

# ROYAL ENFIELD

## SUMMER INTERNSHIP REPORT

Harish Kumar P

126390004

M.Des (Mobility & Vehicle Design)

IDC, IIT Bombay

8/30/13

Gmail - Internship Completion



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## Internship Completion

1 message

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**Vaijayanta Singh Deka** <vsdeka@royalenfield.com>  
To: harish22890@gmail.com  
Cc: "S Sivakumar (ID Studio)" <SSivakumarIDStudio@royalenfield.com>

Tue, Jul 2, 2013 at 4:41 PM

To,

**Prof. G G Ray**

HOD IDC

IIT Bombay

Powai, Mumbai

This is for your information and kind perusal that Mr. Harish Kumar P final year student of Mobility and Vehicle Design, IDC IIT Bombay did an intern at Royal Enfield this summer during the period of June 3<sup>rd</sup> -2013 till June 29<sup>th</sup>-2013.

He successfully completed the internship programme under the guidance of Mr. S. Sivakumar, Head - Industrial Design, Royal Enfield.

He had a very good work culture and blended well with the design team also.

We wish him the very best for a bright future ahead.

regards,

V S DEKA

Industrial Designer

Co-ordinator Internship

iD-STUDIO

ROYAL ENFIELD

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<https://mail.google.com/mail/u/0/?ui=2&ik=f5908536e6&view=pt&q=internship&q=true&search=query&th=13f9f14c54ba755c>

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## ACKNOWLEDGEMENT

I would like to express my gratitude to Mr. S. Siva Kumar , Mr. Vaijayanta Singh Deka and the whole Royal Enfield design studio for giving me an opportunity to intern at such a prestigious company. I'm sincerely grateful to Prof. Nishant Sharma, Prof. K.Munshi and Prof. K. Ramachandran for their valuable guidance and inspiring words which helped me a lot in this internship.

I would also like to take this opportunity to thank my parents ,brother and friends for their love and keeping faith in me.

## DECLARATION

I declare that this written submission represents my ideas in my own words and where others' ideas or words have been included, I have adequately cited and referenced the original sources. I also declare that I have adhered to all principles of academic honesty and integrity and have not misrepresented or fabricated or falsified any idea/data/fact/source in my submission. I understand that any violation of the above will be cause for disciplinary action by the Institute and can also evoke penal action from the sources which have thus not been properly cited or from whom proper permission has not been taken when needed.

Harish Kumar P

126390004

Mobility & Vehicle Design

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## OVERVIEW

The one month internship program at Royal Enfield ID studio was a good learning experience. The main objective of this internship is to give an overview of motorcycle design and the process followed at Royal Enfield. The internship started with brief of what is happening inside the studio and why the studio is setup & a quick look at the line. Then introduction to Royal Enfield history and how the motorcycles are evolved till date. This was followed by a presentation on the overview of the process followed inside the studio and about the team structure. The team consists of 6 designers, an illustrator, a model maker and a design engineer. A few exercises on concept development were given with frequent feedback and presentations. It is followed by marker rendering techniques and few tips on presenting the work. The last part of the work is a quick exercise on clay modeling. The internship came to an end with the feedback session. The feedback was very useful. Each and every designer gave their individual feedback.

## ABOUT THE COMPANY



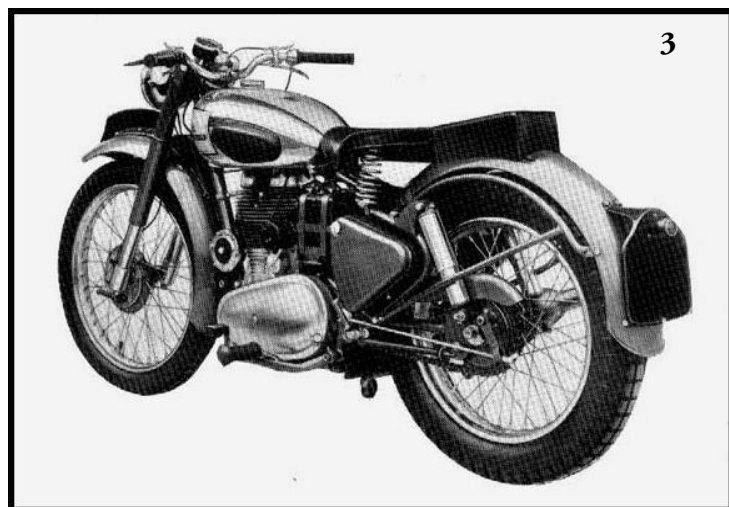
Royal Enfield is one of the world's oldest motorcycle companies which are still producing motorcycles. It was a British company, and then shifted to India. It started as Enfield Cycle Company which was also producing bicycles, stationary engines and rifle parts. They designed a Quadric-cycle in the beginning. The company has strong connection with the military which was then put to use in World War 1. It was carrying machine guns. In World War 2 also, they used it for carrying war equipment.

Royal Enfield bought license for assembling the motorcycle at India. The plant was set up at Chennai and the parts were imported from UK. In the year 1962 they started to make the parts at Chennai plant itself and became the main centre for the company.

1 - [motorcycleexpeditions.com/](http://motorcycleexpeditions.com/)

2 - [motorcyclistonline.com/](http://motorcyclistonline.com/)

## THE FAMOUS BULLET



The Royal Enfield Bullet is known for its classic looks and the thumping sound. This motorcycle was born in Britain in 1949. It was introduced as a 350 cc motorcycle. It came with some innovations like the swing arm, which is now used in almost all motorcycles. It had a single cylinder engine which proved itself as a trials bike. Immediately in one year, they produced a powerful variant, the 500cc bullet which got famous worldwide by winning many races. It even participated in Isle of Man tournaments.

