

Acknowledgement

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Finally, I thank IDC staff for the invaluable support with the facilities.

Declaration

I declare that this written submission represents my idea in my own words and where other ideas or words have been included. I have adequately selected and referred the original source. I also declare that I have adhered to all principles of academic honesty and integrity and have not misinterpreted or fabricated or falsified any ideas / data / facts / sources in my submission.

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Approval

Design Research Seminar

“Signature Tail Lights”

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M.Des Industrial Design 2012-2014

Is approved as a partial fulfillment of requirements of post graduate degree in Industrial Design at **IDC, IIT Bombay**.

Prof. K. Munshi

(Project Guide)

Abstract

The objective of this research project was to document the people's feelings and understand the inclusion and connectedness in signature tail lights of a vehicle using some case studies as a medium within the constraints of the project description.

A concept of signature tail lights has been already developed in the history of automotive industry to add a brand value to the company.

Through this process report, the author will explain the documentation for the project, analyzing some example through case studies, existing concepts and forms of self-expression as a designer. The journey will then take you through the process of how the concept of signature tail lights evolved through generations and the concrete nature of which came into being through academic research, thought and analyses. The report explains all the relevant aspects of this subject.

Details and insights on the research methodology results will be found in this report.

Contents

Introduction	2	Indian scenario of signature tail lights	20
Project vision	3	How many people are able to recognize any car or car brand by seeing its tail lights or headlights?	20
Need	4	Do people think recognizing any car by its lights (headlights or tail lights) is helpful?	20
Brief history of automotive lights	5	Do people think that it really affects its brand value?	20
Tungsten	8		
Halogen infrared reflective (HIR)	8		
High-intensity discharge (HID)	8		
Led	8		
Elements of tail lights	9	Customized tail lights	21
Rear position lamps (tail lamps)	9	Futuristic tail lights	25
Stop lamps (brake lights)	9	Audi	25
Centre high mount stop lamp (CHMSL)	9	Renault New Design Tail lights	28
Rear fog lamps	10	Mercedes	29
Emergency stop signal (ESS)	10	Conclusion	31
Reversing lamps	10	Bibliography	32
Rear registration plate lamp	10		
Special case	11		
Chevrolet Corvette	12		
C1 _Generation I	13		
C2 _Generation II	13		
C3_ Generation III	13		
C4_ Generation IV	14		
C5_ Generation V	14		
C6_ Generation VI	14		
C7_ Generation VI	14		
Bmw 5 series	16		
Audi A6 series	18		

In automobile we have two major types of lights:

- *Head light (Front position lamp)*
- *Tail light (Rear position lamp)*

Each company has its own policy and work ethic, belief, like that each company or brand has its own design language which reflects from the design of its product range and they continue this style from the history. So some quality and elements became the signature of the brand and individuals can make out the brand of the product. In the same way

Signature tail light is a tail light of automobile by which people can recognize the brand/model of the automobile.

Introduction

Without headlights and tail lights, every nighttime driving experience would be a nail-biting, fear-filled passage through the unknown. With superior performance, automotive headlights and tail lights allow you more time to react on the road, giving you the confidence and control to handle whatever the night throws at you. Better visibility and illumination- the light emitted provides the driver with many benefits. It assists the human eye and allows better visibility and improved hazard awareness, allowing the driver to navigate poor driving conditions with increased confidence and with less fatigue.

(The Technology to Bring on the Night n.d.)

But these days automotive light are not only

give better driving comfort at the night time but it also gives the high aesthetics and brand value to a car.

Lighting really is important on all vehicles, but, on luxury vehicles, it can make or break the look of the entire car. In the case of the upcoming all-new luxury cars, the dramatic tail lighting truly reflects the inspiration that went into the car.

(Innovative signature lighting on the 2013 Cadillac XTS)

New techniques in lighting design are adding to the dramatic presence of luxury cars, while also providing real-world functional benefits. Designers took advantage of different design and technology to use lighting to convey drama and space alongside functional benefits.

(Spark 2013)

"The new LED offerings now provide a new palette of color to bring more dramatic lighting effects that have never been available before," said Christos Roustemis, Cadillac interior designer.

(Roustemis 2012)

Project vision

By defining the project goals and vision to be achieved by overall study and analysis.

- Within the overall study and documentation to collect data about,
- History of signature tail lights.
- How signature tail lights are evolved through generations.
- User perception about these signature tail lights.
- Customized tail lights.
- Futuristic signature tail lights.

Need

Document the problem description why 'Signature tail lights' are needed for automobile industry. This thing will lead the project background and history of automobile industry.

By using signature lighting system it gives every model a branding advantage. Naturally, when Mercedes chose to produce such an accessory for their cars, they wanted to refrain from adding something that could be seen as garish and keep it decidedly simple.

(Spark 2013)

Audi has become so famous for its lights that aftermarket and some OEM headlight manufacturers have started ripping off the brand's trademark LED strips.

