

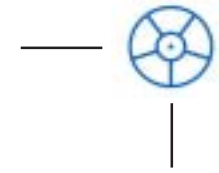
Design of AuroDeep

at
Aurore CSR
Auroville

Yogesh s Patankar
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Project I
June 2002

Acknowledgements



During my training in Aurore, CSR, auroville i have discussed many things with people which beniffited me in my one month assignment. I am particularly thankful to

Mr. Hemant Lamba :for his guidance & sharing his practical vision & taking out some valuable time from his busy schedule . I am also thankful for giving me such great oppurtunity to work on solar lanterns.

Mr. Jos vanden akker :For stepping in when hemant was not there & helping me in my intial days in Auroville. Guiding me in my user survey & basic structure of solar lanterns.

Mr. carsten:for valuable inpu on the present design of solar lantern.

Mr. Michael:providing me some market information and present scenario of solar lights .

Mr Guy:for giving me key suggestion in design made by me and also helping me to find the brass vessel maker in pondicherry.

Mr Robby and staff:for very quick service in making the two models of lights which i designed .

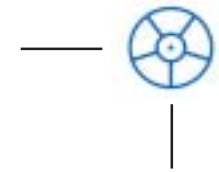
Ms. Shantha:for giving me support in official activities at Aurore .

Mr. Arnab:for nice company.

Mr. Anand:Thanks for helping me in packing and moving my stuff from auroville.

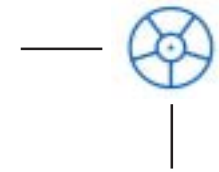
kumar:Thanks! for making brass lamp for me

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About Aurore and CSR



CSR -Centre of scientific Research

Auroville's Centre for Scientific Research CSR was founded in 1984, with an original focus on ferro-cement technologies: roofing channels, water tanks, doors, biogas tanks and other products.

Aurore-Auroville renewable energy



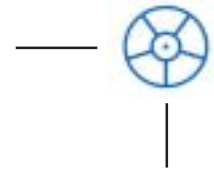
Hemant Lamba -Executive Aurore

Aurore Projects and Services is a renewable energy service providing agency. It aims at progressively introducing renewable energy systems in India by interacting with product manufacturers, lease companies, subsidy givers and endusers. AuroRE has executed renewable energy projects in the Indian states of Andaman and Nicobar, Tamil Nadu, Pondicherry, Karnataka, Kerala, Orissa, Jammu & Kashmir, Punjab and Gujarat.

Partnerships have been established with Government, NGO's and the private sector to promote renewable energy in different parts of India.

Since 1992 AuroRE, through the Centre for Scientific Research (CSR), has been closely collaborating with IREDA, the Indian Renewable Energy Development Agency, for implementation of several renewable energy projects.

work

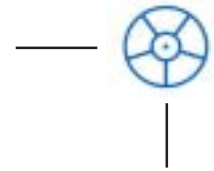


I was involved in one project

Design of solar lights for different sectors of market.

This involved the study of present lantern ,market survey .Then followd by making the concepts for solar lights and work ended with four models of lights .

Schedule



Project duration 30th may to 29th june .

Week1

knowing auroville &CSR
basics of lantern
Market survey in Chennai
Pamphlets and net search
Talk with Mr.carsten

Week2

Discussion with Hemant
Finalising the product
brief
concept generation
Discussion with hemant
Presentation

Week3

concept refinement
concept finalisation
Thermocole models
3-d models
Dimension finalised

Week4

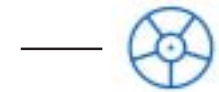
model making
winding up all the process
visiting various activities/
workshops around Auroville.

Schedule activitywise

Data processing :7 days
concept generation :10 days
Thermocole and paper models:5 days
Model making :7 days

Design of solar lights

Auro Deep



Aurore is doing the manufacturing and selling of solar lanterns along with Auroville energy products .Major market is the rural area of India in Ladhak and Leh where the power grid is not available .But the sell of the lantern is not so high as compared to the potential of users .There are several reasons ,one is cost of the lantern and other thing is design of lantern .The problem is there is no product Designer in auroville,they are buying all the components from vendors all over the india .Only the assembly is made in auroville .Previous to the solar energy the people were using the kerosene lamps now when the technology has changed they haven't changed the old image of kerosene lamps ,everybody is copying the same image . So keeping the same objective i was appointed on to design new series of lanterns according to the market sectors .