The Indian government found the use of this motorcycle and ordered 800 units for the military near Pakistan border. This was a huge amount, but they managed to make it. The Bullet became quickly popular in India and it was also considered a sign of manliness. More orders from India started pouring in, that made them set a factory in India itself.



## THE FAMOUS BULLET

5



6



An Indian partner in 1955 was found and many trainees were sent to Redditch where the actual plant is located. They were taught the production methods. In the beginning only know down units were brought to Madras (now Chennai) were assembled. In the year 1956, full factory was set up in India itself and that gave birth to Enfield India, Ltd. They were making the same bike which they were trained for, the 1955 bullet. This was then made in the year 1955, 1966, 1976, 1986, and 2006. The demand for the old bike never stopped. The production number crosses over 30,000 units, all of them being 1955 bullets. The same old techniques are used nowadays also. Most of the parts were made by hand. Even the pin stripe work is done by hand only. With the advancement in the metallurgy and new machining techniques, the Bullet is becoming superior, but the essence of 1955 model is still retained.

5- [vicky.in/](http://vicky.in/)

6- [topspeed.com/](http://topspeed.com/)

## ASSIGNED TASK

The task is to create concept for “Iphone inspired Royal Enfield”.



7- [phonearena.com/](http://phonearena.com/)  
8- [royalenfield.com/](http://royalenfield.com/)

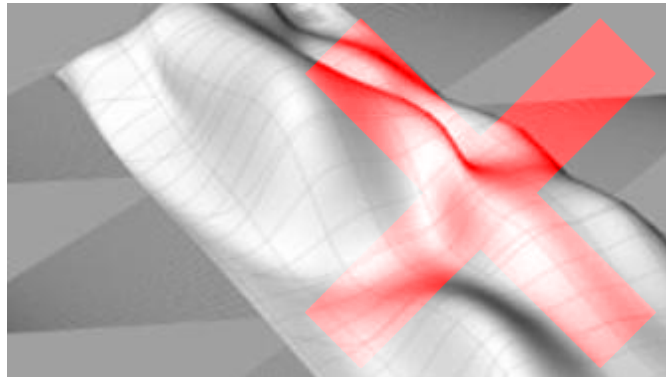
# STUDY OF IPHONE DESIGN

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## Unibody Design

Body machined from a single block of Aluminium is a major feature in almost all apple products. They give the solid feel and increases the value of the product.

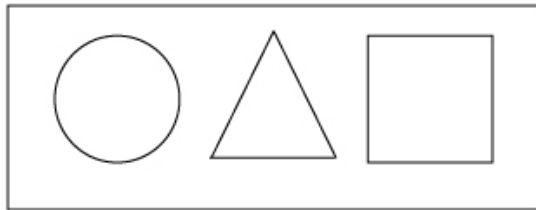


## No complex surface transitions

The Iphone is known for its simple surfaces. Plane surfaces with less fillets is a common surface treatment in almost all versions of Iphones.

9- [smartasyou.com/](http://smartasyou.com/)

## STUDY OF IPHONE DESIGN



### Use of basic shapes

All components on the Iphone are basic shapes. Most of the shapes are reused. Circles, rounded squares are used very repeatedly.



### Simple and sophisticated

All components on the Iphone are basic shapes. Most of the shapes are reused. Circles, rounded squares are used very repeatedly.

## STUDY OF IPHONE DESIGN



### **Sleekness**

Iphone is known for its sleekness. The newer models are becoming more sleeker. This is also a result of advancement in the technology.



### **Rounded corners**

None of the corners in Iphone have sharp 90 degree bend. They always have a consistent fillet all over the body. That adds to the sophistication factor of the phone.

## STUDY OF IPHONE USERS



12

Iphone users buy Iphone for different uses. People tell various reasons for owning an iphone. Iphone does not have best of the features, but as a whole it is considered as the best phone. The main feature about all the Apple products is the design and the uniqueness. A few of the points the Iphone users justified for owning an Iphone is shown below.

MINIMALISTIC

STATUS SYMBOL      CLEAN DESIGN

APPS

SOPHISTICATION

EXPERIENCE

SIRI

SPEED

PRESTIGE

12- [letsunlockiphone.com/](http://letsunlockiphone.com/)

