Report
on,

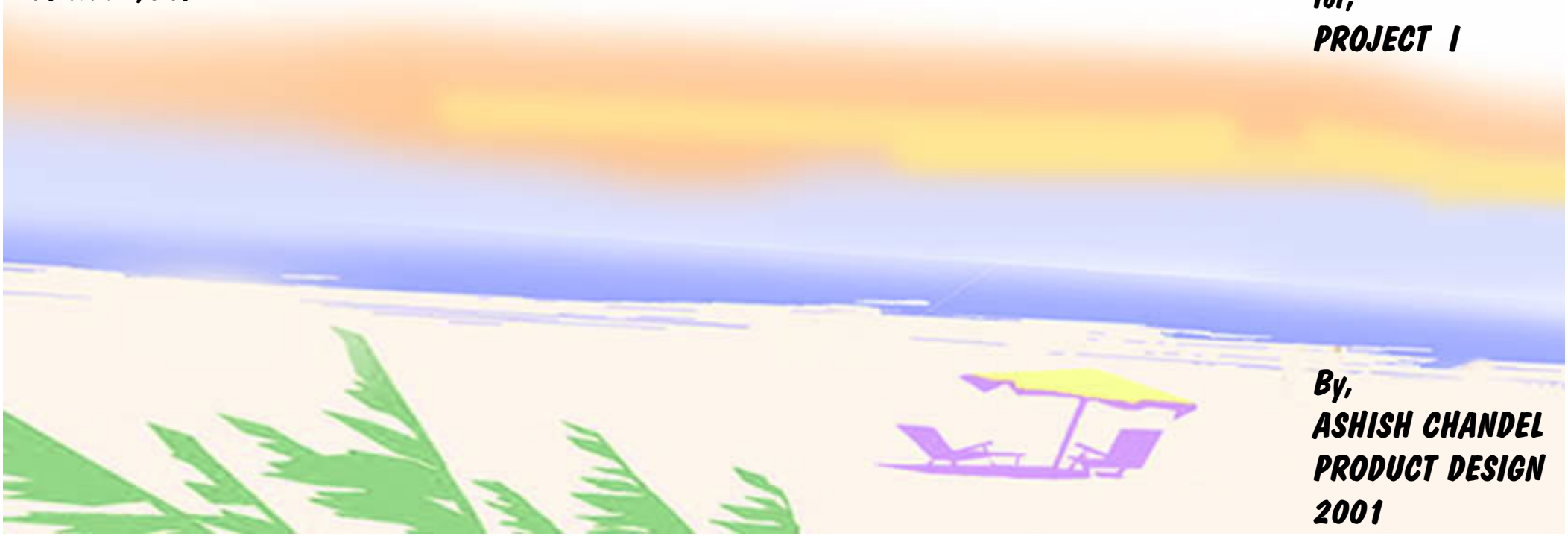
INDUSTRIAL TRAINING

at

m O z
a i C
design combine

BARDEZ,GOA

for,
PROJECT I



By,
ASHISH CHANDEL
PRODUCT DESIGN
2001

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To Whomsoever it may concern

Ashish Singh Chandel has done a month of training with 'Mozaic' from 1st June to 28th June.

During that month he worked on a number of projects in conceptual capacity, starting with
- looking up inspirational material and compiling it for the design of a truck cab,
-Working on proposed alternatives for a dryer Fascia,
- doing the layout of an instruction manual and
- concepts for hubcaps in the accessory market.

He displayed sensitivity and concentration at work.
He may require to train himself more to look for analogies in nature...manage to get a little poetic so to speak to enjoy the full latitude of the joys and surprises design can offer.

The rest, as with anybody, will come with experience.

We enjoyed having him with us and wish him well for the future.

Thanking you

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THE MISSION.....

Industrial training is an exposure to the design scenario as it exists and to get a feel of practices which shape the products which reach the masses.
The training is also a chance to get a first hand exposure to market forces and constraints under which a designer works. Its an opportunity to understand the demands of the design field, which the design students will have to rise to as he moves into the arena. The student gets to work with senior designers and technicians and gets a first hand feel of design methods , materials and processes .the students gets constant guidance and comments from the seniors designers and works towards conceptualizing and detailing a complete product within a month. However given the time constraints whatever the student achieves in the month should reflect a sincere effort towards a feasible design solution.
A first year student gets a month for this experience. Whatever he learns in this period should inculcate a professional touch in his future works especially in his second year projects.

WHATS WAS IN STORE

I finished my industrial training with mosaic design combine. Mozaic design is a firm based in BRADEZ , GOA which handles industrial design and architectural projects from all over India.
The architectural department is handled by Mr. Dean d'cruz one of the foremost names in current Indian architecture. The product design team is headed by Mrs. Reboni saha , a graduate in product design from national institute of design.
Moazic is renowed for its expertise in utilization of local materials and techniques in building constructon as well its products.The product design team churns out artifacts in materials like seas shells ,clay and uses the expertise of local manufatureres in FRP to create products on various scale in feasible quantities.Mozaic also extensively uses laterite rocks and sand in its construction activities and committed to nurture and strenghtnen the very typical goan architacture.

TOOL BOX

Mozaic is a well equipped form in terms of man power and technology. They have excellent high end workstations and model making facility. It utilizes softwares like solid works, rhinoceros, 3dstudio max, Photoshop and illustrator for product development and visualization .they enjoy excellent rapport with their clients and
extensively utilize their facilities to get feel of new materials like frp and glass before starting the product development. Mosaic follows a design methodology which is quite adaptive to various clients. They insist on extensive discussions and brainstorming sessions in which the clients as well as all the employees of mosaic participate. Mozaic also insists on regular client inquiry and correspondence during product development which although inconvenient to the client to some extent, not always though, ensures a satisfying result.

Mozaic design house has a strong belief in the notion of value addition to their products. Value however shouldn't, as they believe, come at the cost of product identity and aesthetics and shouldn't be ostentatious only while speaking for their utility.

Project: Design of truck cabs in FRP

Clients : kineco industries..
Quantity : 15-20 per month
Material : fiber reinforced polymer reinforced with a tubular stainless steel structure.