(Johnson 2013)

Brief history of automotive lights



Fig1. History of tail lights <http://www.1aauto.com/content/articles/tail-lights>

In the earliest days of automotive travel, cars and trucks didn't have any kind of running lights or brake lights on the back of them. Most vehicles did have *some* form of headlights on the front, but it wasn't until the 1920's when tail lights (also called "tail-lights", "tail lamps", or "tail lamps") began showing up. At first, they were just an added option that you could purchase, and many

were nothing more than a kerosene lantern with a red lens. As you can imagine, this sort of tail light was only lit when you physically lit it, and it had absolutely no connection to the brake pedal at all. It was basically just there to let other vehicles know that you were there. Not only was this style of light a bit of a liability with its open flame inside, but it also had the potential to blow out while driving. It

was a great start no doubt, but luckily for us, it evolved quickly.

By the early 1930's, electrically controlled tail lights were becoming the norm, and they were actually connected to the brake pedal. "Brake lights" finally existed! It was also around this time that dual filament bulbs arrived as well, allowing the tail lamps to have "running lights" at night, along with "brake lights" when the pedal was pushed. The 1930's were a decade of tremendous innovation from car manufacturers, and automotive lighting was a major part of it. Turn signal lamps followed shortly after the tail lights, and the government began to realize the connection between automotive lighting and public safety.

It wasn't until the early 1980's when the next big automotive lighting change happened. Several car manufacturers began throwing the center high mount stop lamps (AKA "Third brake lights" into their cars and trucks. This allowed surrounding vehicles to easily decipher a brake light from a turn signal, and having it higher up also made the tail lights more visible to other drivers. In 1986, the third brake light became mandatory on all passenger cars in the United States. A few years later it also became mandatory on all light and heavy duty trucks.

(Nutt n.d.)

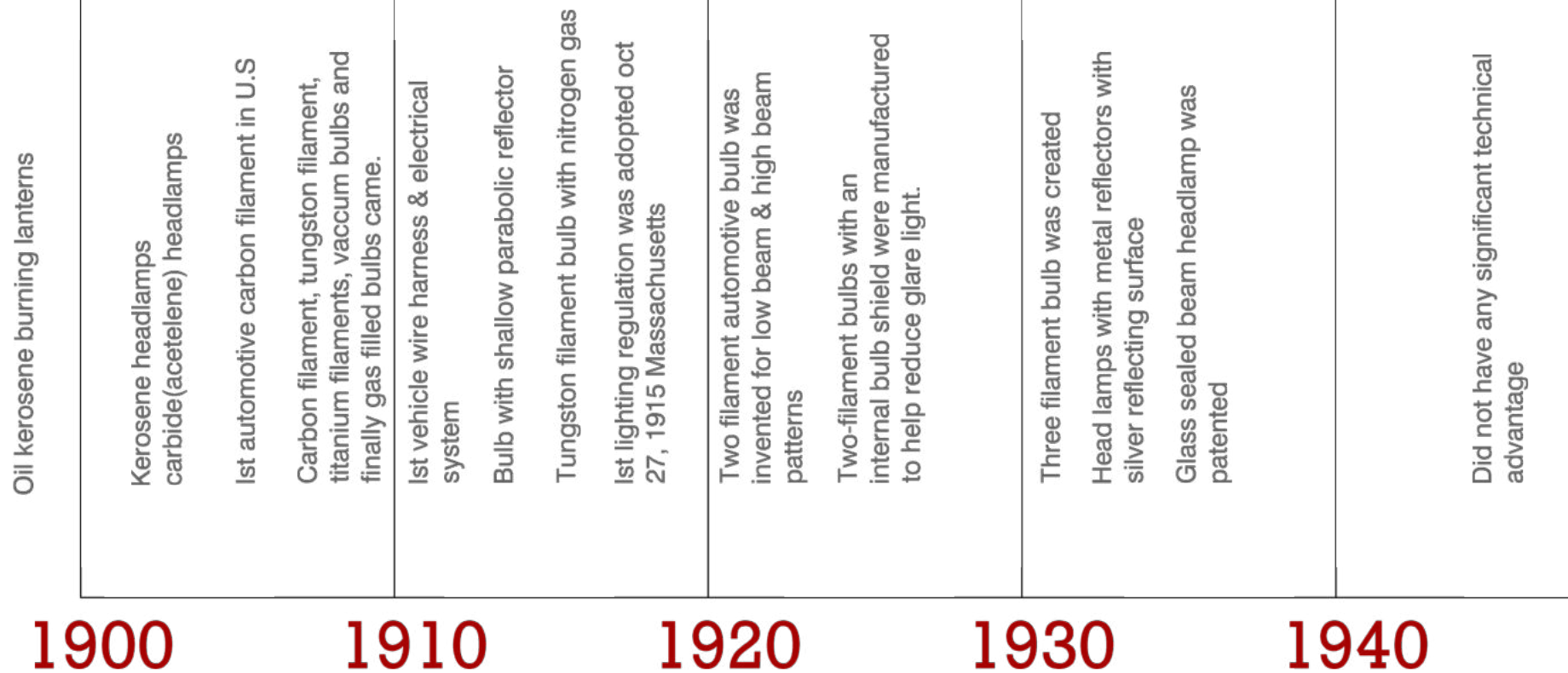
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<http://lowres-picturecabinet.com/http://thumbs4.ebaystatic.s3-eu-west-1.amazonaws.com/d/I1225/ml/m4xG2K7ha-main/13/91996.jpg>