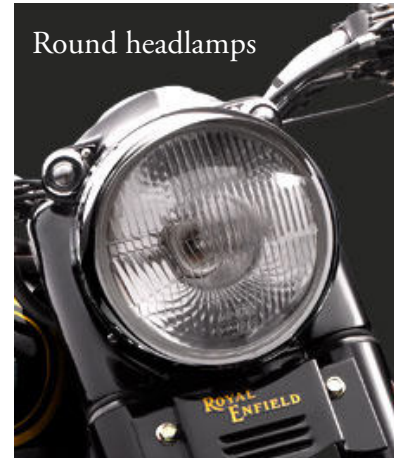


## STUDY OF ROYAL ENFIELD DESIGN

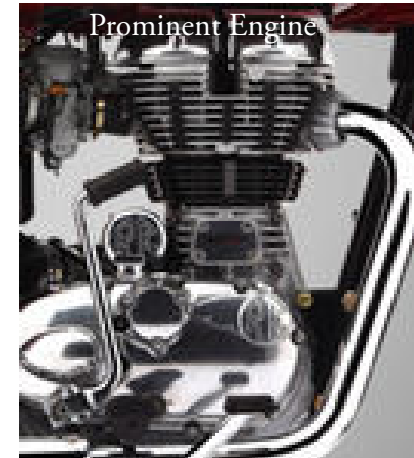
Tall stance



Round headlamps



Prominent Engine



Large wheels

Disconnected body panels

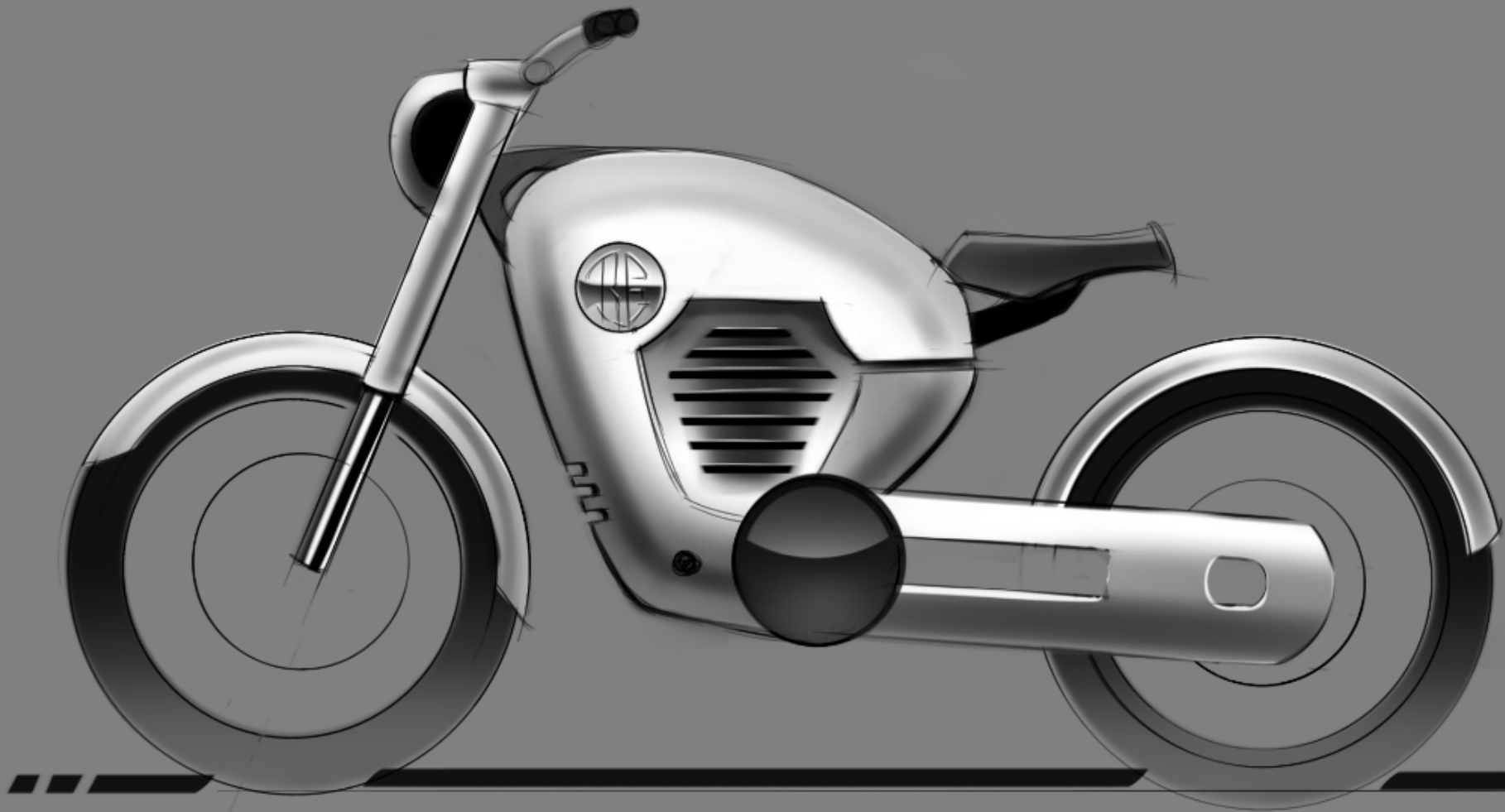


Tear drop fuel tank



ROYAL  
ENFIELD

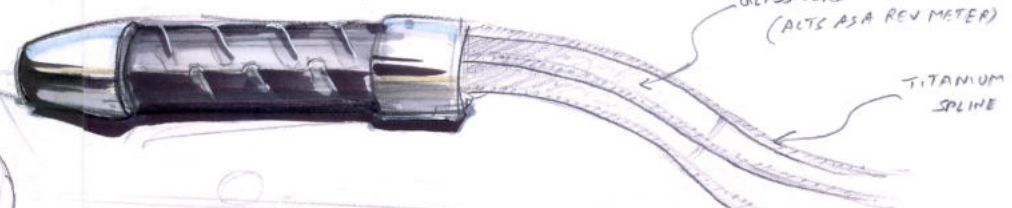
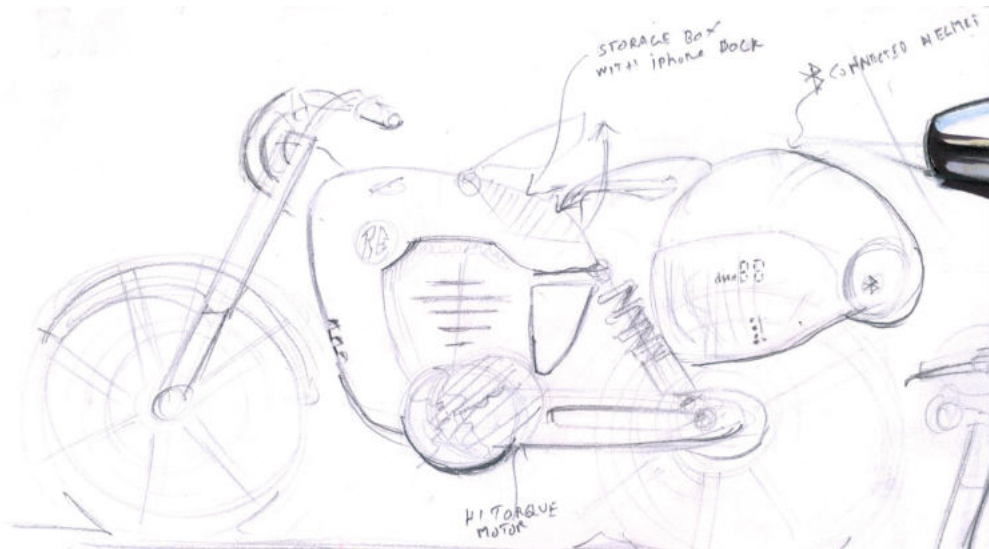
CONCEPT 1