Data collection

- Market survey
- Product analysis
- User survey

Design Brief

Concepts

Final Concepts

Data collection



User survey



In initial days the present model of lantern was studied .The basic components were understood .Then discussion with many people yielded various points to be considered in the project .The user survey done at chennai helped lot in the design of lights .The activities related to lights going on in auroville were visited which also yielded the creative solutions .The market survey in the form of pamphlets research and www search was carried out which gave the initial movement to the project and idea generation .Talk with experienced people in electronics,marketing,production field gave inputs to the project.



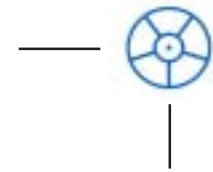
WWW search



Pamphlets search



Product Analysis



Pamphlets search

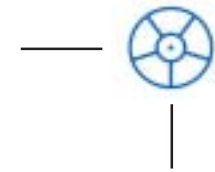
Number of pamphlets were searched and the important points were noted down .The good and bad features were listed down .The pamphlets search gave a fare idea of the present market and form trend .



Nice ,elegant form ,compactness because of vertical battery
Bad feature is too much ribs provided around the chimney.



Very stirdy and rugged design .But form is bulky .



Few images of the pamphlets



Handle arrangement different from others
.The shape is quite different from others
.chimney shape is no more cylindrical.

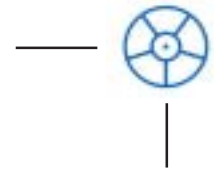


safety cap for battery input . rugged design.too much mess around the chimney.

www search



New shape but very bulky



Old lantern image

Box design ,no protection to chimney.



Good Designs



Box type instead of circular ,rest is same old image

Nicad batteries used which makes lantern very compact.



Panel is attached to the lantern .New form .



User survey

The user survey was done in chennai on Besent nagar beach .Aurore is right now doing one experimental project .The shopkeepers and hawkers on the beach side take lanterns on hire on daily basis .They pay Rs 20 per day for 5 hours and they return the lantern everyday to the owner .The company name is Sunmin, the owner of this company is Mrs Poornima .There are two more helpers named Rajendra and Tabresh who actually distribute and collect back all the lanterns .We went to Chennai and alongwith the rajendra i went on beach side to ask various questions about the use of light .Rajendra did the job of translator for me .We asked various qeustions about the shape ,colour,usage,interface problems .Very valuable information came out of discussion .some points are listed down

- sand goes in the switches
- Steel rods corrode
- all of the hawkers concerned with price
- The access to the inside battery and electronics -
- should be easier while maintainance .
- Handle design must be carefully done .
- all around illumination necesarry



Lanterns kept for charging in day time



Hawkers using light during night time .