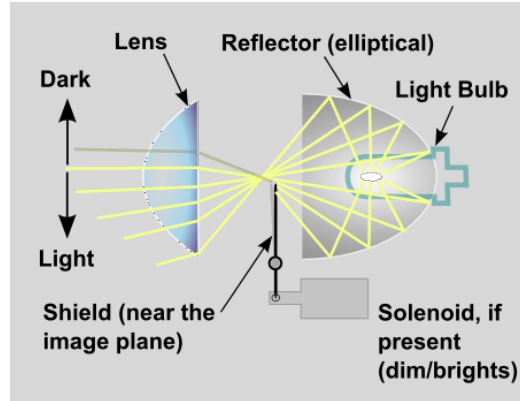
http://www.ipdusa.com/uploads/images_products_slideshow/fullsize_4978.jpg



Fig2. Timeline history of automobile lights



http://upload.wikimedia.org/wikipedia/commons/e/ed/Headlight_projector_schematic.png



http://i01.i.aliimg.com/img/pb/564/251/374/374251564_039.jpg



http://www.hidled.com/ckeditor_assets/pictures/50/content_Audi%20A6L%20LED%20headlight.jpg?1328463323



http://upload.wikimedia.org/wikipedia/commons/6/68/Lincoln_xenon_headlamp.jpg



Fig3. Timeline history of automobile lights

Lighting engineers, lighting manufacturers, and vehicle manufacturers develop a common beam pattern.	Certain helogen gas was inserted in the bulb which allows filament to burn brighter without shortening its life.	The U.S. government passed the Motor Vehicle Safety Act in 1966.	Materials and coatings were developed to provide good abrasion resistance	Most European headlamps used replaceable bulbs.	First aerodynamic/composite/replaceable-bulb headlamp HID (high-intensity discharge) lighting systems was being done Clear lens-complete reflector optics headlamp Ellipsoidal surfaces for headlamp reflectors were first attempted early in the history of headlighting.	By installing a vehicle headlamp aiming device (VHAD) on each headlamp on the automobile, HID headlamp system Fully harmonized beam pattern Led lighting system Oled lighting
1950	1960	1970	1980	1990	Present	

Tungsten

The first electric headlamp light source was the tungsten filament, operating in a vacuum or inert-gas atmosphere inside the headlamp bulb or sealed beam.

Halogen infrared reflective (HIR)

A further development of the tungsten-halogen bulb has a diachronic coating that passes visible light and reflects infrared radiation. The glass in such a bulb may be spherical or tubular.

High-intensity discharge (HID)

High-intensity discharge lamps (HID) produce light with an electric arc rather than a glowing filament. The high intensity of the arc comes from metallic salts that are vaporized within the arc chamber. These lamps are formally known as gas-discharge burners, and have a higher efficacy than tungsten lamps.

Automotive HID may be called “xenon headlamps”, though they are actually metal-halide lamps that contain xenon gas. The xenon gas allows the lamps to produce minimally adequate light immediately upon start, and shortens the run-up time.



Fig4. Head light
<http://lowres-picturecabinet.com.s3-eu-west-1.amazonaws.com/43/main/13/91996.jpg>

Led

The first series-production LED headlamps were factory-installed on the Lexus LS 600h / LS 600h L presented in 2007 for 2008 models. Additional facets of the thermal issues with LED headlamps reveal themselves in cold ambient temperatures.

LEDs are increasingly being adopted for signal functions such as parking lamps, brake lamps and turn signals as well as daytime running lamps, as in those applications they offer significant advantages over filament bulbs with fewer engineering challenges than headlamp.

Elements of tail lights

Rear position lamps (tail lamps)

The lights furnished at the rear position of the vehicle are known as "Rear position lamps", "Tail lamps", or "Tail lights". These are basically red lights and programmed in such a way that whenever front lights are switched on they are on and vice versa. These lights have basically two major functions whenever vehicle is on run they lights dimmed and whenever vehicle stops they lighted brighter. This function operates because of dual intensity bulb.

Stop lamps (brake lights)

When driver applies break to stop the vehicle these lights become brighter to give a signal to running car behind it, these tail lamps are known as "Brake lights" or "stop lamp". They are required to be fitted in multiples of two, symmetrically at the left and right edges of the rear of every vehicle.

Centre high mount stop lamp (CHMSL)

This is a central break lamp mounted higher and the center of both tail lights. These lamps are also known as "centre high mount stop lamp (CHMSL)" "centre brake lamp", the "third brake light", the "eye-level brake



Fig5. Elements of Tail Lights

lamp”, the “safety brake lamp”, or the “high-level brake lamp”.

The intension of this light is to provide declaration warning to the following driver whose view of the vehicle left and right stops is blocked by interceding vehicle. On passenger car the CHMSL may be placed above the back of the car.

Rear fog lamps

A tail lamp that provides strong beam in a foggy weather is Rear fog lamp.

Which serve as high-intensity rear position lamps to be turned on by the driver in conditions of poor visibility to make the vehicle more visible from the rear.