THE PROCESS

I was supposed to gather inspirational material which will help in the design of the cabins. They involved looking for and collecting pictures and construction details of existing trucks in FRP. Sources were automobiles catalogues, net and automobile magazines


SCANIA


ISUZU

This phase was followed by **discussions** as to which features we want to include in the design including the possibility of actually making them in FRP. We selected features like

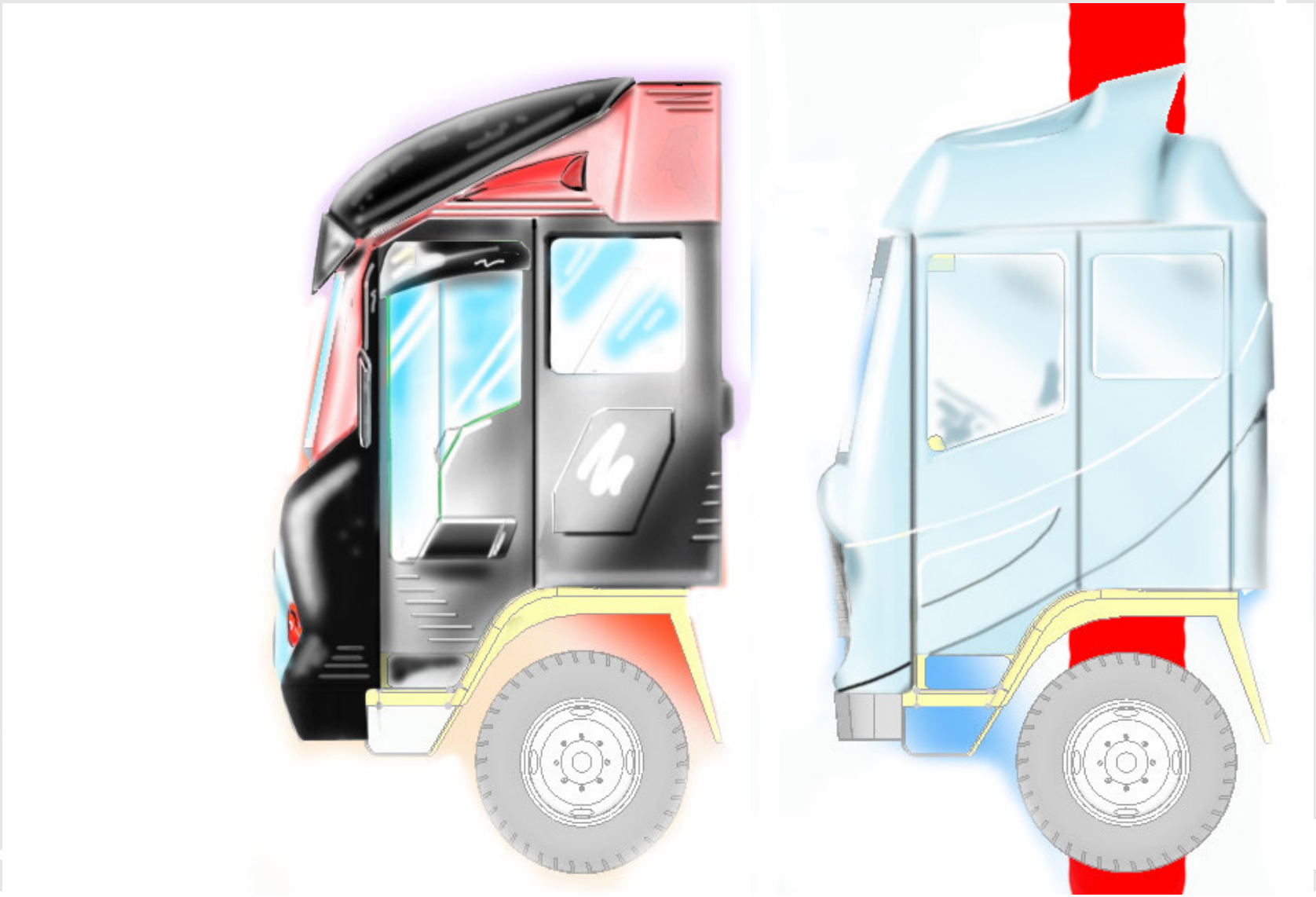
#Air scoops for ventilating the cabin,
#Aerodynamic roofs which double as extra storage space and #head room for the bunk bed.
#Bunk beds for the occupants.
#Extra large rear view mirrors.
#Thinner A columns so as to increase visibility
#Dents at strategic places to increase structural strength.

These are how are discussions went by ....
annotations ....
quick sketches ...
reference .....

since we were catering to a niche market we felt little need to create an image for our product .....
we worked with an aim to push in as much utalitarian simplicity as possible

UPSHOTS

I was asked to make the **conceptual sketches and renderings** for presentation to the clients before starting the detailing process. The renderings were supposed to include most of the features .



Proposed interior layout .....