Rajendra carrying 6 lanterns in hand

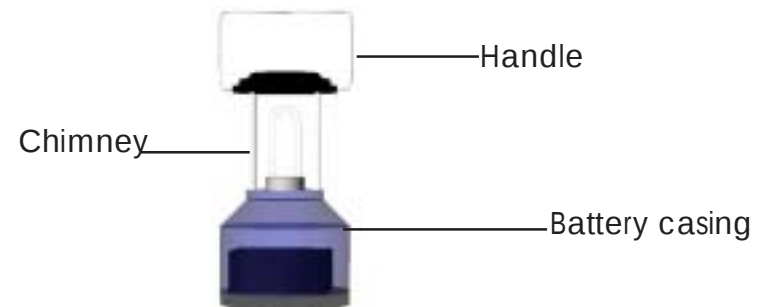
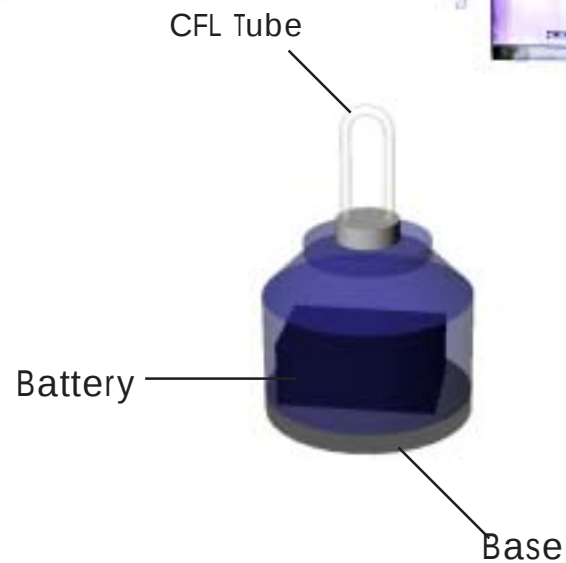
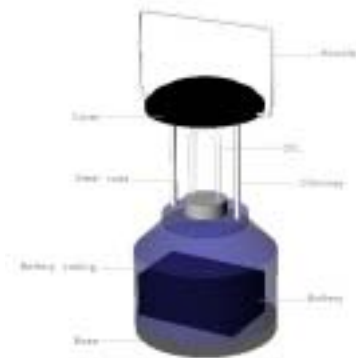


Product Analysis

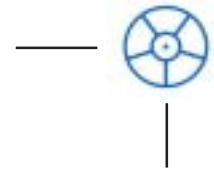
Basic configuration of lantern -Product analysis

The lantern works on solar energy. The essential components are

- 1 battery
- 2 electronics called as charge controller
- 3 solar panel
- 5 CFL tube (compact fluorescent light)
- 6 Main body and chimney to protect CFL



Operation of Light



During the day time when sun is available the solar battery is charged with the pannel .the pannels are kept on the roof top and the con-
nection is done through the cable .when the battery is fully charged an indication is shown by the LED light .Then in the night time the lantern is ready for use .

The configuration is

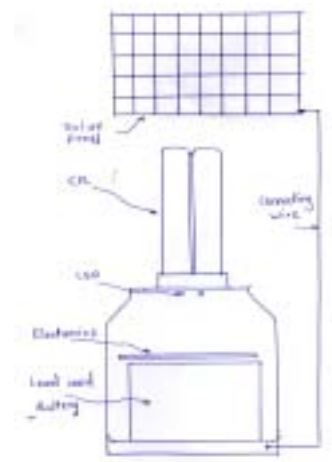
Battery :lead acid battery -12V 7Ah

CFL tube : comes in the range of 7W,9W,11W

Price :Rs3500



Solar panel



Basic operation

Brief



Target user category

After discussion with Hemant we decided to divide the market in three major sectors. The existing design is common for all type of user whether he is farmer, villager or urban man, the image is same. So three sectors identified as

Rural market

Urban market

Shopkeepers

For all of them the design will be different as the context is different and the way of use is also different.

product expectations common for all three categories

Maximise the efficiency of light.

Easy to operate.

Easy to carry

Cost must be near to the present lantern.

Product expectations according to their market

Rural market

rugged

portable

old image of lantern should be maintained.

Urban market

fashionable

aesthetically pleasing

simple elegant forms

Shopkeepers

versatility in its use

portable

It can be hanged upside down.

The illumination should be 360 degrees.

The product name was given as

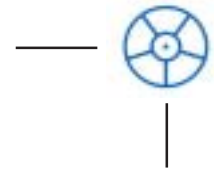
Aurodeep-1

Aurodeep-2

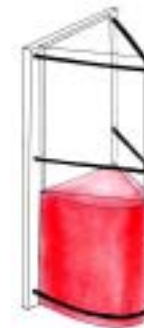
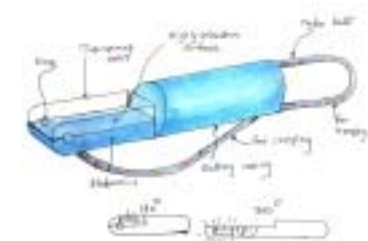
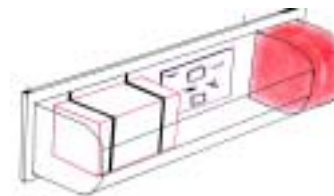
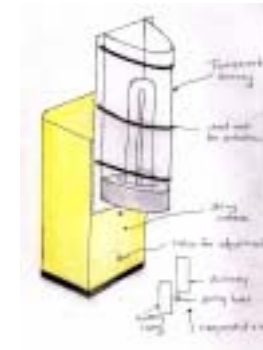
Aurodeep-3

