - Khamla, Tehsil - Bhainsdehi, District - Betul, Madhya Pradesh

4. **Baramacha**, Post - Khamla, Tehsil - Bhainsdehi, District - Betul, Madhya Pradesh

Major locations covered by the general survey seem to be promising when it comes to the willingness of individuals to buy ice cubes. There is a strong and significant demand for ice among the local residents.

Project Budget & Estimated Generation

BATTERY CHARGING- HYBRID **1 units**

SYSTEM COST- 9.5 kW (4.5 kW SWT + 5 kW SOLAR)

S. No.	Particulars	Rating	Cost
			(Rs.)
1.	WINDISTAR SWT 4.5 kW	4.5 kW	442100
2.	SOLAR SYSTEM	5 kW	250000
3.	STORAGE BATTERY	25 kWh	200000
4.	INVERTER MPPT 8 KVA 120V DC		115000
5.	CONTROL SYSTEM		75000
6.	ICE MAKING MACHINE - 500 KG/DAY		250000
7.	TRANSPORT, ERECTION		150000
8.	ENGINEERING /CONSULTANCY		100000
			1582100

ANNUAL GENERATION- 9.5 kW (4.5 kW SWT + 5 kW SOLAR)

S. No.	Particulars	Rating	CUF	Generation
				(kWh)
1.	WINDISTAR SWT 4.5 kW	4.5 kW	14.00%	5519
2.	SOLAR SYSTEM	5 kW	18.00%	7884
				13403
	per day for 4 months (120 days)-wind			32.19
	per day for 8 months (240 days)-solar			23.00
	after 30% Loss in conversion & Storage			
			Rs./unit	
	Cost per Unit (20 years)		8.43	
	without O&M			

ICE MAKING MACHINE

Electric load will be 2.3 kW for 500 kg unit. Power supply will be 230 Volt/1Ph/50 Hz

8 hrs of operation per day –total **18.4** units

8 hrs of operation per day will make 250 kg of Ice. During Summer when wind power will be available during night hours, 2 shifts will be run to make 500 kg Ice.

Cash Flow

Cash Flow For Ice Making Community Project Considering 100 % Grant

CASH FLOW-ICE PROJECT KUKRU-LOAN										
Cost of Project	Rs.	1582100		Ice Production Annual		100	kg/day-365 days		36500	kg
Debt 90% @9%	Rs.	0								
Equity 10%	Rs.	1582100							36500	kg
				Selling price - Ice	Rs.	**10**	/kg	esc 5%		
		Water	700	Rs/5000 ltr		17	tankers			
		Salary	5000	Rs./month @ 5% esc						
Years	1	2	3	4	5	6	7	8	9	10
Inflow										
Ice sale	365000	383250	402412.5	422533.1	443659.8	465842.8	489134.9	513591.7	539271.2	566234.8
esc 5%										
Out Flow										
O&M @ 3%	47463	49836	52328	54944	57692	60576	63605	66785	70124	73631
esc 5%										
Interest -Debt	0	0	0	0	0	0	0	0	0	0
debt repayment	0	0	0	0	0					
Salary, @5% esc	60000	63000	66150	69457.5	72930	76577	80406	84426	88647	93080
Water Cost, @5% esc	11900	12495	13119.75	13776	14465	15188	15947	16744	17582	18461
Battery replacement										**400000**
Total expenses	119363	125331	131598	138178	145086	152341	159958	167956	176354	585171
Net saving	245637	257919	270815	284356	298573	313502	329177	345636	362918	-18936
Cumulative Saving	245637	503556	774371	1058726	1357299	1670801	1999979	2345614	2708532	2689596
Outstanding-debt	0	0	0	0	0	0	0	0	0	0
Assumptions:										
1 Only 100 kg of ice cubes produced. i.e. 20 households taking 5 kg of ice daily.										
2 Selling Price of Ice @ Rs. 10 /kg. In a city it sells for Rs. 40/kg.										
3 Debt repaid in 5 years, Interest @ 12% p.a.										
4 Battery shall last for 10 years, post wich the replacement considered at double the cost.										

Project Site Details

A factual representation of project site details is presented under **Tables 1, 2 and 3.**

Table - 1: Location Details.

S. No.	Location Details	
1.	**Village**	Kukru
2.	**Patwari Halka**	Kukru
3.	**Tehsil**	Bhainsdehi
4.	**RI Division**	Bhainsdehi
5.	**District**	Betul
6.	**State**	Madhya Pradesh

Table - 2: Land Occupancy Details.

S. No.	Land Occupancy Details	
1.	**Khasra (Plot) Number**	164
2.	**Area**	1.416 Hectares
3.	**Name of Possessor**	Mr. Manan Kumar Deb
4.	**Type of Possession Right**	Land Owner

Table - 3: Miscellaneous Details.

S. No.	Particular Description	Attribute
A. Standard Site Details		
1.	**Terrain**	Rolling
2.	**Contours**	Moderate
3.	**Soil Type/ Condition**	Mountainous : Soil/Rock (i.e., mixed soil-rock with soil proportion dominant)
4.	**Landscape**	Natural and beautiful
5.	**Transportation Accessibility**	
	Roadways	Linked to National Highway (NH)-46 at Betul, at an approximate distance of 85 KM
	Railways (Nearest Railway Station)	Betul Railway Station, at an approximate distance of 85 KM
	Airways (Nearest Airport)	Dr. Babasaheb Ambedkar International Airport, Nagpur, at an approximate distance of 270 KM
6.	**Landmark Location** (Nearest City/Town)	• Bhainsdehi and Betul, Madhya Pradesh • Paratwada and Amravati, Maharashtra
B. Geographical Coordinates		
1.	**Latitude**	21°29'34.8828" N
2.	**Longitude**	77° 28' 13.9224" E
3.	**Altitude**	1118.18 Metres above MSL

Contact Details

Mr. Rajan Deb
Secretary

Mobile : +91-9826055479
E-mail : santulansociety.mp@gmail.com

Santulan Society
Registration No.: 25608 – 22.08.1992

'ENERGY TOWER'
64, B-Sector, Kasturba Nagar
Bhopal - 462 023
Madhya Pradesh, INDIA.