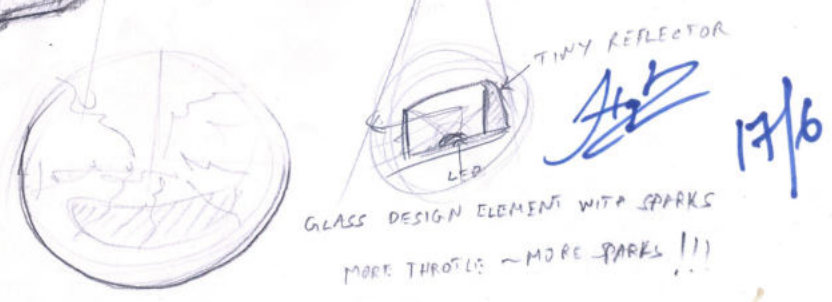
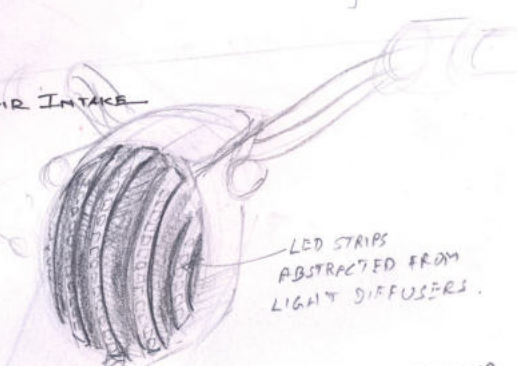
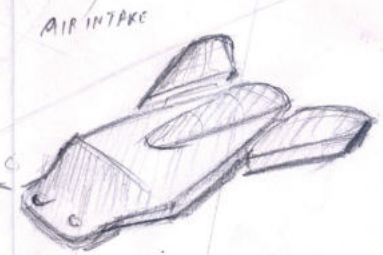
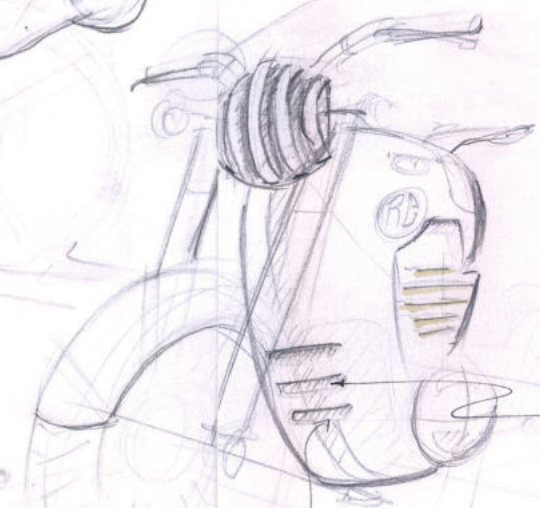
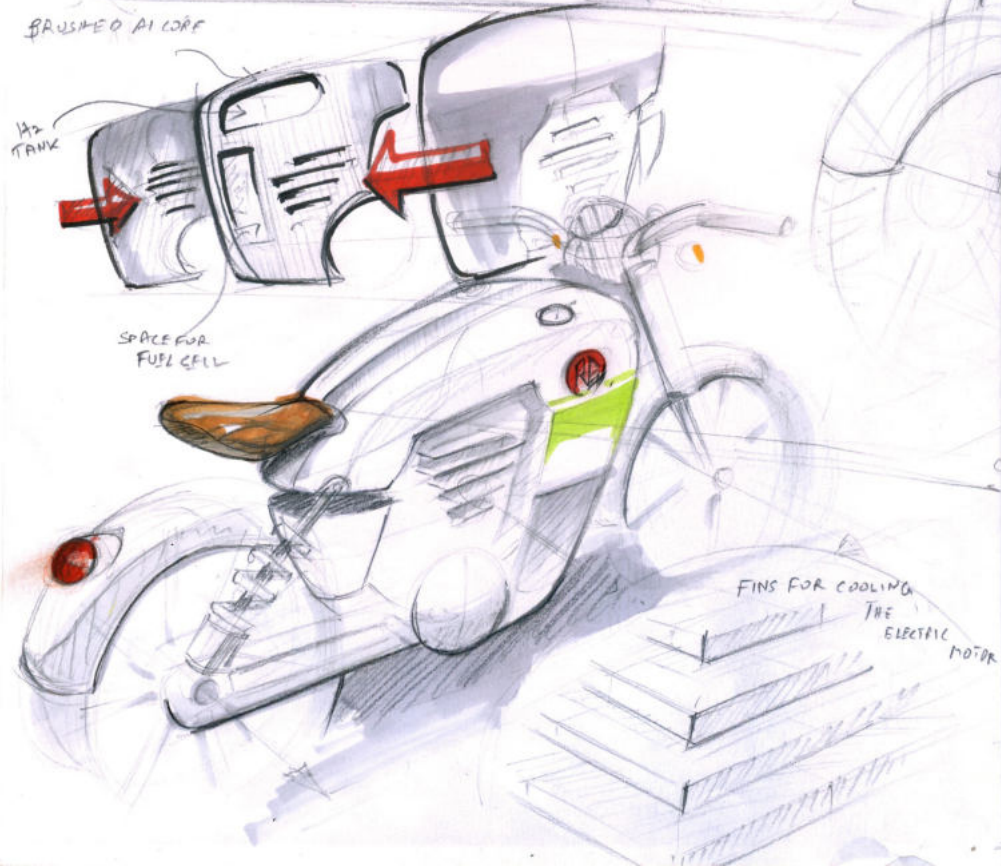
## THE CONCEPT