Aurodeep-4

concepts

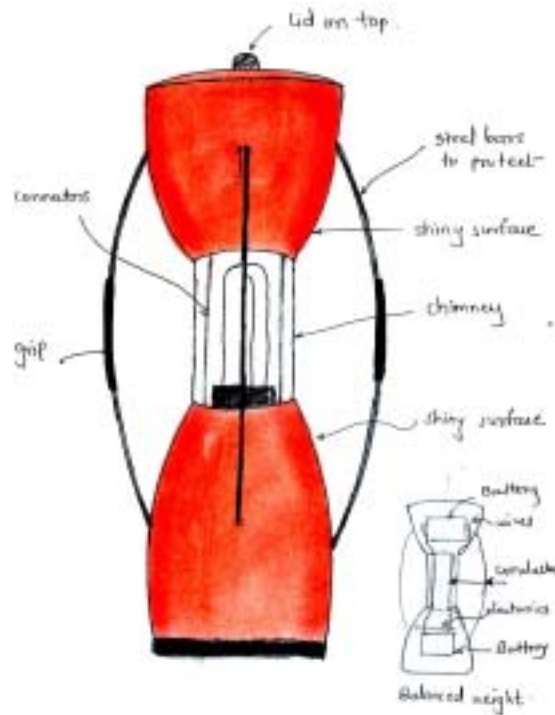


We had brain storming sessions between Hemant, Jos and myself. The battery is the major bottleneck in the design. For whole week we thought on various ways of battery placements. Then according to product brief we tried to generate various ways to increase the illumination. Some options with both 180 and 360 degrees of illumination were tried. We also went through the net to get some more ideas on shapes and then we came up with some ideas which are presented in next session.



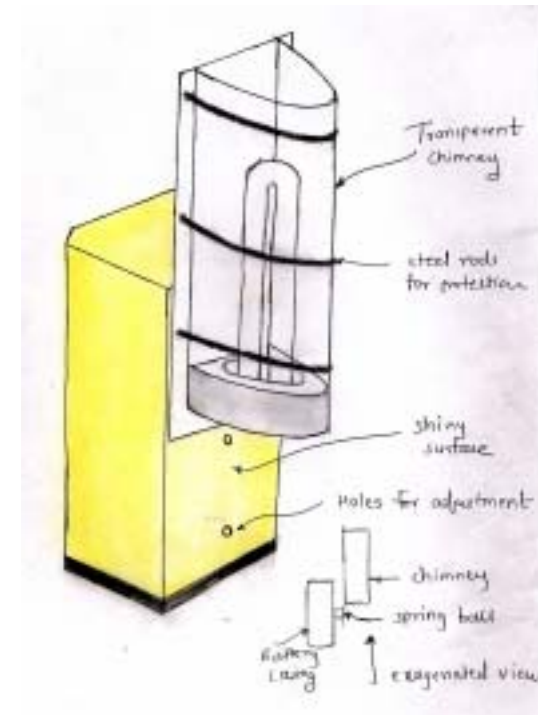
concepts in detail

1



Basic shape of old lantern was maintained .The shape is such that even if the lantern falls from height the chimney is protected from breaking so in short it is a rugged design