Most jurisdictions permit rear fog lamps to be installed either singly or in pairs. If a single rear fog is fitted, most jurisdictions require it to be located at or to the driver's side of the vehicle's centerline whichever side is the prevailing driver's side in the country in which the vehicle is registered

Emergency stop signal (ESS)

It is a special kind of light that only operates when the vehicle braked rapidly and severally. This type of light is known as “Emergency stop signal”.

Reversing lamps

A light at the back of the vehicle that signals for warning when vehicle is being reversed.

It is used to warn adjacent vehicle operators and pedestrians of a vehicle's rearward motion, each vehicle must be equipped with at least one rear-mounted, rear-facing *reversing lamp* (or “backup light”).

Rear registration plate lamp

The rear registration plate is illuminated by a white lamp designed to light the surface of the plate without creating white light directly visible to the rear of the vehicle; it must be illuminated whenever the position lamps are lit.

(Wikipedia n.d.)

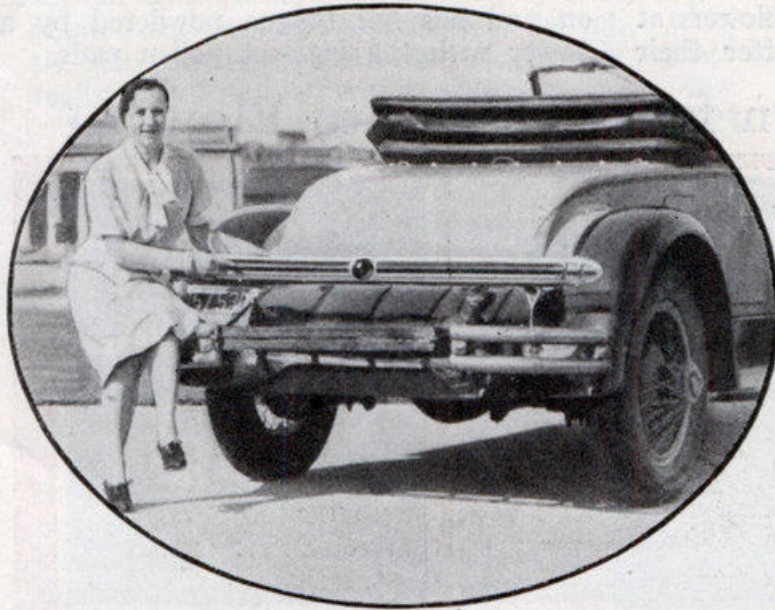
Fig6. Brake lights



http://www.ehdwallpaper.com/wp-content/uploads/2014/05/2013_cadillac_xts_13.jpg

Special case

TAIL LIGHT SHINES ACROSS CAR



AN AUTOMOBILE tail light, resembling a neon tube, has been developed by an Indianapolis, Ind., inventor. The streak of red light, running across the car is easily seen from any position in the rear and it also outlines the width of the vehicle. This is especially desirable in the case of unusually wide buses. The light is tubular in shape and from fifty-four to ninety inches in length. Two standard tail light bulbs, which are placed inside the tube, supply the illumination.



Auto tail light, running across entire rear of car, shows a long red streak which is easily seen. Close-up, above, outlines the streak of light which comes from two concealed tail light bulbs

Fig7. Special case http://blog.modernmechanix.com/mags/qf/c/PopularScience/12-1932/lrg_wide_tail_light.jpg

Neon tube had been developed early in the history why did this concept died up?

At that time there was an era of two solid shaped tail lights, so people couldn't perceive this single line neon tube as a tail light, also they had a mindset for rounded tail lights.

People didn't appreciate this kind of design activities in automobile industry. As a result this style of tail light died up.



Fig8. Neon lights
<http://justacarguy.blogspot.in/2010/10/why-hasnt-any-one-done-this-with-their.html>

Chevrolet Corvette



Fig9. Corvette generation

The Chevrolet Corvette is sports cars by Chevrolet division of GM (General Motors) that has been produced in seven generations. It is divided in first to seventh generation it is also called as C1 to C7. Corvette concept cars have inspired the designs of several generations of Corvette. It was first shown at 1953 in Motorama at Waldorf-Astoria hotel in New York city on Jan 17, 1953 and from second generation Chevrolet Corvette is following their signature tail lighting system. Compared to other evocative brands, Corvette has stayed true to its originality and maintains its design language throughout its 60 years history.

The long tapering tail styling, and tail lights these all ticked the aesthetic boxes. They are still holding their style of rear part. At that time other brands didn't think about rear styling and signature lights or other styling language. The changes weren't just skin deep advances in technology allowed the designers to utilize a unibody construction with a low possible roofline and stiffer chassis. Radical changes happened like change in mid engine and even turbo charging were considered but designers ended up with sticking with the design consistency.



Fig10. C1 generation 1 <http://goo.gl/NkpfAa>

C1 _Generation I

Since beginning, the Corvette has had similar tail lights. It has two elements and they are very simple in shape but designers of corvette followed this identity through the generation. In C1 the tail lights were more towards sporty and athletic look. The tail lights were on shoulder line of the car and it also blended with the curvature of the car.