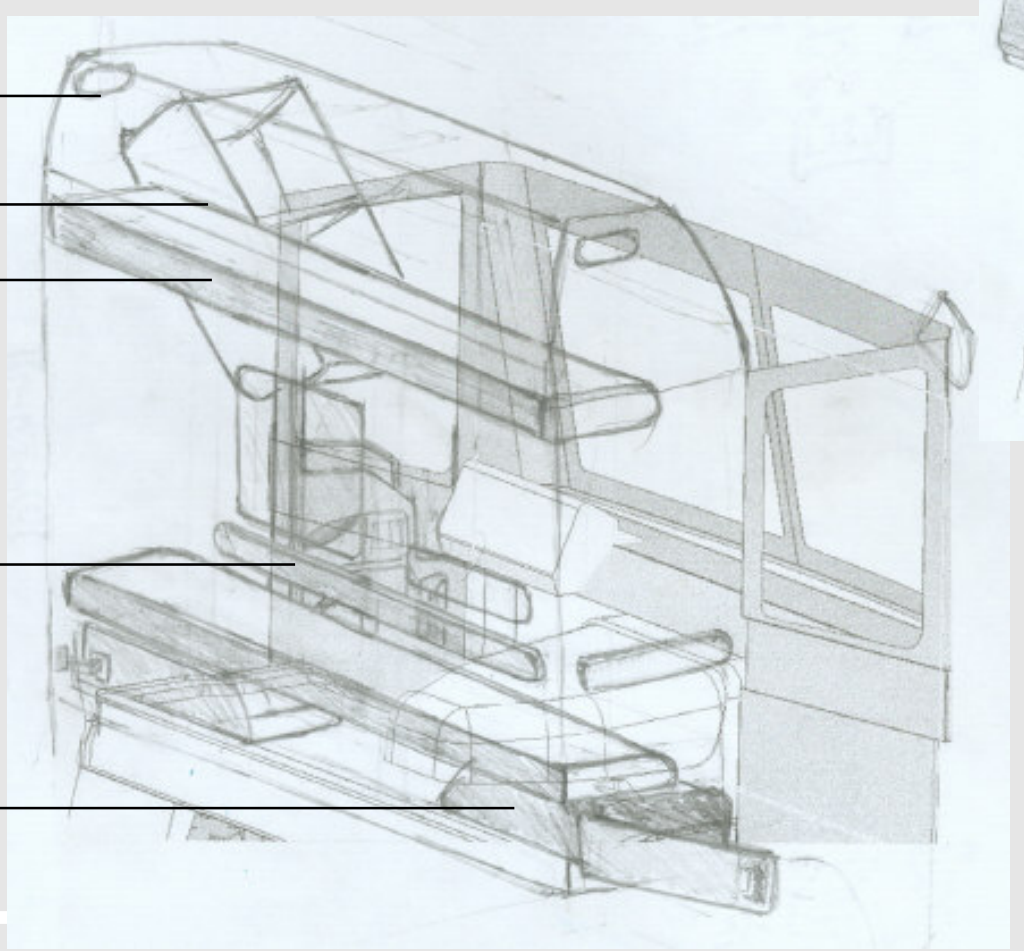
air scoops for ventilating the top bunk

pull down storage for driver's essentials

upper bunk

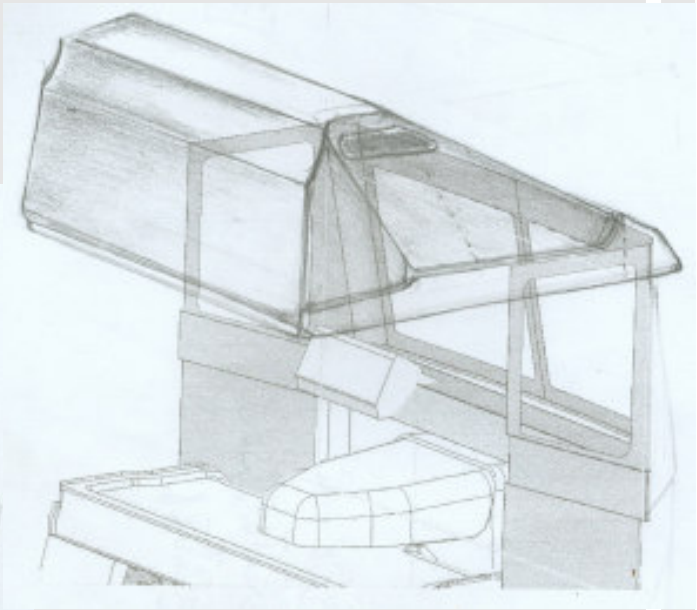
The projections due to embedded steel structure will be hidden by panels which double up as rests also they help the occupant to climb up to the top bunk .

storage space for tools and maintainence accesories accessible from outside .

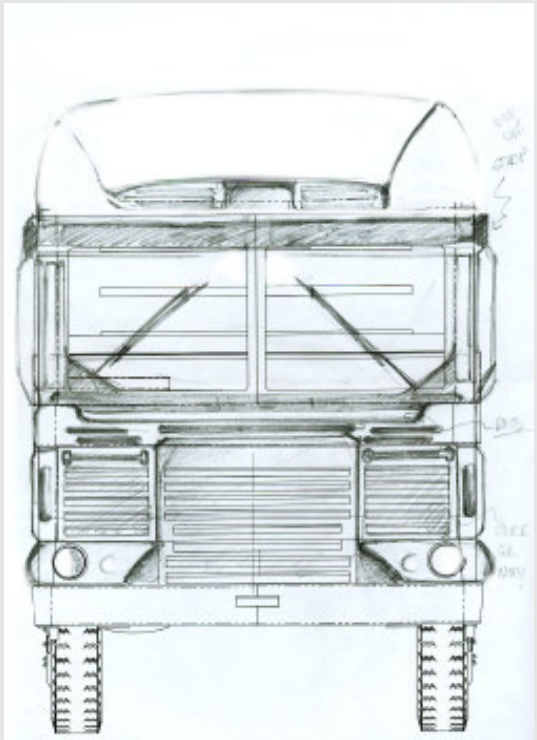


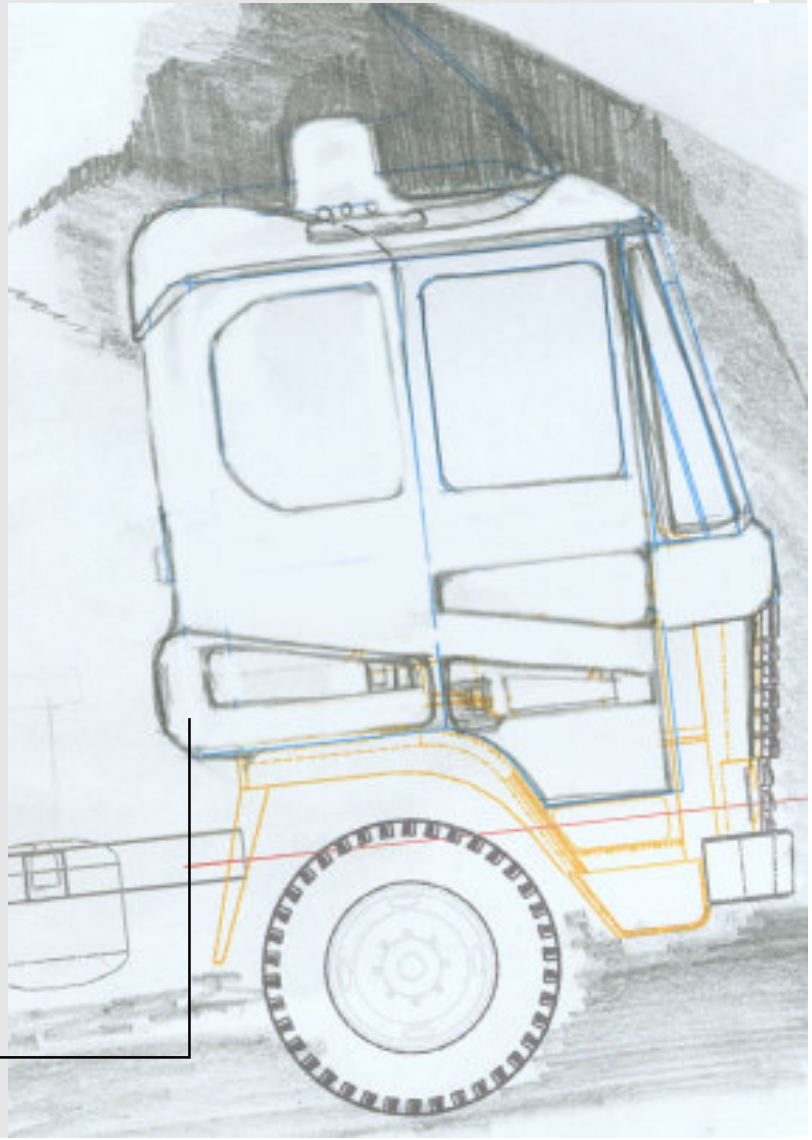
Rain gutter on the roof .....

This is how the channelswill be hidden. They will be a blended with the form and streamlines



some more concepts based on the same guidelines. Experimenting with the front fascia was still on, while trying to convince the client that it can be extended to cover the lower portion also .





