Journey of a Solar & Social Entrepreneur

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Fuelwood Crisis - Our Fragile Ecological Environment.

Two billion people need fuelwood for cooking. 80% of the fuelwood is used in Third World countries.

Half of the logged trees, goes for cooking. Trees are cut faster than they can be replenished.
Solar Box Cooker
SK-14 Solar Cooker
Indoor Community Solar Cooker
Development of Solar Steam Cooking System for Institutional cooking
Solar Cooker with 106 Solar Concentrators for 30,000 meals per day at Tirupati Temple
World's Largest Solar Cooker

Now is Shirdi Temple that cook
50,000 meals per day
World's Highest Solar Cooker

10 Concentrators to cook for 500 people for Indian Army in Ladakh
Increasing rate of Waste Water evaporation
Wood Fired steam generated in boiler replaced with Solar Steam
ANDASOL 1, Guadix, Spain
(50 MW, 7 h Storage, 2009)
New Concentrating Solar Power Projects

PS10, PS20 Sevilla, Spain
(10 MW + 20 MW, 2007 & 2009)
Big Dishes concentrate sunlight 2,000 times to produce thermal energy

Thermal energy can be stored & delivered on-demand

Our IP is patented in Africa, Australia, China, Europe, India, South America, USA
Various available thermal storage options for CST based Technologies:

- Molten salt
  - Potassium Nitrate & Sodium Nitrate

- Steam accumulators

- Concrete as thermal storage
100 TR Solar Air-conditioning with 100 dishes of 16 m² can be run with one BIG Dish

Big Dishes concentrate sunlight 2,000 times to produce thermal energy

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Sunrise CSP’s 500 m² BIG dish at Australian National University
Decentralized Power full-filling vision of Dr Abdul Kalam by providing electricity. Heating and cooling for villages
Big Dish Concentrated Solar Energy

Thermal energy temperatures to $>1,700^\circ\text{C}$.

Our Big Dish at the Australian National University makes superheated steam of 560°C at 110 bar pressure.

It can be adapted to support different applications that require different temperatures and pressures.
Uses of thermal energy from our plants

- **Electricity** (co-generation, tri-generation, grid stabilisation, peak power)
- **Agri-processing** (UHT milk, hydrogenation, gasification, fertilisers, ...)
- **Waste processing** (converting waste to fuels & fertilisers, sludge drying, incineration, ...)
- **Water purification & desalination**
- **Urban & village solutions** (District cooling, air-conditioning, sterilization, cooking, ... cremations!)
- **Fuel production** (ammonia, hydrogen, methanol, syngas, ...)
- **Metallurgy** (steel-making, foundries, ...)

Thermal energy is literally used everywhere
Single dish to be installed at Sahaj Marg Spirituality Foundation, Hyderabad, to provide steam for process heating, space cooling and cooking.
Phase 2: Co-generation

10 dishes to generate electricity, and use the low pressure steam for process heating, space cooling and cooking.
Benefits delivered by technology

1. Commercially proven, low cost, utility scale, thermal energy storage to deliver thermal energy on-demand

2. Integrates seamlessly with industrial thermal processes: production of chemicals, waste management, desalination, metallurgy, cooling, ...

3. Hybridising CSP with coal / gas / oil lowers fuel consumption and fuel cost volatility

4. Can deliver grid-stabilisation services, a perfect complement to massive scale PV and wind plants

5. Maximises local manufacturing jobs & supply chain – **Made in India!**
SMOKE FREE VILLAGE with 26 K-14 SOLAR COOKERS & 23 Biogas Plants
SK14 for Ironing Clothes
President Dr Abdul Kalam seeing his vision of “Providing Urban Amenities in Rural India” (PUARA) being implemented at Ashram farm
Video Links on “Muni Seva Ashram”

• YOUTUBE Videos & Links:
  - 14-Min Video: http://www.youtube.com/watch?v=d-c8kXu5-20
  - 7-Min Video: http://www.youtube.com/watch?v=jaSlzvrf0b4
  - Cyclotron Project: http://www.youtube.com/watch?v=O5U6vN-7qWA
  - VTC: http://www.youtube.com/watch?v=irCv8QOV3RM

  - Solar Kitchen (German) http://www.dw-world.de/dw/0,,13263,00.html
  - Solar Kitchen (English) http://www.dw-world.de/dw/0,,13291,00.html
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  o VTC: http://www.youtube.com/watch?v=irCv8QOV3RM
  o Ashram History: http://www.ijourney.org/story.php?sid=14
    
  o Solar Kitchen (German) http://www.dw-world.de/dw/0,,13263,00.html
  o Solar Kitchen (English) http://www.dw-world.de/dw/0,,13291,00.html