# STYLING OF A 'SPORTBIKE'

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Bike Catalog

Exit



Benelli

..... Glynn Kerr



Shown above is a contemporary motorcycle (a Honda CB1300/ 2003 model). It shows the various features and components associated with motorcycles

#### **Evolution of the Sport Machine**



Indian board race bike 1911



Harley Davidson Model 11F 1915

#### Evolution of the Sport Machine



Harley Davidson XL Sportster 1957



Vincent Black Shadow Series C 1949



#### MV Agusta 750 Sport 1973



Honda CB1100R 1981

#### **Differentiation Based On Motorcycle Weight Bias**







#### **Colours Typical To Reputed Brands**







Ducati

Kawasaki



Suzuki

Yamaha





# Reaching out to the users

The objective of the project was styling of a '*sportbike*' for young people, possibly in their early twenties.

User Studies were done in **Pune** and **Mumbai**.

Places included Colleges - Fergusson college (Pune), MIT (Pune), Symbiosis (Pune), IIT Bombay Restaurants & Cafes Hangouts, shopping streets and parking places Garages which modify bikes for customers, auto accessories shops

Apart from all these, opinions about the project were obtained from designers, automotive journalists and users of exclusive imported bikes, in short those with working knowledge of sport bikes .

User studies involved

- 1. Observing users and noting interesting happenings
- 2. Interviewing users informally and trying to get them to speak out their heart on the issue

### Questions & queries asked to the user

- Does sport mean something to you?
- Do you play any sport? Any favourites?
- Do you like using and experiencing sporty gadgets and accessories?
- Which motorcycle do you consider sporty?
- Would you like to own one, in the way you described?
- •Would you like to give your opinion on some sportbike model photos
- that I have?
- Does a particular styling appeal to you?
- Do you follow fashion and style trends in your daily life?
- Are you an automobile enthusiast?



**Behavior** 

# Attitude USEr Income Passion Gender

# Lifestyle

Understanding the users, their passions, their needs.....

Aged 18 – 25 years

Enthusiast

Individualistic

Aggressive

Adventurous

Aware of bike trends

**Relishes rides** 

Attempts to look cool

The opposite sex is important

Wants getaways

Loves accessories



#### Interpreting the user comments

"A bike should go as fast as it looks"

styling & performance as related entities.

"Styling trends...edge style and curve......what trends?"

"Sporty means engine.....sporty means Ninja.....sporty means black"

Designing a form with engine as focal point could be a good idea.

Names of bikes often add to the sporty flavour. Black components tend to make the bike look powerful, but black is often used to hide pooly designed components and adds bulk.















- <u>detail design</u>
- <u>outstanding visual appeal</u>
- lesser bodywork
- <u>continuity of form</u>
- <u>distinct riding posture</u>
- add to the solidity
- <u>wrap</u> around the rider
- More bodywork in the <u>frontal area</u> adds to the safety perception

- <u>tailor made for Indian physique</u>, yet must reflect an international identity
- It should looked planted on the surface, like most <u>sport</u> <u>shoes</u>

A very important insight has been the desire to have an expressive bike, an active one.....one which urges the rider to communicate with it and responds.....

.....does this mean that a transition in form is desirable...with technology and materials to aid in achieving this.....an opportunity to explore.

# NFO - Autocar 2003 Motorcycle Total Customer Satisfaction Study [India]

Top five purchase reasons

## **STANDARD**

Good Fuel Economy Low Price Good Styling Good Model / Good Vehicle Low Maintenance Costs

Top model - Hero Honda CD 100 SS

# PREMIUM

Good Styling

Engine Performance (acceleration / Pickup) Good Fuel Economy Good Model / Good Vehicle A Model That I Have Wanted / Liked

Top model - Bajaj Pulsar

# EXECUTIVE

God Fuel Economy Good Styling Good Model / Good Vehicle A Model That I Have Wanted / Liked New Product

Top model - Hero Honda Splendor

## CRUISER

#### Good Styling

A Model That I Have Wanted / Liked Good Model / Good Vehicle Heavy Bike Engine Performance (acceleration / Pickup)

Top model - Royal Enfield Bullet Electra

5400 owners of 30 major motorcycle models interviewed across 16 citiesi in India Reference – Autocar May 2003

#### User Age Group

The target user is 18 – 25 years of age. The 'Sportsbike' design has to meet and more positively, surpass the user's expectations. It might appeal to other user groups also.

#### Form & Design

- The styling should be based upon the user insights and observations and must reflect his characteristics.
- The form should speak a **sporty language**.
- The styling should not be a hindrance to functionality and the motorcycle should promote its use as a regular vehicle
- A certain freedom which is part of any styling process must be utilised to demonstrate **personal style and design capability**. It should add originality to the design.

The form

- Should imbibe speed, elegance and good transition of proportions
- Should be **free flowing** and a coherent entity, integrating otherwise separate elements
- Should have aggression and a unique identity
- Should integrate technology with Styling elements

#### **Ergonomic Aspects**

- The riding posture should be nearer to **upright seating posture**
- The motorcycle should have an ergonomically contoured seat
- Footrests should be at ergonomically correct position
- Ergonomic seating such as Mandel's seating principles, i.e. the saddle seat type should be considered

**<u>Please Note</u>**: Given the project duration and scope of the project, priority will be given to form generation. It may not be possible to evaluate seating ergonomics thoroughly.