Tel.: +91 (0)755 2600241-43, 4058931
Fax: +91 (0)755 2600240

Bank Account Details

M/S Santulan Society

Current Account Number: 53020637306

RTGS/IFSC Code: SBIN0030135

State Bank of India, Shahpura Branch

Bhopal, Madhya Pradesh.

Annexures

Annexure - 1: System Specifications and Indicative Price

End of Proposal

ANNEXURE - 1

System Specifications and Indicative Price

Gat No-1569/B,Off Pine Saswad Road
Vadki Village,Vadki,District-Pune-412308,MAHARASHTRA
VAT NO - 27140598749V w.e.f. 28.03.2007 VAT NO - 27140598749C w.e.f. 28.03.2007
Website:www.wishenergy.com, E Mail: sales@wishenergy.com
Phone No-+91 20 ,65110453-460,We are an ISO 9001-2000 Company

PROFORMA INVOICE

Customer Name And Address	**Proforma Invoice No-** WISh/E/01032021
Mr.Rajan Deb	**Date-** 01.03.2021
CECL	**Your Order No-** Email
Bhopal	**Order Date-** 01.03.2021
9826055479	**Customer Code-**
	Vender Code-
SOC No-	**SO Dt-**

Bill To Party

Mr.Rajan Deb
CECL
Bhopal
9826055479

Sr No	Description Of Material	Unit	Qty	Unit Rate(INR)	Amount(INR)
1	Windi Star 4500 120V Wind Turbine including Wind charge controller	No	1	2,20,000	2,20,000
2	30 feet Painted Tower with Guy Wire Support	No	1	1,20,000	1,20,000
3	5 KW Solar PV with Structure	No	1	1,80,000	1,80,000
4	Battery 25 KWH (12v /150Ah 20 nos)	No	20	11,200	2,24,000
	Payment Terms:100% Advance Payment against proforma Invoice before				
	Bank Account Details:				
	Benificiary Name: WiSH Energy Solutions Pvt. Ltd.				
	Benificiary's Bank Name: BANK OF BARODA, HADAPSAR BRANCH, PUNE ,-411028			**EX-Works**	7,44,000
	Benificiary's Bank Account.No. 24830200000658		**Add**	**Transportation**	28,000
	Beneficiary's Bank SWIFT Code: BARBINBBPCB		**Add**	**GST**	At Actual
	Benificiary's Bank RTGS/IFSC Code : BARB0HADAPS (Note: Read as 0 'Zero' before 'H')				
	Note : All Banking charges outside India will be borne by customer only			**Total**	**7,72,000**

Remark: WIND POWERED ELECTRIC GENERATING MATERIAL,NO OCTROI APPLICABLE

Amount In Words ``````````

Our warranty terms for Wind Turbines and Controller manufactured by us :

Our products carry an offsite warranty of 12 months from the date of sale from dealer or 15 months from date of sale by the manufacturers factory/ warehouse, whichever is earlier, (till such date when & if it is withdrawn by issue of another prior notice). The warranty covers defects arising out of manufacturing defects or bad workmanship and is made good by rectification/ replacement of part or whole equipment at the sole discretion of the company. The warranty does not cover defects arising out of improper installation, installation at unsuitable locations, misuse, wrong application, mishandling, operation and maintenance by unauthorized personnel and also physical damages arising from natural calamities and aberrations. The warranty is non-transferrable without the written consent of the manufacturing company. The consequent or causal damages like damage to tower, cable, other related equipment, properties or personal near the installation are not covered by this warranty. The warranty is to be read in conjunction with Whisper 200 manual page 1 and 2 of 33 and Whisper 500 manual page 1 and 2 of 34 where safety measures required to be taken have been elaborated.

Any wind turbine of the manufacturer found or appearing to be defective by the concerned customer / selling dealer with consent of the manufacturing company earmarked service representative will be sent to the service point recommended by the manufacturing company. Upon completion of rectification, the rectified product will be taken back by the concerned customer/dealer. The to and fro movement will be borne by the end customer/sales dealer & the defective equipment, shall be duly rectified by the manufacturing company or its service representative at no extra cost to the buyer /dealer towards spare parts and services.

The selling dealer will intimate to the manufacturer, the date of sale , customers full details including contact number along with product details & serial number immediately after the sale., failing which warranty will be null & void.

WiSH Energy Solutions Pvt. Ltd

CST No-	27140598749 C
Vat No-	27140598749 C
PAN No-	AAACU8731B
ST No-	AAACU8731BST001
EW	134991
CEC	A4303378

For WiSH Energy Solutions Pvt. Ltd

Authorized Signatory

Subject To PUNE Jurisdiction

I/we hereby certify that my/our registration certificate under the Maharashtra Value Addes Tax Act 2002 is in force on the date on which the sales of goods specified in the tax invoice is made by me/us & that the transportation of sale covered by this tax invoice has beeneffected by me/us and it shall be accounted for in the turnocer of sales while filling of return and the due tax,if any payable on the sale has been paid or shall be paid.

Goods once sold will not return back

Any dispute with material should inform within 15days from receipt of material