Fig11. C2 generation 2 <http://goo.gl/WUlvfM>

C2 _Generation II

In C2 the designers pulled the taillights downwards and made it in a simple manner by making it circular. This time the tail lights were on the shut line (Any visible distance between two adjacent exterior body panels) of the car, which holds the car on very stable position.



Fig12. C3 generation 3 <http://goo.gl/59WxV7>

C3_ Generation III

This time the trend was using flat and simple surface to give a new language to the car. They increased the size of the tail lights but did not change the basic design of the lights and the whole system. They also pushed it inside the body.



Fig13. C4 generation 4 <http://goo.gl/oXZZgj>



Fig14. C5 generation 5 <http://goo.gl/1WXROs>



Fig15. C6 generation 6 <http://goo.gl/EEuvLZ>

My comments:

May be the thinking behind this change was to prevent lights from getting damaged or accident.

C4_ Generation IV

In this generation the new corvette was more flat, more edgy and more stable looking. The elements used were with less filleted, sharp and angled. A pair of the horizontal line ran throughout the whole body of the car which gave more grounded look to the vehicle. So this time tail lights are more flat and filleted.

At the fourth generation they didn't lose the signature element of the tail light, and it perfectly blends with the form of overall car design.

C5_Generation V

This time corvette again switched to circular lights. It also has more elements in it like indicator lights and brake lights. The designers were looking for new surfaces having good combination of edgy and smooth surfaces and they achieved this by highlighting the design of its tail lights.

C6_ Generation VI

Designers didn't change so much with the tail light parts but they removed all the unwanted elements like reflectors.

There is no drastic change in the tail lights of corvette, but they have tried to make it cleaner.

C7_ Generation VI

After launching new model of corvette C7 people were commenting on the design of its tail lights saying that - the essence of Corvette was lost in this. Director of GM Design, defended this statement in his interview.

Tom Peters

GM Director, Design

As long as I have been associated and involve in corvette across my carrier. There is something about the rear of this car that seems to draw so much discussion. I would virtually say more so than the front.

I wanted to push it a way new form of traditional round signature light to create as much as newness in from its past. I really wanted to shake up more I figure out I believe that is my job is to move it. Sometimes it may be uncomfortable but if you do it in a calculated careful way towards if you push the boundaries than it may be comfortable to sound. But I feel that two things have to prevail one is if you stand back it will look like a Corvette and number two it has to have sense of a beauty of sound. And I believe the tail lamps of new

Corvette Sting ray will deliver that. And many different faces one- It is a combination as rest of the corvette is to be elegant beautiful statement that is as optimized functionally as can as possibly. So knew the aerodynamic consideration on the rear we had some technology with led that we have use it previously and we add some depth of sculpture effect as you can see with the exterior. In every aspect the tail lights are now different. I have real listen to my young design team in terms of developing some themes that will cross the spectrum of different shapes and graphics. And I will tell you we tried rounds on this different shape and quite frankly it didn't work with its form vocabulary. So we want something integrated dual element that will work with the sculpture and to fall range of technology and functionality. So I think I my view when you look at Corvette Sting ray you will see that unique signature of a corvette but done in a fresh way.

Fig16. C7 generation 7



<http://goo.gl/TNja9g>

I believe that this is not a correct statement. The arguments against this radical evolution are:

- *They combined the signature element (round shape of tail lights) and made it as a single component.*
- *They used edgy and sharp angles in the design of tail lights and converted it so that the people thought it spoiled the character of corvette. It also resembles with the new version of Camero.*