While we studied the detailed drawings which we made after measuring the truck, one thing that came in view is the iminent problem at the bottom flange on the chasis. It was a right angle and to have strangth at edges we needed a fillet . This was a possible solution with a round edge giving way to the square profile

While the aesthetic treatment was on, the clients were constantly discussing the possibilities in structures and fixing details of the truck cabins .in the end following points were discussed and were jotted to be incorporated in the final design ….

#The process for manufacture with kineco is essentially hand lay.. Also they did not have CNC facilities for cutting the molds. Thus it was decided that for the initial prototype there will be limited 3d parting lines. The aesthetics will have to be evolved out of flat panels. Possibilities of aesthetic treatments of window panes and futures like roll up windows and matching sun visors.

#The cabins wall will be finished on both sides. They will be double walled structures with PU foam filled in. The thickness of the walls will be 15 mm. Since frp is vulnerable to vibrations in dynamic loading, a skeleton structure made of 20mm MS square beams will be inserted in the panels.
The end sections will be strengthened by inserting MS sheets 3 mm thick .
The ends aHUSHnd joinery will be hidden by PVC sheets.

#The structure will be tested for dynamic loading n case of hard braking and sharp turns and impacts
#The clients insisted upon using flat rectangular safety glass windshield to cut down on costs.

#The FRP is strong enough to withstand impacts and wear and tear but they have tendency to crack on impact so it was decided not to bolt any outside feature in the panels. Rather they will be directly bolted on the inserted skeleton so as to transmit the entire load to the inner sides.

Is this what is going to come out eventually ?
The question will be answered in next four months, which is the stipualted time for completion of project ..

my job was shited to second assignment.....

Project: design of fascia for IFB cloth dryer …

Clients : IFBglobal
Material : ABS,sheet metal

IFB global were looking for a new fascia for its soon to be introduced cloth drier.
The brief that we were given was to design the fascia keeping in mind the following points …..

#The drier will be pushed in as package with the existing front loader washing machines.

#The drier being light weight can be kept right on top of the machine upside down, so the there should be semblance among the two machines.

#The controls for the drier are extremely y simple consisting of a simple mechanical timer. however the possibilities of using a electronic timer has to be explored

#The Company had already gone ahead with the tooling of the front loader lid. They expected us to provide new designs for only the control panel fascia.

#In addition to this they wanted us to stick to he upper left quadrant of the machine to place the mechanical timer and since the other spaces were either taken over by the heating elements or were ergonomically futile.

#The company wanted us to tackle the problem of placing the graphics in such a way that they work both ways. The existing snap on them had for their logo was adding to the cost of the machine.

This is the fascia panel for the IFB washing machines designed by MOZAIC.The firm has set high standards for IFB.My job to come out with designs with clean uncluttered looks was clearly cut out.The drier fascia will have to complement with such existing concepts

Product analysis

The company had provided the front panel of the existing drier.

After opening the drier panel following points was clear.

1.There was little or no scope for any other draw on sheet metal body due to very tight spaces and optimization for a single shot process.
2. The only intrusion possible on the panel was to provide for different locations for screw holes, which can be run down to both ends of the fascia.
3. The cover needed to cover the machine had the possibility to be scaled to house the control panel in itself.
4. The electronic timer being much smaller does not require a separately drawn sheet metal housing and can be completely incorporated inside the panel itself

Since the company has been trying to explore untouched territories , they had forbidden me from divulging details.
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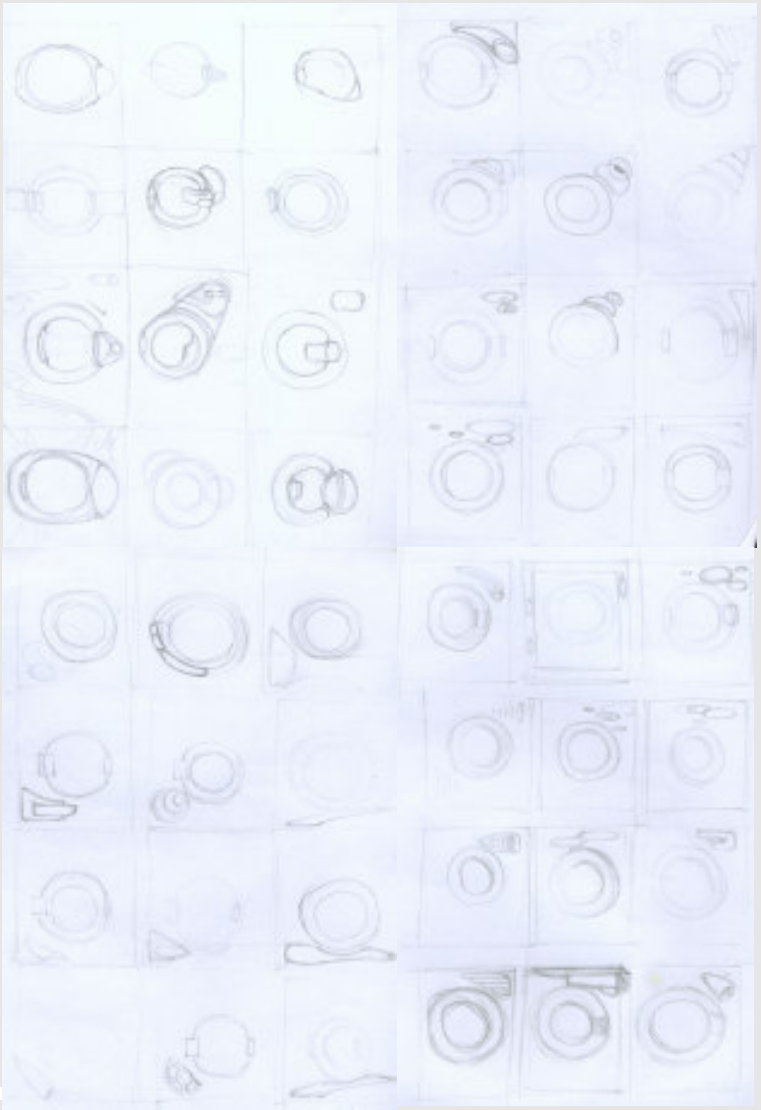
Form generation



Since the space and outlines of the form where clear we started the process by looking for forms which will covey dynamism within the limited space. An approach was to continue the lines of the lid to the fascia and run it towards the other end and balance the lower half with graphics. Other approach was to looking for clues from nature and incorporate.

This was followed by fast sketching sessions where I came up with quite a number of sketches within a very short time .although the some of them were way beyond my brief but they all the more helped to understand my constraints. After selecting the from I went about product visualization using renderings in rhino and Photoshop. I had in mind the graphics which can be used to balance or harmonize the composition if necessary.