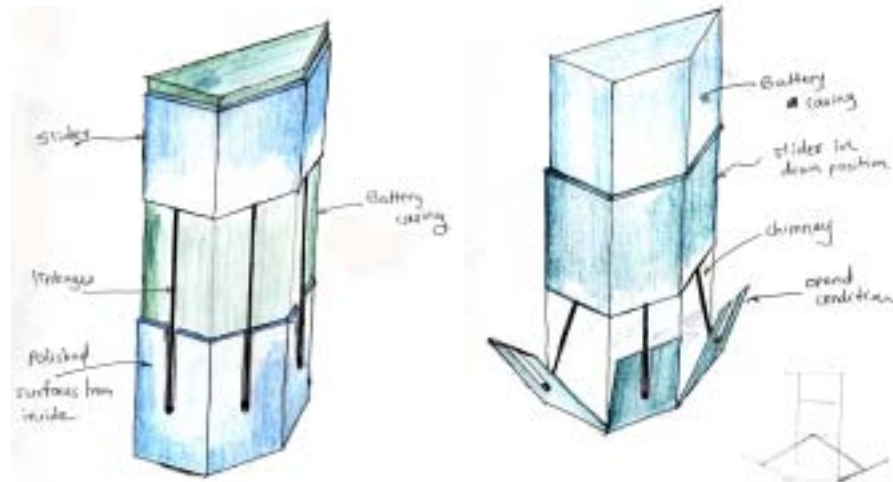
2



The idea of selective illumination that is 180 or 360 degrees is achieved by the sliding mechanism .The design is made such a way that the light can be used in any position

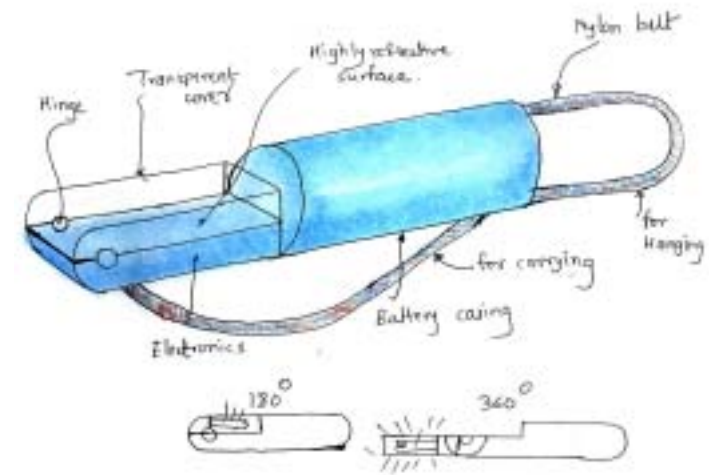
concepts in detail

3



The idea of selective illumination that is 180 or 360 degrees is achieved by the sliding mechanism which is like an umbrella. The flaps are opaque and they are polished from inside to enhance the illumination.

4



The idea of selective illumination that is 180 or 360 degrees is achieved by hinge mechanism which enables the chimney to be opened or closed. The batteries used can be nicad batteries to make it more compact.

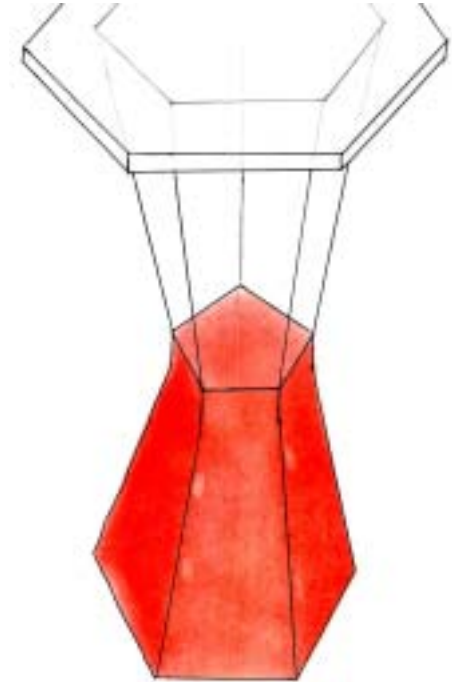
concepts in detail

5



Some vertical forms were tried out. The placement of battery is vertical to make it more compact.