The Royal Enfield motorcycles have rugged looks, whereas the Apple Iphone has a clean and simple looks. The design language of Apple is to hide the complexity of the technology and give simple and understandable surface to the user. Most of the customer buy Iphone just for a status symbol. To be said in a more casual terms, they buy it for show off. Others will see and tell that the person has an Iphone. That show off feel is what needed in this concept. The concept is a fuel cell powered electric vehicle. The Body parts are completely covered and it is hidden from the outside world. But the design will express that there is a huge powerhouse that can propel this machine. Sophistication is the keyword that we are looking in this concept.

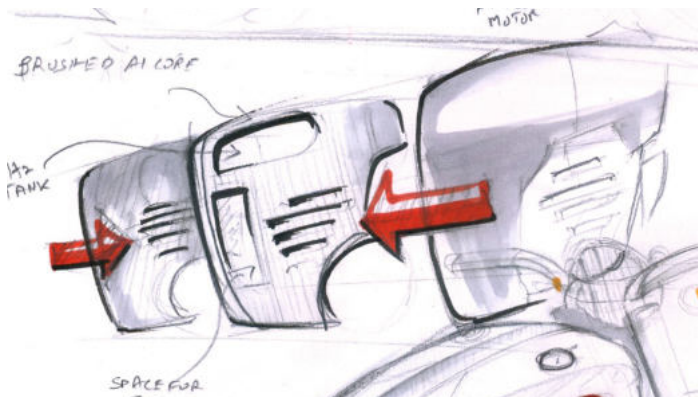


# iELECTRA

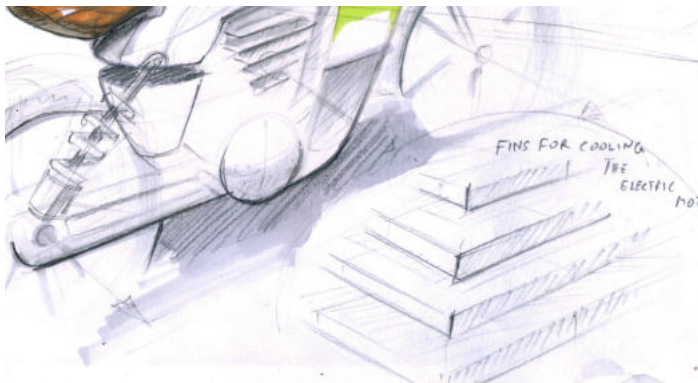
SOPHISTICATION. SLEEK. RESISTANCE



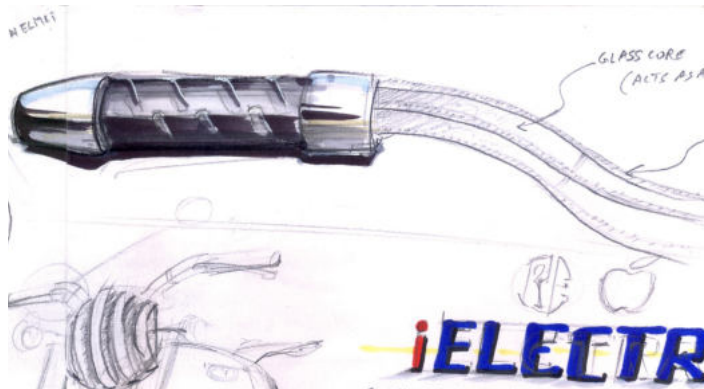
## CONCEPT 1



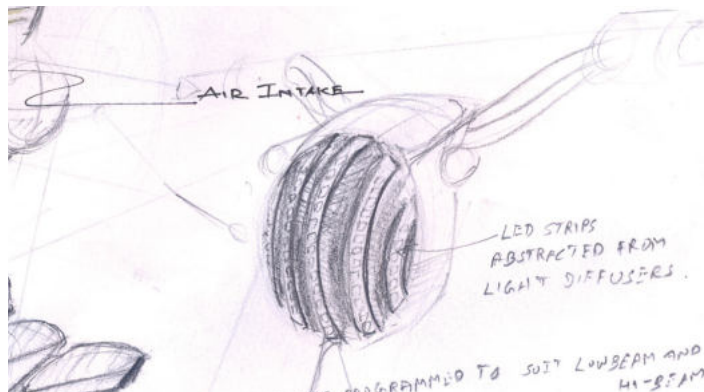
The aluminium machined core of Iphone is taken as an inspiration in this. The chassis is a machined aluminium core. The components of the motorcycle is held by the machined aluminium core. The core is sandwiched between two covers which will hide the complexity of the motorcycle and show a clean surface outside.