CONCEPTS

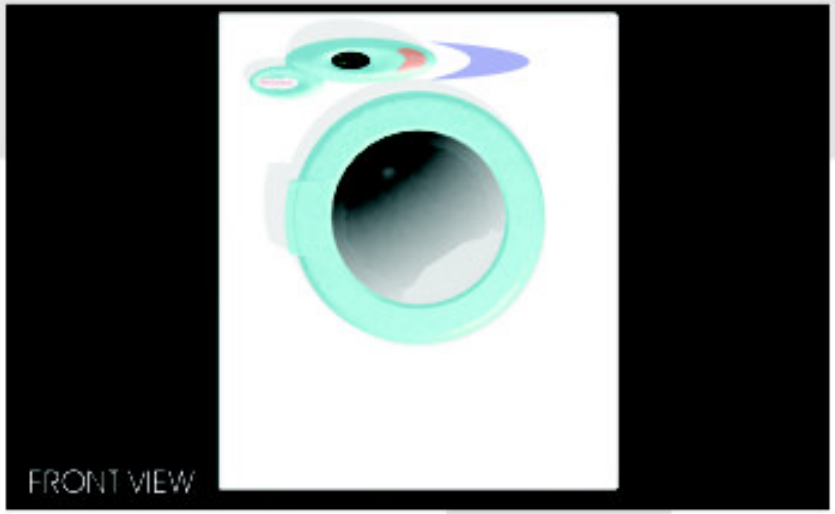
The following concepts were generated and visulaized using 3D modellling in Rhioceros and SOLIDWORKS and shown to the clients.

An abstraction ..
how about putting a comet on top ...
the imagery of a comet has a persistant bend ...
should go well with the lid .....

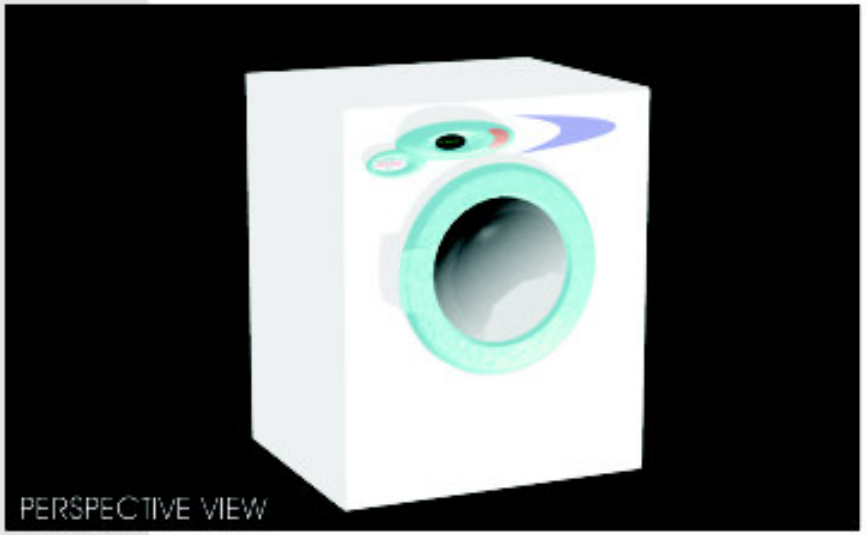
The concept was selected and is being fine tuned at MOZAIC right now

We got the idea correct ... dream clouds !! goes well and should fancy the target
users ..

the most difficult part was coming up with a good name and we totally messed it up



IFB Blaster



Solaris was based on classified analysis by the client's marketing team . here we face the problem of putting the logo in the scenario when the machine might be put upside down

The solution ...
How about putting another upside down . seems to be working ...

IFB Solaris

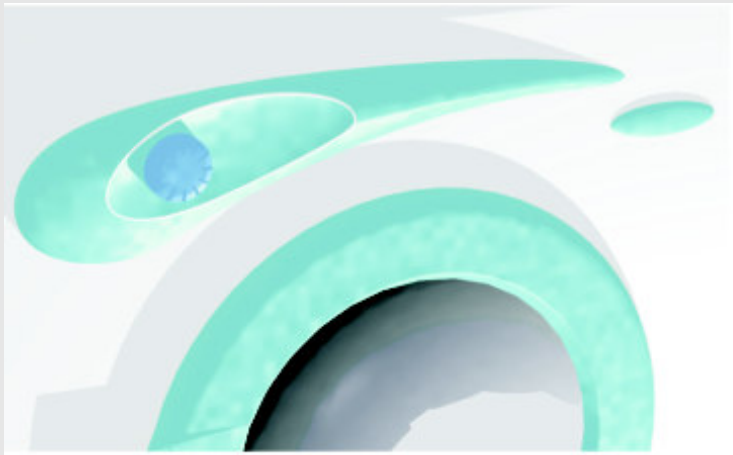
More than often the clients wanted to push in their own conceptions regarding what will appeal to their users ...

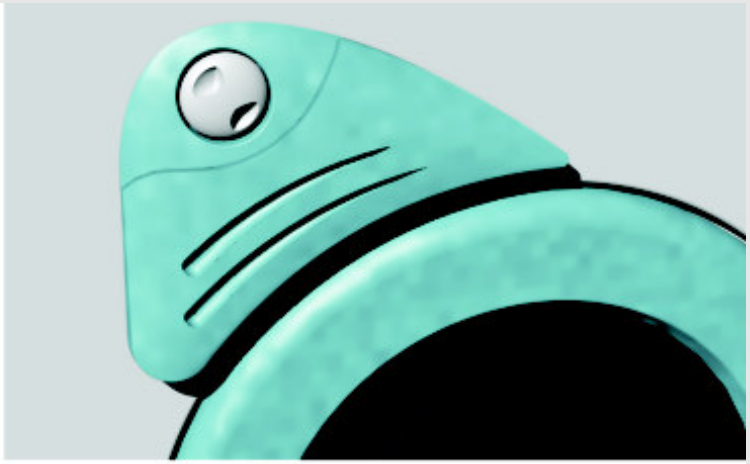
Solar was one of those .. we devloped the design for them ... The sluiced lower portion should go well with the washisng machine's control panel .....