Bmw 5 series

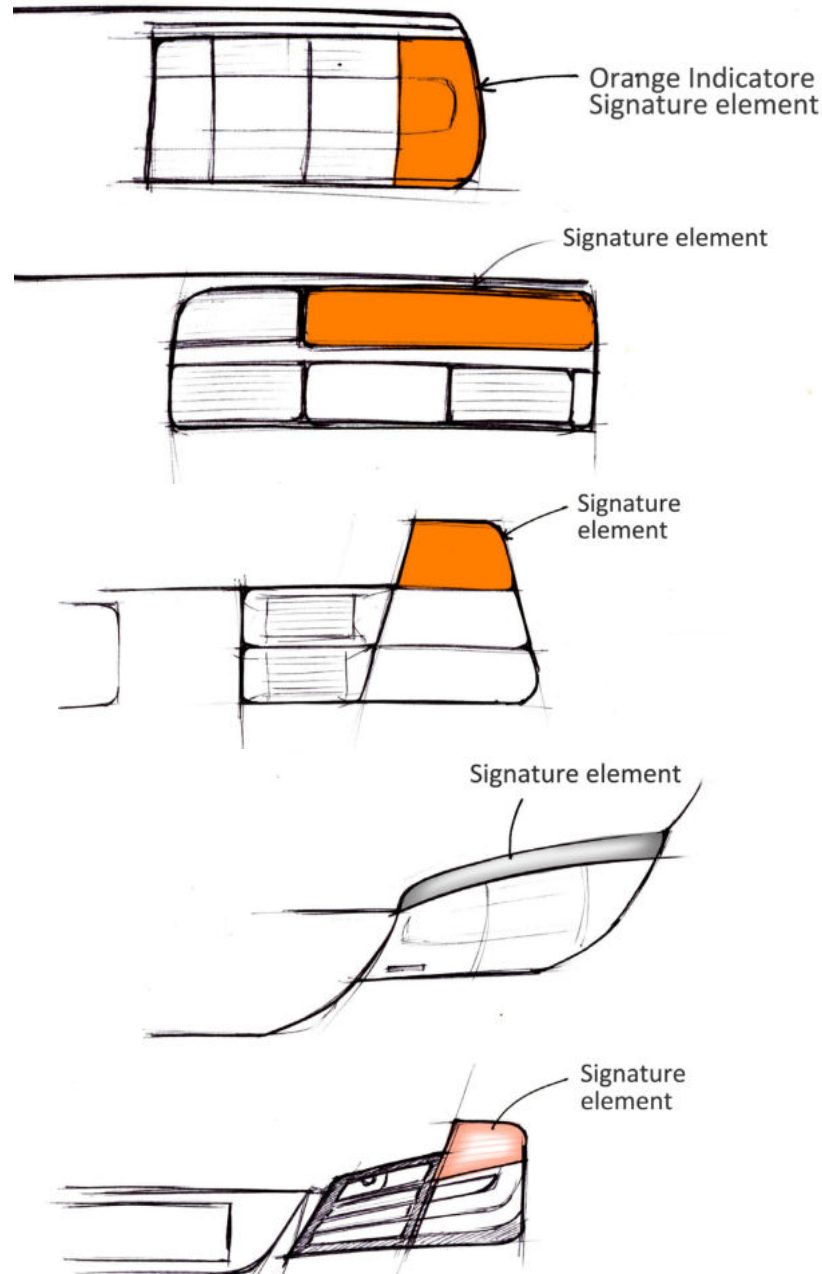


The **BMW 5-Series** is an executive/mid-size luxury car manufactured by German auto-maker BMW since 1972. The car, now in its sixth generation, is sold in sedan and touring body styles. It is BMW's second best-selling model after the 3-Series and in 2010 produced about 50% of the BMW's profits.

(wikipedia n.d.)

- Rectangle is the major element in the BMW tail lights. Arranging rectangular lights in different manner in the unique signature lighting achieved in this series.
- The orange color indicator is playing a major role in the whole composition; all the elements are arranged such that the whole emphasis comes to this element by contribution from other elements.
- BMW 5 series generations are making their tail lights more towards edgy and sharp design. In the latest design they tried with some curves but the edginess is still there in it.

Fig17. BMW 5 series transformation of tail lights



- The tail lights of BMW E60 (fifth-generation 5-Series, produced from 2003-2010) changes with its non-traditional styling (designed by late BMW designer Davide Arcangeli) and many of its features received mixed reviews.
- These tail lights also incorporate their continuity with the trunk partition line of the car.

My comment:

The tail lights of latest version of BMW 5 series F10/F11/F07 (sixth-generation 5-Series, produced from 2010–present) construct a relation of design between the 3 series and 5 series, because they adopt some design aesthetics from 3 series of BMW in interpreting its tail lights. Thus the viewer will get some idea about the BMW's tail lights, and can map the brand by its signature tail lights.