Royal Enfield motorcycles are known for their prominent engines. The concept proposed here is a fuel cell bike, propelled by an electric motor. The fins in the engine, which is used to cool the cylinder, is replicated here. The purpose of the fins are same, but the motor is cooled here with the fins instead of an IC engine cylinder.

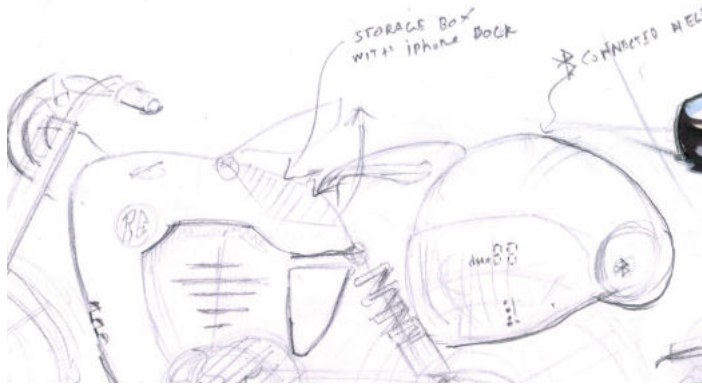


The handle bar is designed to add more fun and adds to the value to this motorcycle. It consists of a glass core and over it four titanium splines are running for strength. The glass core is illuminated with LEDs and acts as a tachometer. If the motorcycle is revved up, the LEDs will glow brighter.

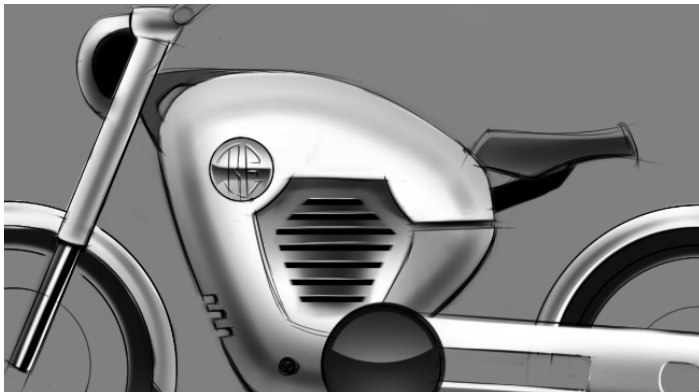


The headlamp is retaining the character of the old Royal Enfield. It retains the circular style which is seen in all the Royal Enfield bikes. Another important feature which is still followed in Royal Enfield is the headlamp diffusers. These diffusers are abstracted and made using LED strips. The LED strips are on a semicircular surface. For high beam all the LEDs can be illuminated, for low beam only the lower part of the LEDs can be lit.