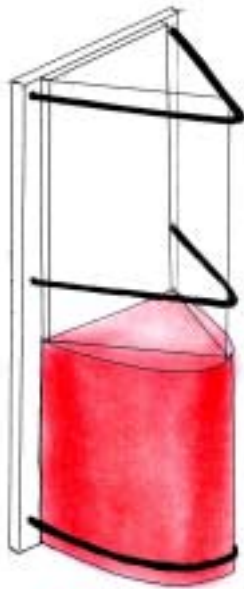
6



The pentagon on pentagon creates some interest and also makes the chimney such that it directs the light in right direction when the light is hung upside down.

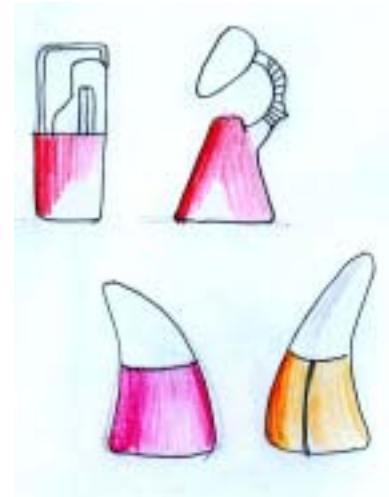
concepts in detail

7

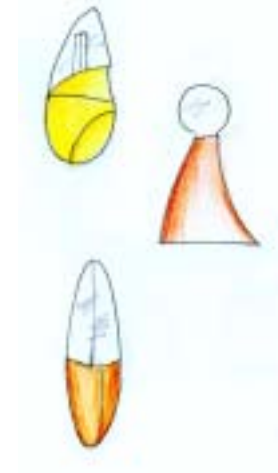
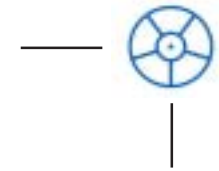


The light was developed keeping the shopkeepers in mind .This light facilitates the use in any orientation which is desirable to shopkeepers.

8

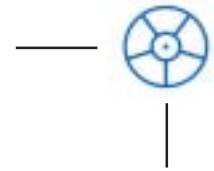


Some different forms were tried .



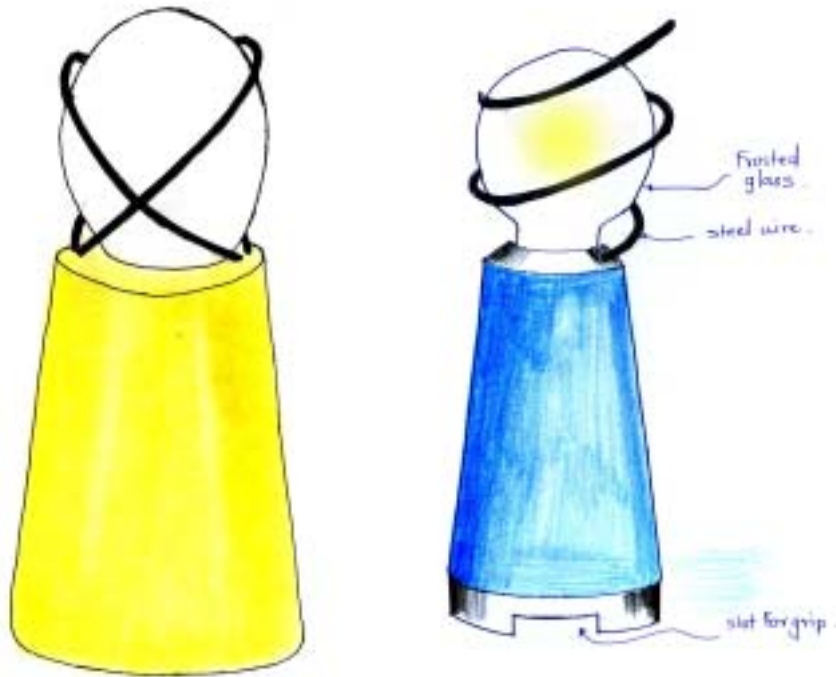
concepts finalised

We had series of discussions, then we finalised four concepts based on the analysis of previous concepts.