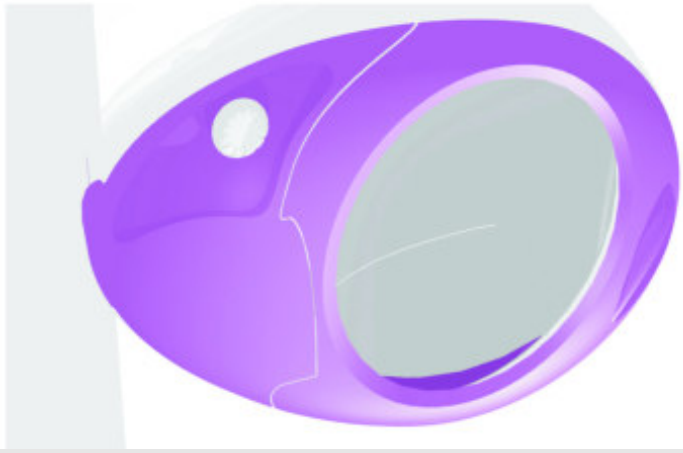
IFB SOLAR

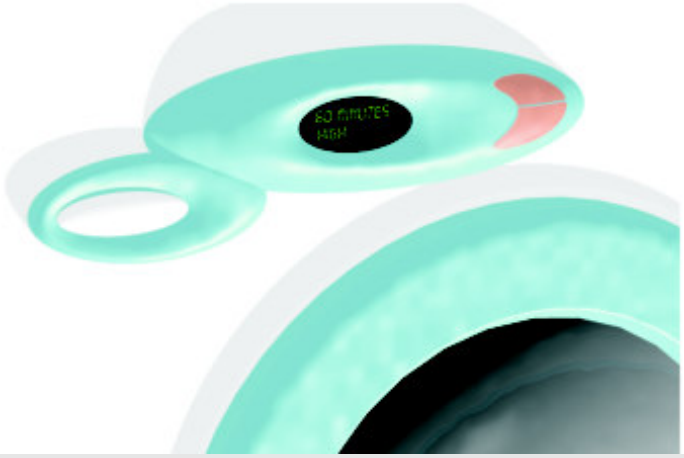
Some propose Some dispose .....

But I came out satisfied at my effort ..... Atlast I used my education .....

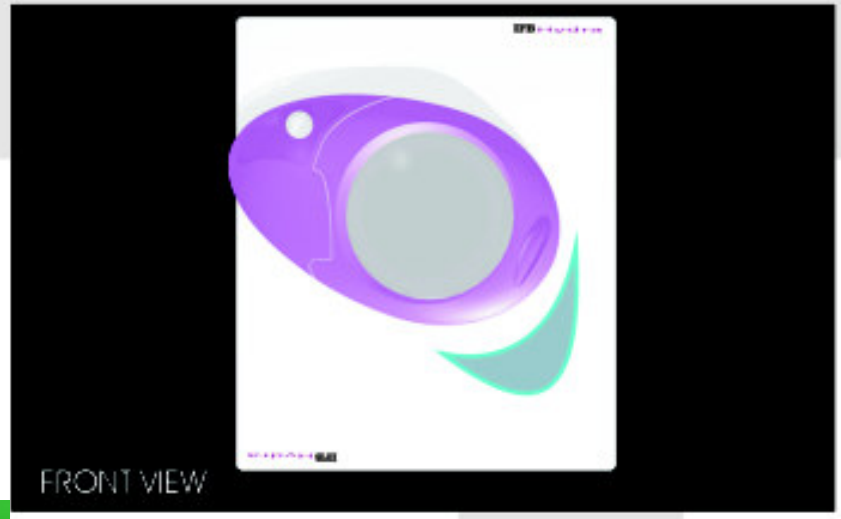




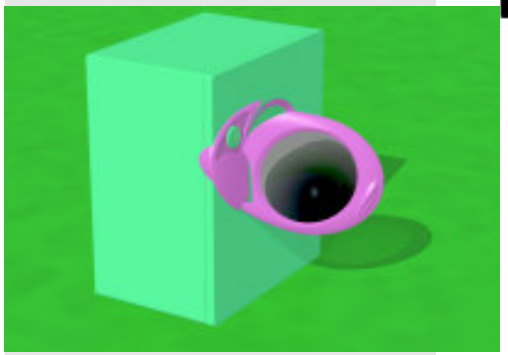


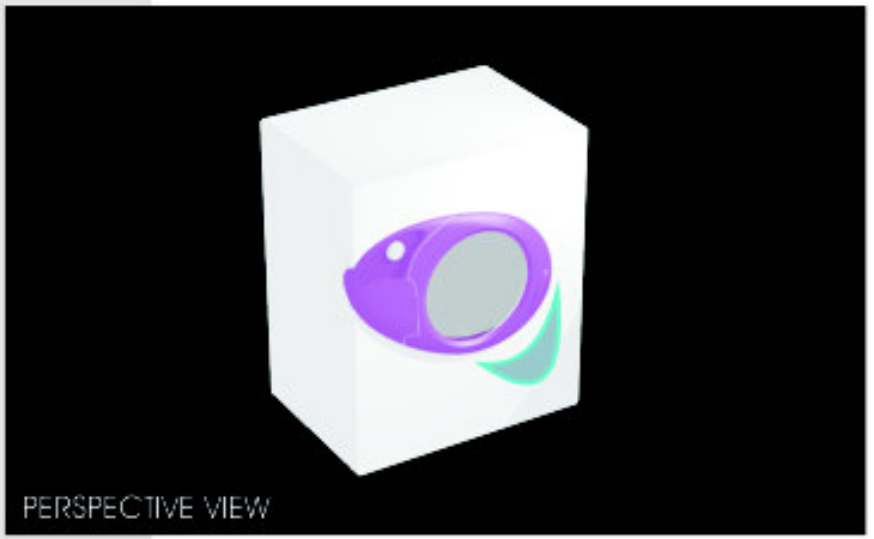


Sometime, at personal level a designer should encourage the client to explore the possibilities and surprise a new design can hold which can introduce freshness in his existing line of products. All this time what should excite him is the possibility of cutting down the cost all the time. This I felt was very much possible in the concept hydra I came out with.



IFB Hydra

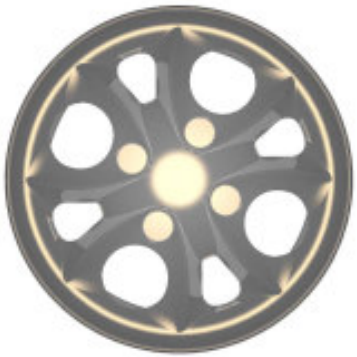




The surprisingly integral form of the hydra's panel with semblance of smooth stones on the river bed was my attempt at creating an interesting play of surfaces using sudden dips and unorthodox grips for opening the lids. Although I knew before beforehand that the concept is not possible because they had already done the tooling for the lid still it was worth a try.

Project: design of wheel hub caps for accessory markets.

Clients : Paresh Industries, MUMBAI
Material:PVC, ABS



This was an assignment in which the client for mosaic had sent them a parasolid file for the basic geometry of the wheel. What they wanted were a range of wheel cap design which should be unique in terms of the form. The cliebts expected us to come up with as many feasible options as we can. the concepts should stand out among the existing range of hub caps and create a new identity for the company.

User study

I went about analyzing the existing range of wheel caps available in the market and also tried to examine the purpose and utility of the caps .
After talking to **customers at Sai service center and Mahindra show-room and local spare shops** I came to following conclusions.