Fig18. BMW 5 series analysis of signature element

Audi A6 series



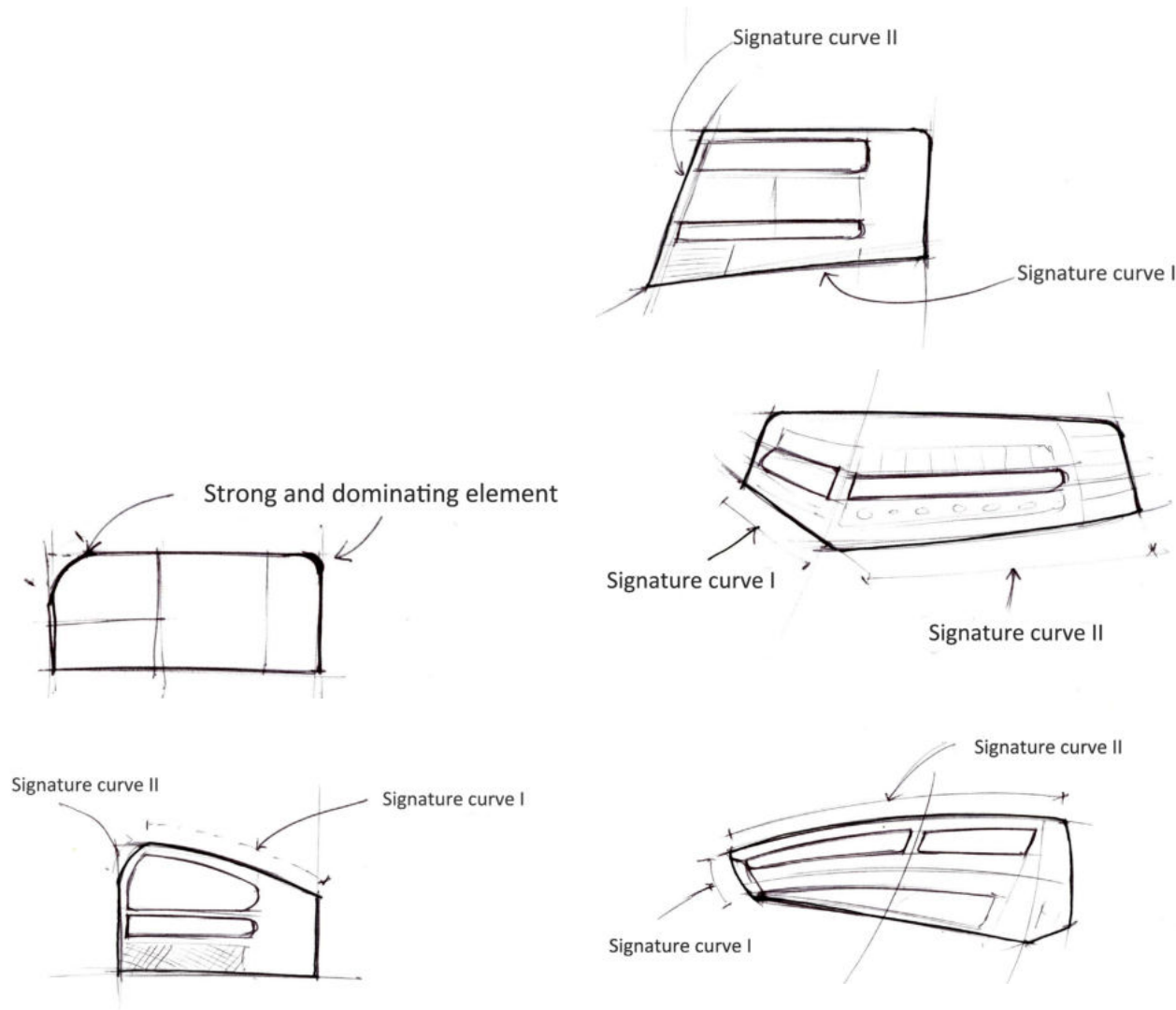
The **Audi A6** is an executive car made by the German automaker Audi AG, now in its fourth generation. As the successor to the Audi 100, the A6 is manufactured in Neckarsulm, Germany – and is available in saloon and wagon configurations, the latter marketed by Audi as the *Avant*.

(Wikipedia n.d.)

There is a strong feeling of simplicity in the design. The whole design language of Audi and its tails lights also reflects the same.

In the first model of Audi (C series) the tail lights are almost rectangular but the two corner lights were filleted it with a strong curve, and this curve became the most dominating curve in the design language of Audi tail lights and this was the beginning of the journey of signature tail lights in Audi. Tail lights and exterior design are brought closer together to provide greater visual cohesion.

Fig19. Audi A6 series tail lights transformation



- Designers of Audi started maintaining this signature curve in the next generations, and these became more and more dominating and eye catchy in the design of tail lights.
- In next generation, Audi designers experimented with the streamlined curves in the tail lights and with head lights as well.
- In current design throughout the car, sharp contours frame muscular surfaces – the interplay between convex and concave curvatures defines the athletic character of Audi tail lights.
- May be these elements and shapes are inspired from the nature like, rain drops, force of the wind it's also one of the most aerodynamic stuffs.

Fig20. Audi A6 series analysis of signature curve

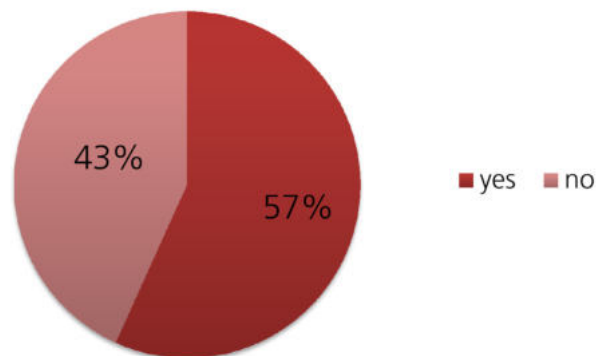
Indian scenario of signature tail lights

An analytical survey was conducted to observe people what they think about tail lights of a car? Are they really able to recognize the car by its tail lights? what are their expectation from any brand.

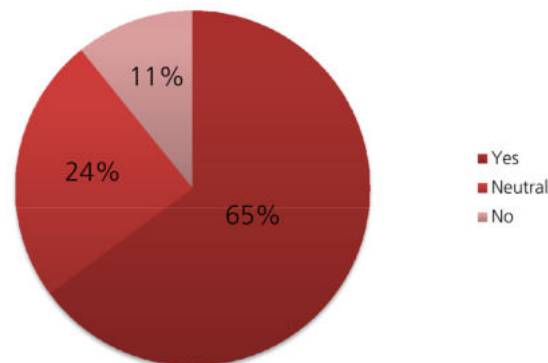
This survey was done in two phase:

- Phase-I: On road interviews
- Phase-II: Spreading questionnaire sheets through internet.

How many people are able to recognize any car or car brand by seeing its tail lights or headlights?



Do people think recognizing any car by its lights (headlights or tail lights) is helpful?



Do people think that it really affects its brand value?