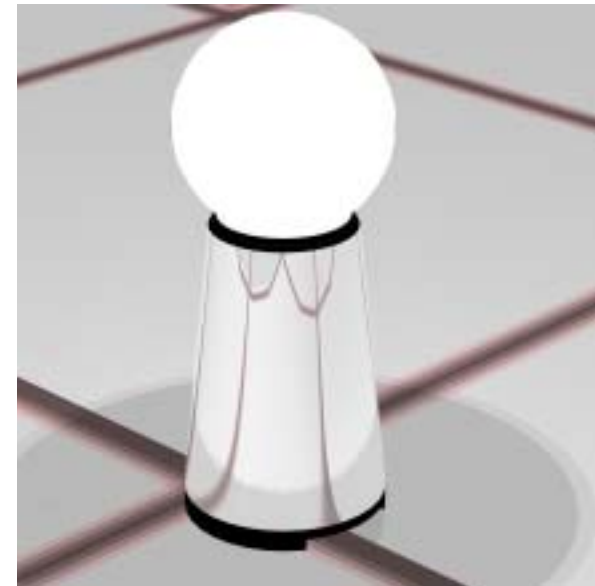


1 Aurodeep-1

Urban Market



Basic geometric shapes and aesthetically pleasing

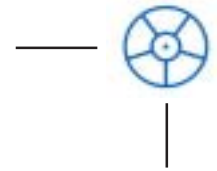
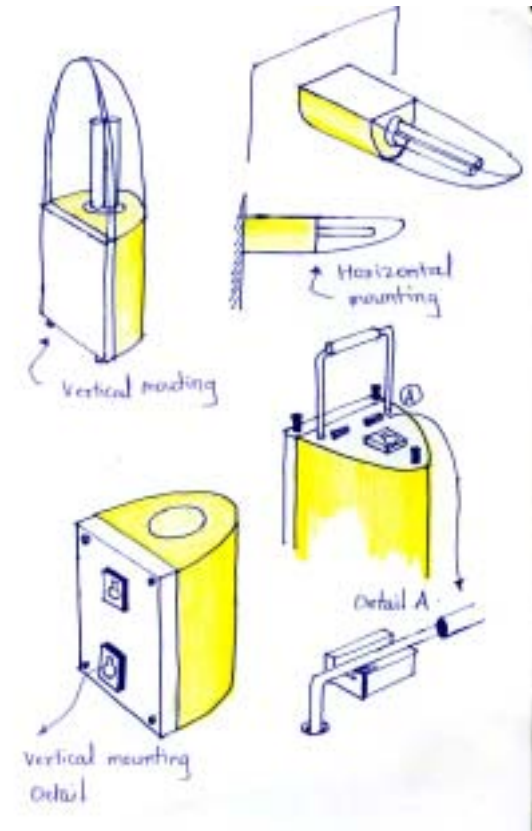
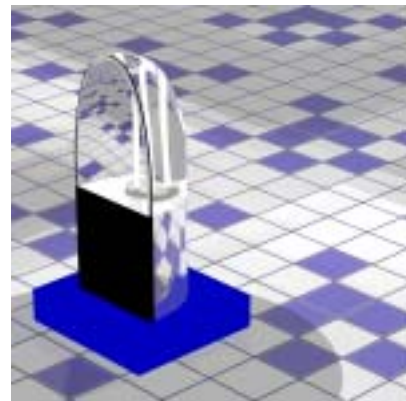
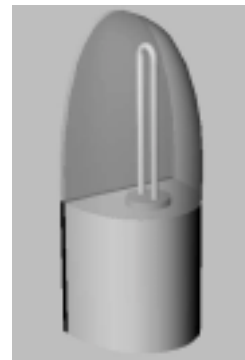
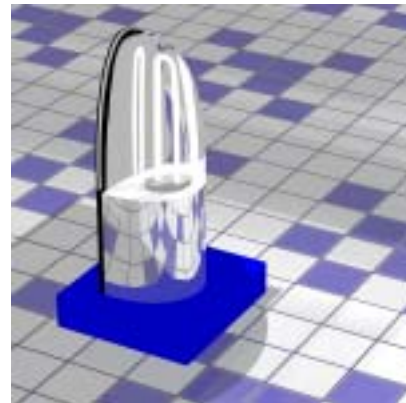