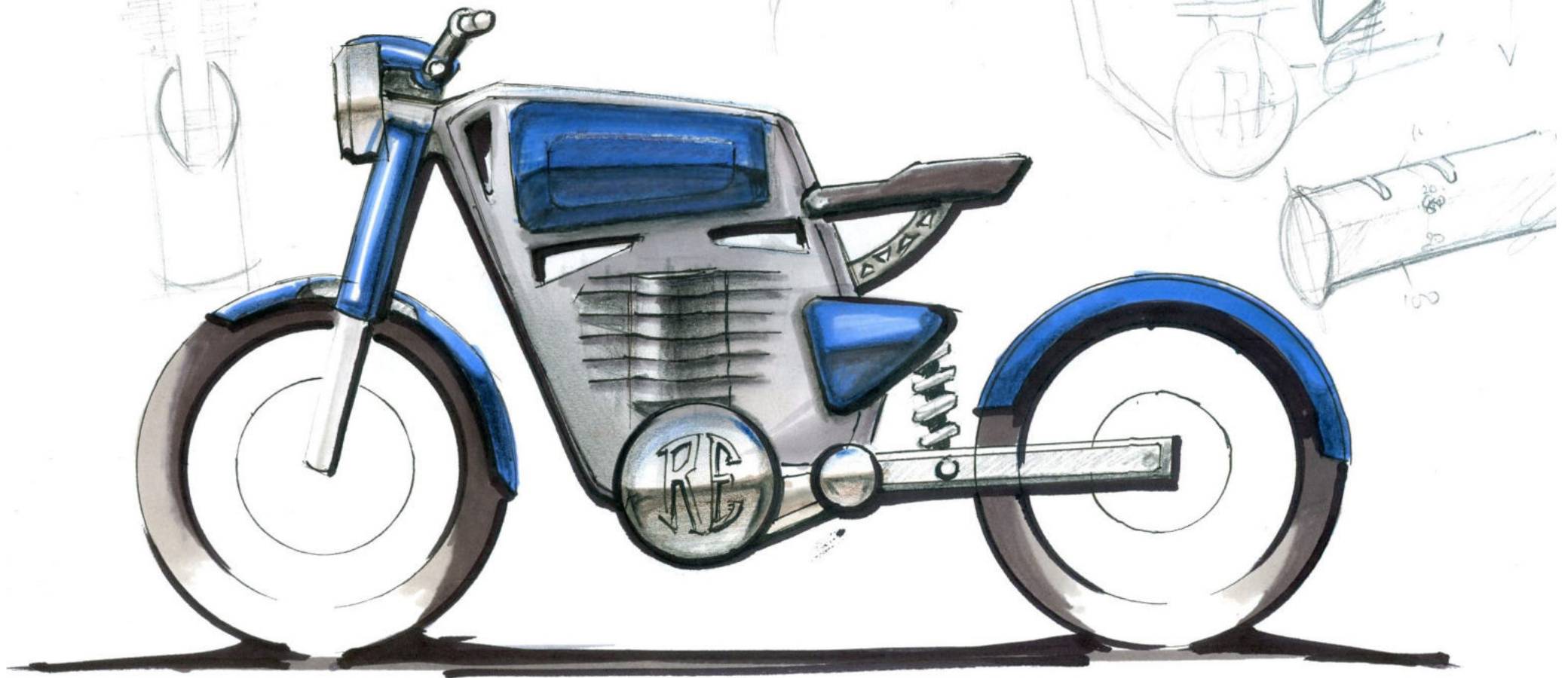


The helmet design is made to suit the motorcycle. The helmet is bluetooth enabled. It can display the details like speed, map, and more features. These informations can be made on demand with a press of a button on the handle bar as the information might disturb the rider. The helmet can be stored inside the compartment near the drivers seat. That holder can charge the helmet too.



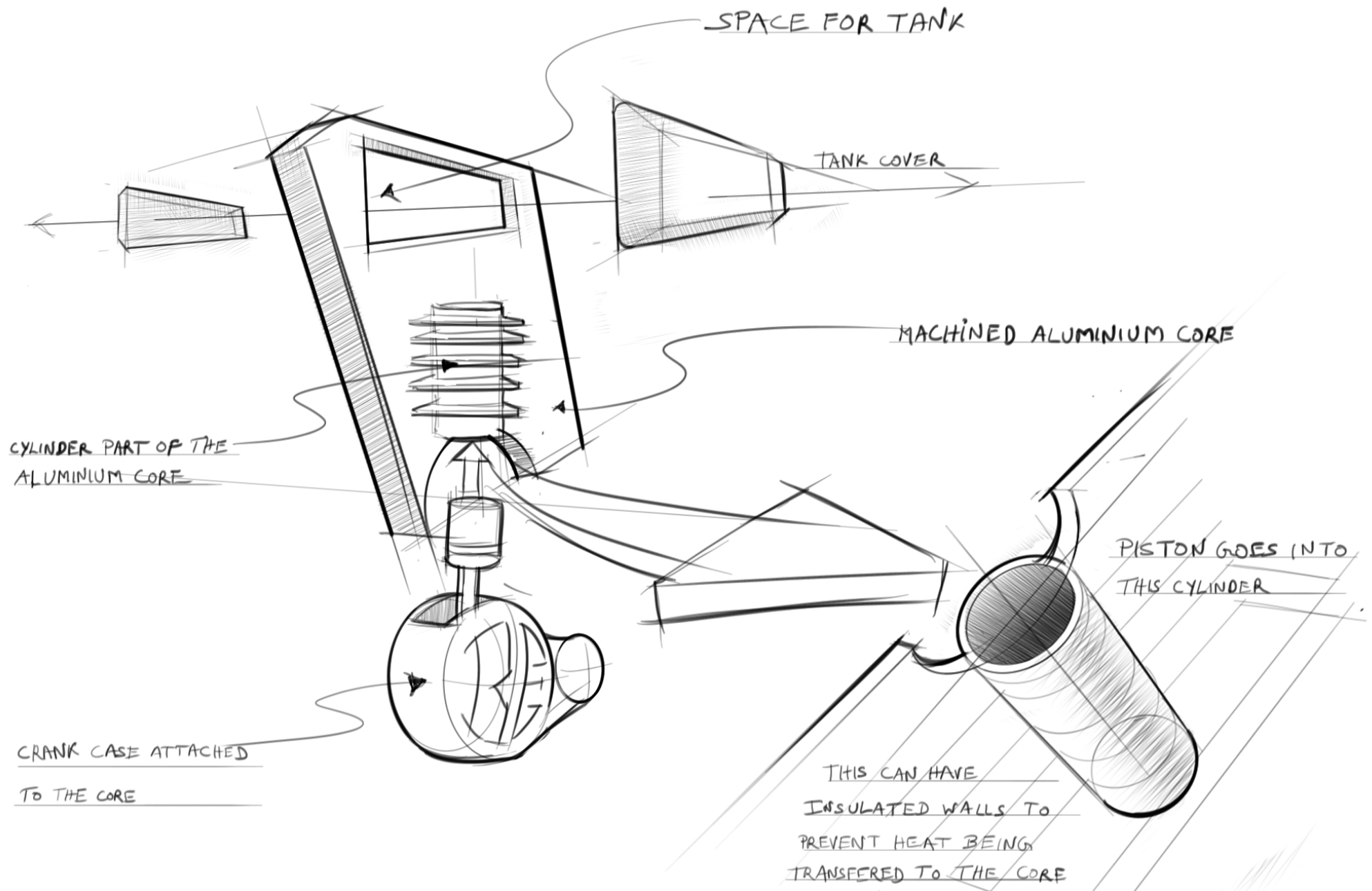
The stance, the sloper feel of the tank, the abstraction of an engine is also incorporated in the design. The crank case cover is actually a glass housing with electric sparks visible. The sparks will be intense if the throttle is increased. The air intakes are kept on the front for fuel cells. The shock absorbers and chain is hidden to maintain the fully covered feel of an Iphone.