[For proposed technical specifications see annexure 1]

#### **Proposed Motorcycle Specifications**

<u>Technical</u>

Engine – 4 stroke, air cooled, twin spark ignition, SOHC, single cylinder

Displacement – 200 cc(cm<sup>3</sup>)

Power Output - 20 bhp @ 8000 rpm

Torque – 1.8 kgm @ 6500 rpm

<u>Transmission</u>

Type – 5 speed constant mesh

<u>Suspension</u>

Front – Telescopic Fork, 130mm travel

Rear - 5 way adjustable gas filled monoshock

Wheels and Tyres

Front Rim – 1.6 X 18 inch

Rear Rim - 1.85 X 18 inch

Front Tyre Size – 3.00 X 18 inch

Rear Tyre Size 100/90 X 18 inch

<u>Brakes</u>

Front – 240 mm hydraulic disc

Rear – 160 mm hydraulic disc

#### Methodology

I wish to generate forms using the elements: air water fire earth space.

The use of these elements can be for...

- form generation, in totality or individual components
- colour schemes
- adding character to engineered components



#### The Path of Cosmic Energy

Ida and Pingala spiral around Sushumna, the principal nadi in the astral body. When the dormant Kundalini is awakened it starts to move up the Sushumna through the seven chakras.

#### Sahasrara Chakra

The thousand-petalled crown chakra corresponds to the Absolute. When Kundalini reaches this point, the yogi attains samadhi or superconsciousness.

#### Ajna Chakra

This snow-white chakra has two petals. Seat of the mind, its mantra is OM.

#### Vishuddha Chakra

This sea-blue chakra has sixteen petals. Its element is ether and its mantra, Ham.

#### Anahata Chakra

This smoke-coloured chakra has twelve petals. Its element is air and its mantra, Yam.

#### Manipura Chakra

This red chakra has ten petals. Its element is fire and its mantra, Ram.

#### Swadhisthana Chakra

This white chakra has six petals. Its element is water and its mantra, Vam.

#### Muladhara Chakra

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This yellow chakra has four petals. Its element is earth and its mantra, Lam.



**Visualizations And Mental Images** 

Ascending

Energy

Fierce

Purifying Sacred

Rhythm in Movement

Bright Matter becomes energy

Passion Creation by Destruction

Warm







н



Dynamism Moulding forms Ever changing moods Direction Speed Unpredictability

Cause and effect









Source of Life

Streams

Cleansing Refreshing

> Spreading Out Rhythm... a poem

flows

Large expanses

Transparent...apparent

### Transience.....







Y

Use of Natural Elements in Form Generation

#### Initial Sketches For Ideation















# Concept





3D form model of engine & crankcase for concept 2











The next concept emphasizes flow, intermingling of fluid lines to give a new meaning to enthusiastic behaviour and rebellion......shown here and next



Concept 3



Concept 4



The 5<sup>th</sup> concept is an attempt to imbibe'speed' ....'grace'.....and.....'activeness'

.....in a motorcyle to suggest a different flavour of sport.



# Concept 5

# and a

# Concept 6

# CONCEPT GENERATION







Concept 7





**Concept 8** 

**The Final Concept** 

## Phase 1

Evaluation Parameters	Concepts 🕨	1	2	3	4	5	6	7	8
Activeness and Expressiveness in form		$\checkmark$	X	$\checkmark$	X	$\checkmark$	X	$\checkmark$	$\checkmark$
Innovative look		X	X	$\checkmark$	X	$\checkmark$	X	$\checkmark$	X
Semantics(form explains its function)		X	X	X	X	$\checkmark$	X	$\checkmark$	X
Potential for use of mechanicals components as design elements		×	$\checkmark$	×	×	×	×	×	$\checkmark$
Contemporary yet future oriented styling		$\checkmark$	Х	Х	Х	Х	Х	$\checkmark$	$\checkmark$
Proportionate features		$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	Х	$\checkmark$	$\checkmark$
Practicality and feasibility		$\checkmark$	$\checkmark$	Х	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$
Result (Ranking)		4	5	5	6	3	7	1	2

 $\checkmark$  = Yes X = No

#### **Concept Evaluation**

Phase 2





Concept 7 and concept 8 were further evaluated through discussions with user feedback as an important aid to help in selecting one among them to refine it further.

<u>Concept 7 was selected</u> over Concept 8 for the following reasons

- Visually more appealing
- Has more meaning than only functional meaning
   ....form speaks a sporty language
- does not closely resemble any existing bike
- Has a more sportier stance and flavour
- More aggressive and raw

The selected concept, I.e. Concept 7 was further refined by rendering on a 1:1 scale and adding details and fixing final dimensions.



The Chosen Concept : Concept 7













#### Tightening the Styled Form



#### Tightening the Styled Form

The overall design was refined by first working on the fuel tank profile, loose ends were tightened





The refinement of the form included the basic ergonomics of rider and pillion seating postures.









### Rendering at full scale.....a need rather than an option

.....and seriously enjoyable











Mock up Model at scale 1:5

# Thank You