1) There are two conflicting so called utilities of the hub caps. One is to protect the wheel hub and the disc brakes form the dirt flying in and in the process give an aesthetic appeal to the otherwise mundane wheel caps provided by the automobile companies
2) The other provocation is to simulate a alloy wheel. Alloys are seen with skepticism by Indian customers due to their high cost and irreparability. However the average car user wants them for their awesome aesthetic appeal . They try to make up for this by using hub caps which look like alloy wheels to the extent that they fake the four bolts on their face which connect the alloy wheel to the hub.

PRODUCT ANALYSIS

Based on these two classes the manufacturers actually come up with two distinct **type of hub caps**

#One with a almost flat geometry but for the allowance for the hub and the fixing detail which is same for both 12 and 14 inch wheels.

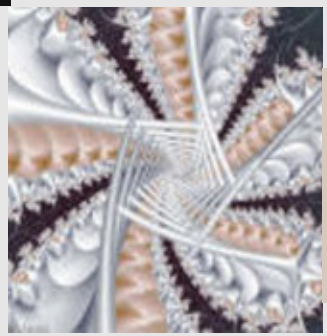
#The other kind has an accentuated depth so as to create suitable depth which shadows the interiors thus hiding the inner hub creating the effect of a alloy wheel.

Other point to be noted was that prices of these accessories varied only with the quality of finish.

There were two ways of fixing the caps. one was to provide snaps on the outer rim which slides down the outer rim of the wheel and sits in. this is not very popular due to non positive locking which can come out on jerky roads. The other way as seen in the image is to use a steel plate which is tightened between air vents on the wheel which is tightened by a single nut. The nut is eventually is what is seen on the fascia as the fixing detail. Some design tries to use this nut as aesthetic elements on the cap.

The hub caps are one accessory which has been neglected due to presence of the wheel caps. Proper aesthetics treatments of the caps which give speak for their very presence as an aesthetic element and not as a cheap simulation in necessary.

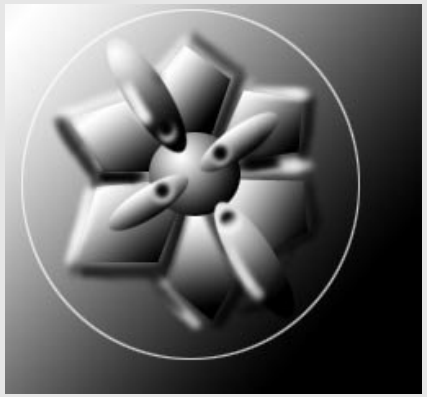
THE BIG IDEA ....

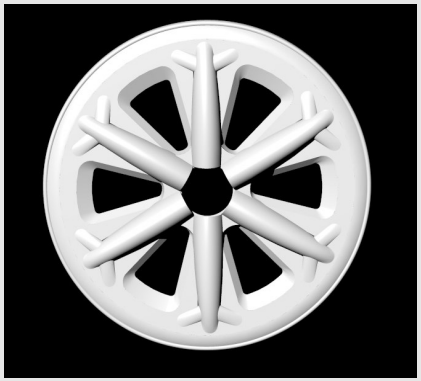


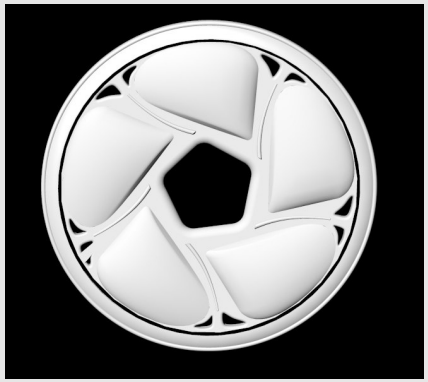
After discussion with the clients we came to the conclusion that it is possible to create a product line for the caps which will help in marketing the caps with a distinction among the existing line of hub caps from other manufacturers. These designs will lend an identity to the company and will hopefully run a new thought process in the design of hub caps.

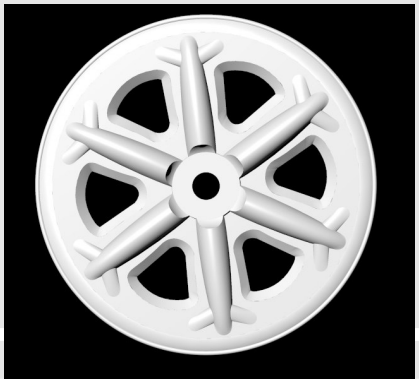
Now that our brief was set, we set about to find a basic form on which the entire range of caps can be designed. We deliberated on constellations, snow crystals, leaves, clouds, muscles etc to gather inspiration. However we found the geometry we desired from snow crystals. it had a distinct centre , spoke like extensions moving out and many combinations to play with as can be seen from the images we collected . the concepts will evolve and will gradually develop into final products.

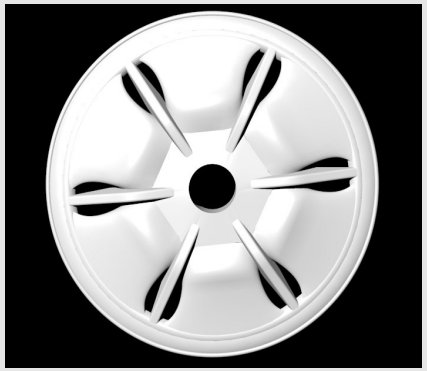
The process started with the initial fast sketches over the snow crystals design. The design were selected and developed eventually over a series of discussions on their visual integrity.









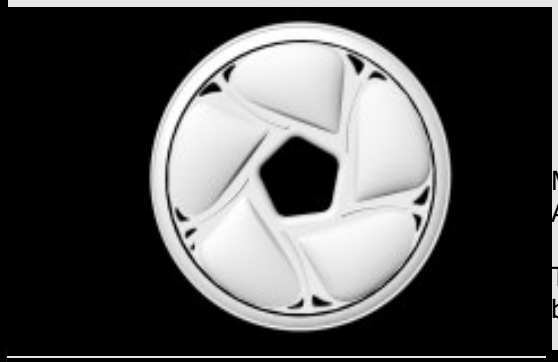


The other points which I had to keep in my while designing these caps were …..

#There should be adequate vents for allowing in air for cooling the discs and drums which get hot with braking on longer runs.
The clients were not in favor of insert molding, so we had to depend on different finishes to generate the desired effect

They sure looked pretty kept together .....

