Kolhapur Zilla Sahakari Dudh Utpadak Sangh Ltd. Kolhapur



Solar Heat for Industrial Process Concentrated Solar Thermal (CST) Project

Challenges in Dairy Industry

- 1) Environment of competition needs reduced production cost
- 2) Need to upgrade for more efficient equipment
- 3) Higher productivity needs Automation
- 4) Reduce losses and wastages at micro level
- 5) Environmental impact reduction through use of renewable energy sources



Expected Actions

- Immediately address all above issues and take prominent action
- Meeting environmental concerns is major thrust area for dairies
- Use of Solar Radiation as alternative energy source is viable for dairy



Implementation of CST Project

- Commissioned 6 CST projects with help of NDDB at following locations:
- 1) Gokul Dairy, MIDC Gokul Shirgaon, Kolhapur
- 2) Satellite Dairy, Shirol, Kolhapur
- 3) Chandgad Chilling Centre, Chandgad, Kolhapur
- 4) Gogave Chilling Centre, Gogave, Kolhapur
- 5) Gadhinglaj Chilling Centre, Gadhinglaj, Kolhapur
- 6) Bidri Chilling Centre, Bidri, Kolhapur



1) Gokul Dairy CST project



- Installed Capacity = 30 Lakh
 KCal/Day
- Hot water temp = Max 80° C
- Aperture Area = 1350 m^2
- No. of collectors = 450
 - Net investment = Rs. 190 Lacs
 - Fuel saving = 1,15,385 Kg of FO/year



2) Shirol Satellite Dairy CST Project



- Installed Capacity = 10 Lakh KCal/Day
- Aperture Area = 450 m^2
- No. of collectors = 150
- Cost of project = Rs. 65.7 Lacs
- Output = 8000 lit/day



Chilling Centre CST Project

- 3) Chandgad CC
- 4) Gogave CC
- 5) Gadhinglaj CC
- 6) Bidri CC
- at District Kolhapur, Maharashtra





3) Chilling Centre CST project



Kolhapur Zilla Sahakari Dudh Utpadak Sangh Ltd; Kolhapur

- Capacity in = 5 Lac KCal/Day
- Aperture Area = 225 m^2
- No. of collectors = 75
- Net investment = Rs. 41-43
 Lacs
- Output

= 6000 lit/day



Hot water Applications at Gokul

Application point	Temp of Hot water (°C)	Daily Utilization
Feed water to Boiler	Upto 80°	Approx. 500 lit/day
Can washers	Upto 70°	3 can washers 600 lit/day
CIP (cleaning in process)	72 <u>+</u> 2°	As per need
Dock cleaning	40 °	Approx 200 lit/day

 Real-time system performance monitoring through PLC & Data logger



Performance Payback

Gokul Site Locations	Aperture CST Area	Capacity (Kcal/day)	Net Investment (Rs. Lakhs)	Fuel in Use	Expected Payback
1) Gokul Dairy	1350 m²	15 Lac	190	FO	4 – 5 years
 Shirol Satellite Dairy 	450 m²	5 Lac	65.7	Briquette	~ 8 years
3) Chandgadh CC	225 m²	2.5 Lac	43	FO	4 -5 years
4) Gogave CC	225 m²	2.5 Lac	43	FO	4 -5 years
5) Gandhinglaj CC	225 m ²	2.5 Lac	41.3	FO	4 - 5 years
6) Bidri CC	225 m²	2.5 Lac	42.5	Briquette	~ 8 years
Total	2700 m ²	30 Lac Kcal/day	425.5		



Achievements of CST project

Gokul Locations	Milk handled (lit/day)	Equivalent steam generation (kg/day)
1. Gokul Dairy	11 Lac	5500
2. Shirol Satellite	1.15 Lac	1850
3. Chandgadh CC	0.87 Lac	930
4. Gogave CC	0.74 Lac	930
5. Gandhinglaj CC	1.25 Lac	930
6. Bidri CC	1.69 Lac	930
Total	16.7 Lac	11070

- Real-time system performance.
- Total CO₂ reduction = 830 Tons/year (6 projects)



Issues and Suggestions

Issues

- Lack of skilled manpower
- Height of panels (Design)

Suggestions

- Supplier should operate the system for 1 year & should train the local operator during that period
- Provide technical training facility at a central location



Recommendations

- Single window such as NDDB should do paper work / documentation and technical consultancy for the project.
- Additional subsidy to be considered by MNRE i.e.
 50 % of the project cost
- The subsidy of central & state government should go directly to EIA once the DPR and NDDB clearance obtained
- Provide income tax benefit , reduction in GST, low interest rates to the end implementing agency as incentive

Conclusion

Though high initial cost, it gives clean & green energy and reduces carbon foot prints.



Questions ?



Thank you !

