



September 2013

## **Introduces Innovative Integration of RE- in Residential Sector**

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## **What is Orange County Foundation**

- It is a Group of individuals that is concerned about the impact of urbanization on the environment.
- This group is more of a voluntary nature & intends to bring about positive change in the urban environment that they loved most.
- SCN Builders, being part of the Foundation and in fact real force behind OCF whole heartedly came forward to convert eco-friendly ideas into practice. The OCF gives credit for success achieved so far.

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We believe Solutions to the present day  
Urban problems are  
with  
The Indian Traditional Knowledge of  
Architecture – Vastu Shastra

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Experiments with traditional Vastu Shastra and  
Modern architectural knowledge helped achieve

- **Solar Passive Architecture**
- **Ideal wind flow pattern and natural air circulation**
- **Ideal Door and window openings**

**This achieved savings in 40% energy needs**

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Reduced energy needs encouraged  
to Explore  
Non-conventional energy options

Solar and wind Hybrid option proved success  
to function as the primary source of energy

It was enough to aim for  
Net Zero Energy buildings

**Success achieved makes OCF projects  
Unique of their kind across India**

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## Step I Use of Energy Efficient Fixtures

To make this approach a viable solution, OCF ensured compulsory use of energy saving devices to minimize energy needs such as :

- 1) T5 tube lights
- 2) LEDs
- 3) Power Saving Fans
- 4) 5 Star rated motors
- 5) Energy saving Lifts, etc.

**This reduced energy requirements by 30% of  
every flat & 67%. of common area**

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## Step II Production of Renewable Energy

The Hybrid Solution was effectively used in residential building - Orange County Phase- II for the first time

- Solar PV- both crystalline & thin film [CIGS] panels [each approx. 6KW]
- Windmills [5KW x 2Nos.]
- Common inverter & UPS- 15 KW capacity
- SMFVRLA battery bank [2V 200Ah, 180 nos.]

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### PV Panels & Windmills



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## Step III

### Effective Utilization of Renewable Energy

Consider renewable energy as a primary source & Grid as a standby option for-

- Green energy to Every Apartment [**except power points**]
- Weight sensing, gearless Passenger Lift that reduces consumption by 66%
- Green energy for Common lighting reduces society maintenance cost
- RO water treatment system free from energy inputs –no maintenance cost
- Water Pumps that run on green energy – no maintenance cost

20%.Reduction of energy requirement of every flat

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### Green Lift



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## Step IV

# Effective Solar Hot Water System

Conventional Solar Hot Water systems encourage wastage of water & are ineffective in high rise buildings.

- OCF introduced PLC based full- proof alternative Solar Hot Water Distribution System that has proved a real success.
- Guaranteed 125 Lit. hot water with back-up options for each flat.

**Which eliminates conventional use of energy for hot water – there by net saving of 40% energy needs**

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## Solar Hot Water Management System



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## Result

- Net reduction in energy bill per flat by 80%
- Overall society's maintenance energy bill is drastically reduced, thereby bringing down the maintenance cost.

**Also guarantee of an uninterrupted clean power supply that is unheard of for any urban high rise building**

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## Further Milestones- I

### First time use of Lithium Ion batteries in India

Instead of SMFVRLA batteries, OCF used LiFePO4 batteries at Orange Srushti [3.2 V 110 Ah, 112nos.] - **Again first time in India.**

- These batteries are eco-friendly, Non-toxic, recyclable, long lasting & very efficient.
- They require 75% less space.
- They can operate in temperature range of [0-50 Celsius] Ideally suitable for Indian climate.

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## Milestone- II

### Use of unique Windmills



With average poor wind velocity conditions at Pune conventional wind mills are unsuitable as alternative energy source

- OCF used windmills that are rated for 5m/s wind speed which is considered as a low wind speed as against conventional wind mills rated for 12 m/s, to suit local conditions
- These wind mills with 20 pole technology are effective even at a low wind speed such as 2m/s.

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## Milestone -III

### Unique Solar energy management system

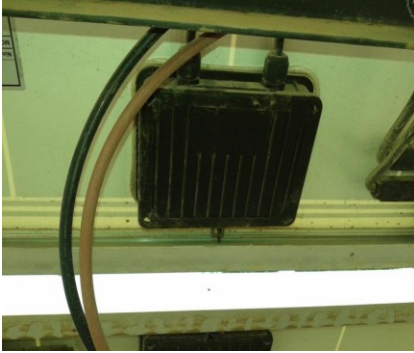
- OCF used Intelligent Energy Controller with every solar panel that has enhanced overall efficiency of solar PV system by 6-7%.
- OCF used green power control unit i.e. **Blink Free Change Over Box** in every flat to regulate use of free green power up to 1.5 amp., which helps **promoting culture of energy conservation**.

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## Unique Solar energy management system



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## Milestone-IV Modular Solar Hot Water System



- OCF introduced a new Modular Solar Hot Water System in Orange County Phase- IV, to streamline maintenance problems associated with centralized system.
- OCF also introduced solar hot water microcomputer intelligence controller, per flat to have efficient management system to suit individual requirements such as- quantity, temperature & back-up controls.

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## Milestone-V Natural Structure Cooling System

- Based on traditional knowledge, OCF implemented Structure Cooling System which uses water to reduce the structural heat, thereby reducing energy inputs for air conditioning by minimum 30%.

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## Milestone-V Natural Structure Cooling System



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## Lime -Alternative to Cement



- OCF Re-Invented - Traditional Lime technology to replace conventional Cement that greatly contributes to the environmental pollution.
- Lime bricks, Limemortar, LimePlaster, Lime Finish; makes OCF constructions strong, long lasting with excellent finish better than the conventional cement but also reduces 40% use of Cement in comparison to conventional buildings.

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## Uniqueness Of Lime



- Self breathing qualities of Lime help regulate temperature within the built-up structure.
- This helps in overall temperature reduction by 8 -9 degree Celsius & saving in energy inputs.
- Lime works as a tool of Carbon Sequestration by absorbing ambient CO<sub>2</sub> that makes it most effective Eco-friendly construction material. (Cement too absorbs CO<sub>2</sub> but fast setting limit sits to the great extent as compared to Lime)
- For enhancing lime composition quality we have identified 11 different ingredients based on our own R&D. The suits achieved has given us confidence that lime is definite alternative to cement to a great extent.

OCF is first in India to use lime as substitute for Cement in any high rise buildings.

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#### Team

- Mr. P . S. Deodhar
- Mr. Vilas Gogate
- Mr. Amar Chakradeo
- Mr. M.D.Akole
- Arch. Swapnil Kshirsagar
- Arch. Amit Bhat
- Mrs. Nirmala Lathi
- Mr. AnandChhajed
- Mr. SandeepSonigra
- MrNirajKothari

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## Contact .....

#### Address:

Orange Life, Sr.No.140/2, Pashan Sus Road, Opp.Datta Mandir,  
Pashan, Pune-411021

#### Email Id:

vggogte@gmail.com, ssonigra@yahoo.com  
[info@royalorange.co.in](mailto:info@royalorange.co.in), kothari\_niraj@yahoo.com

#### Contact No:

V.G.Gogte- 9561354550 ; S.R.Sonigra- 9860010960  
A.Chakradev- 9822196473, N Kothari-9975827627

#### Website:

[www.ocfoundation.co.in](http://www.ocfoundation.co.in)

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