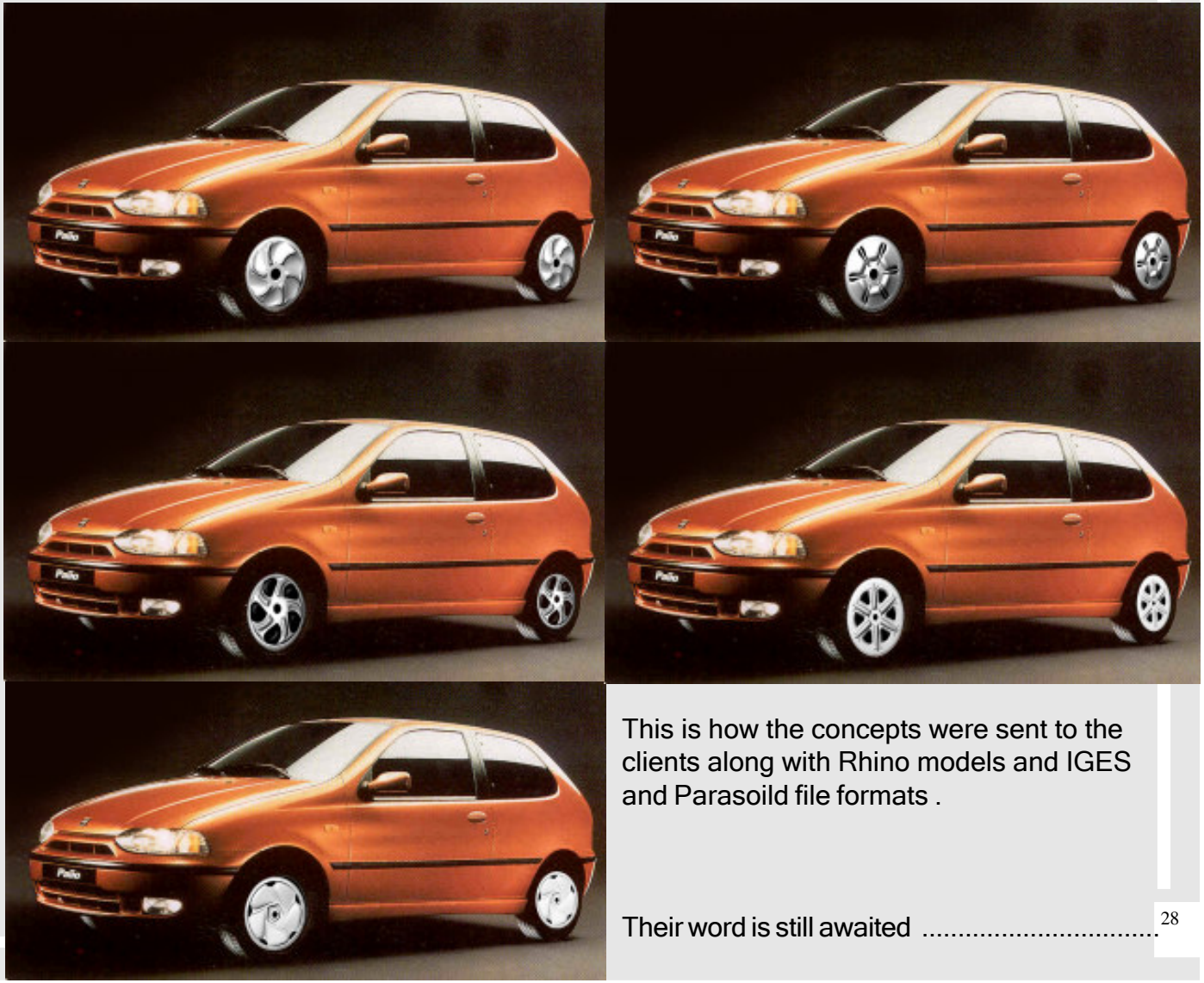
The concepts do not need a hard look to understand our idea .....
The SNOWLINE is ready to roll before the clients . But not before the color schemes are finalized .



Metallic finishes with vaccum metallized, ABS bolt caps were recommended .

The possiblity of providing false bolts is being looked into.

THE FINAL FIVE



This is how the concepts were sent to the clients along with Rhino models and IGES and Parasoild file formats .

Their word is still awaited .....

Project: Proposals for end caps of DMUs in FRP

Clients: kineco industries..

This is the existing DMU , the coach factory manufactures .

The assignment came from the kineco industries , who are an old client of MOZAIC . they wanted to porpose their manufacturing capability and design to integral coach factory. integral caoch factory manugfactured DMUs for indian railways which is entirely in metal .
For a start , the kineco wanted to porvide the end caps for these DMUs in FRP.Since the deadlne was on the head , they asked us to come up with design porposels which will give an initail idea of how the DMUs new look would be. Since mozaic has been working with kinceo for sometime, they knew their manufacturing capability beforehand .
The challenge in this race against time was to come up with concepts that were feasible for KINECO also .

This was more of an exercise in rendering skills. Since i only had a few hours to complete the concepts i rather chose to go by own perceptions and clues I could gather.

KINECO at present doesn't own state of art manufacturing facilities .mostly dependant on hand lay process and hand mademoulds , they face difficulty in mating 3d surfaces therefore the parting lines in the concepts were made as straight as possible .Only the soild panels which can sustain unsymmetry to some extent were palyed around with .

COMPOSITE END CAP FOR DMU'S

COMPOSITE END CAP FOR DMU'S

Acknowledgement

Working in Mozaic was a mixed feeling of gratitude and appreciation to many of my teachers over there. In this month were I got to work with an eclectic team of product designers , graphic designers , architects and engineers , I feel myself getting into the mould of a product designer . I gained useful skills in FRP detailing and got a first hand experience of the field of consumer products .This one my first experience of working with the industry and was the first time I was using my education in real life scenario .I also got a chance to do some visual communication assignments when I got to do instructions manual and brochures.

Dean and Reboni were always there to fill the much needed voids in the designs I produced. Their magic touch was is an aim in life which I wish to develop within myself, the clues they gathered in nature left me awed every time. How about imagining the water flowing while rubbing through the stones on a river bank while u are trying to fit in an otherwise ugly void in the wheel cap. Or better imagining the clay piling up as one moved the dough up towards the center for creating an interesting form which intrigues due to its familiarity, which was le desirable.

I learnt ways of marshalling your team from them. I was pampered, undisciplined, but still I was able to come up with something to speak about. I owe this to the infinite freedom I was given in design, I was allowed to put forward my thoughts and develop them to some extent. No time did I felt like a trainee I lived in a work environment which had a aroma of friendliness and intelligence. But down the line I guess this had more to do with what dean and reboni actually are, unpretending to their team, cool to the core (no big words required here) uncompromising towards their work and perfection .Thank u both, u were the greatest!!

The best part of the training was beating the deadlines we had to face as a team. These were times when I learnt about the compromises one has to make when one is battling with the clock. We had these situations during end cap design for DMUs, railway platform in FRP and the bus shelter design. We had to leave aside our regular methodology of studying the existing products and users and mapping our capabilities with the inventories. All we had to out forward was our capabilities in design. This is where hardcore industrial design education worked when u feel oneself capable of making intelligible decisions.

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