## CONCEPT 2

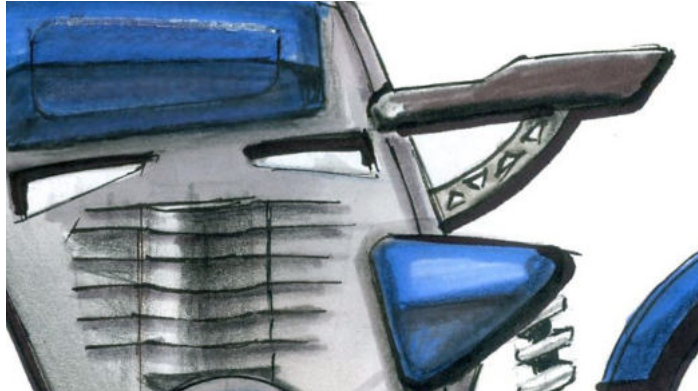


## THE CONCEPT

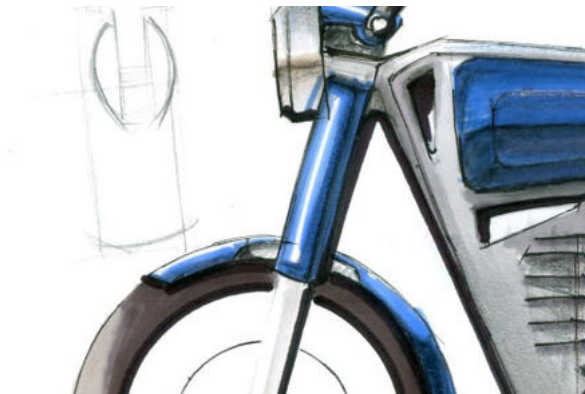
The Royal Enfield motorcycles are about the riding experience offered more than the product. There is no defined design language as such for Royal Enfield. It is very raw and simple. The one who has a Royal Enfield will be more into riding rather than just commuting. Apple Iphones Innovative thinking led to the machined aluminium core that can be used to hold most of the components. There will be less assembling, but the detail on the machined surface will be high. Using this machined aluminium core as an inspiration, the Royal Enfield which is seen in this concept uses the same machined aluminium core as the chassis. This core will also contain the cylinder and the piston and crank case can be fixed to it from the bottom.



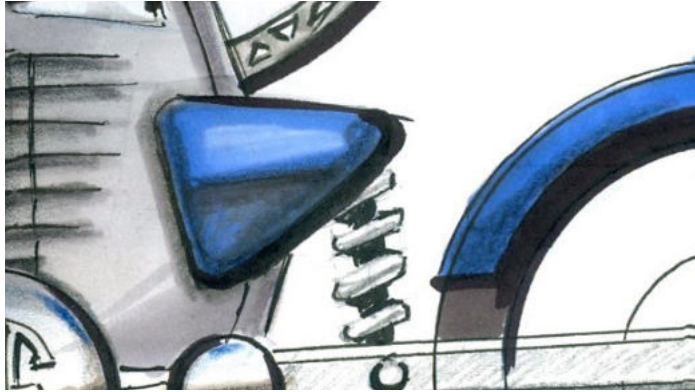




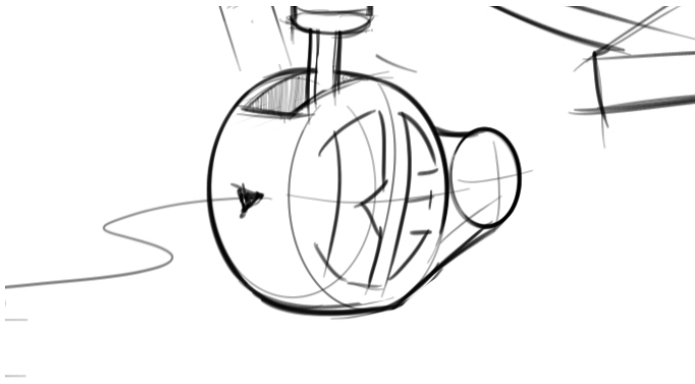
The same rugged feel of Royal Enfield is still retained in this design. Yet all the complexities are hidden for the user. The exposed parts are mainly the machined aluminium and the panels covering. The screws are also hidden just as seen in iPhones.



The circular headlamps and prominent forks are still retained so as to give that classic bike touch. Those are also giving the tall stance as seen in the Royal Enfield motorcycles.



The disconnected body panels are also retained. This is common in almost all classical motorcycles and a striking feature in Royal Enfield. The triangular panel used as air intake cover is also retained.



The huge crank case is stressed here. Royal Enfield consider their engine unit as the heart of the motorcycle. They give so much importance to that so that they even mount the chassis over the engine rather than mounting engine on the chassis.

## LEARNINGS AND EXPERIENCE

The one month internship at Royal Enfield was very helpful for me to understand how the actual industry is working, a good knowledge of how the designers in a studio perform their task. How does a motorcycle design studio differs from a car design studio is clearly understood from this internship.

The first and the foremost learning is never hesitate to put the ideas on paper. Hesitation is the major problem what many young designers are facing right now. Skills will develop with time, but the thinking should not be killed by lack of skills.

A clear understanding of the difference between concept development and form iteration is gained. Concept sketches must show all the relevant information about what i am thinking, whereas the form sketches need to explain everything but should show iterations of the overall shape.

After doing all the exercises at Royal Enfield, i got feedback from all the six designers. That really helped me to understand where i am standing right now and where i can improve myself.

To summarize it, the summer internship at Royal Enfield is more like a training program to build my confidence level and to know what is actually happening in the motorcycle industry.

## REFERENCES

<http://www.motorcycleexpeditions.com/history-of-royal-enfield.php>

<http://www.enfieldmotorcycles.com/history.html>

<http://www.wikipedia.org/>