concepts finalised

2

Aurodeep-2

Shopkeepers

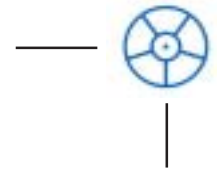


concepts finalised

3 Aurodeep-3 Rural Market

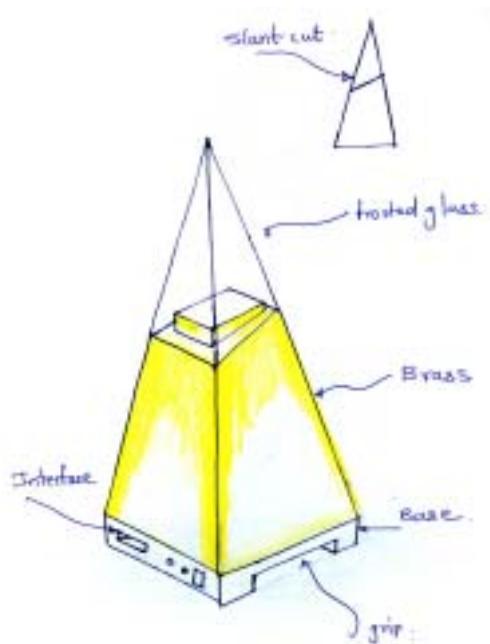


Strong rugged design, portable light with simple nylon belt.

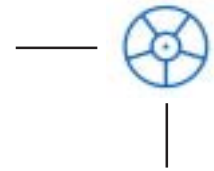
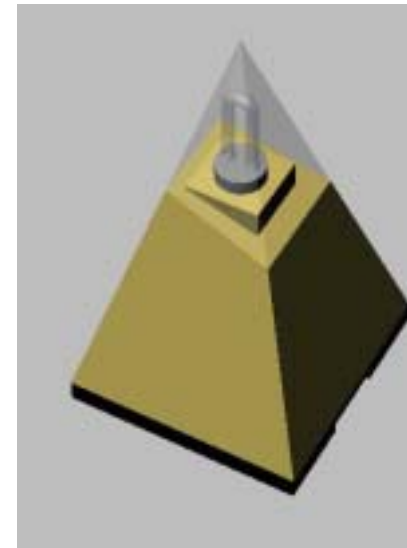
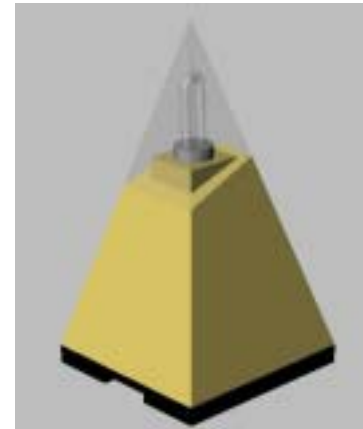


concepts finalised

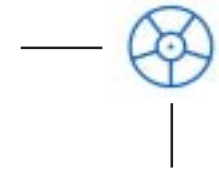
4 Aurodeep-4 Urban Market



combination of brass and frosted glass makes lamp more fashionable and elegant.

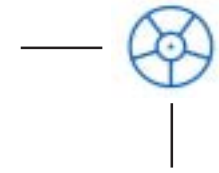


Final models



After finalisation of concepts ,in the last week the actual models were made .The model was done in Aureka workshop .The material chosen was stainless steel .The Buffing operation was done in Bharath Electroplating Muthaipeth Pondicherry.The third brass lamp was also done in Muthailpet .Kumar ,local brass vessel maker made the brass lamp.Then One model was done by me in thermocole .

Conclusion



In all The auroville was great experience .The people over there are doing lot of exciting and innovative work.The working environment was very good and free so i was able to produce very good results which also satisfied Mr Hemant executive of Aurore.Also in the case of language barrier the only medium to communicate is sketching and drawing .You have to provide each and every information to them .You cannot assume some things .Better you give the information better will the results .Also it's always important that you plan your schedule before you actually start your project work that helps in completing the project in time .