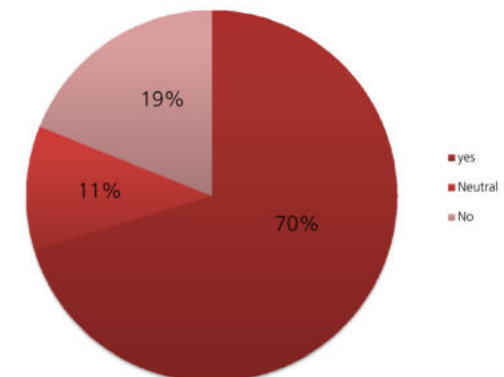


Fig21. Indian scenario of signature tail lights

Customized tail lights

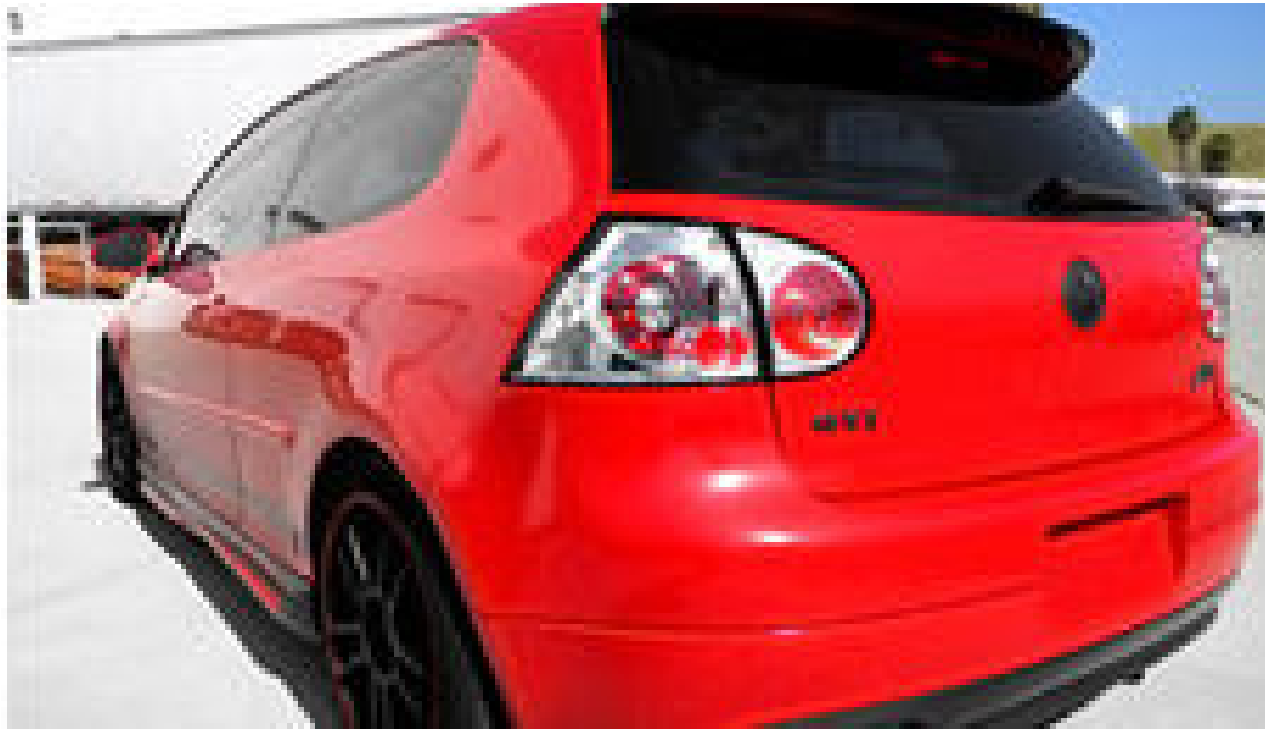


Fig22. Customized tail lights 1 <http://www.carid.com/spec-d/>

OEM lights can't offer the style and efficiency provided by aftermarket products. These customized range of advanced aftermarket lights is the embodiment of innovative technologies blended with impeccable style.

Cold cathode fluorescent halo lamps (CCFL), combined with LED lights, provide increased safety and higher efficiency. CCFL halo rings provide concentrated, extremely bright light beam that is wider and longer compared to the conventional halo lights, and all that

without using much energy. Being SAE and DOT approved, the lights by Spec-D meet all international and federal standards and are completely street legal.

These products are 'high quality' and 'affordable price' can indeed go hand-in-hand. They have it all: everlasting materials, exceptional style, enhanced performance, and eye-catching design.

(145)

Features:

- Perfect fit your factory brake lights positions
- Everything necessary for installation included
- Waterproof housing protects sensitive electrical system
- High-intensity LED lights
- Street legal
- Resistant to Thermal and Vibrational shocks

Customized brake light features LED technology, which is known to be the most energy efficient nowadays. Compared to other lights, LEDs are of the brightest ones and light up faster than regular incandescent light bulbs. When it comes to the road safety, extra brightness can be very advantageous, especially in the conditions of low visibility. A strip of bright LED lights sits just inside your rear windshield and gives an extra boost to your tail lights when you brake. Everything you need to install this handy light bar is included with purchase, including all mounting hardware. No drilling or rewiring is required, only plugging the Spec-D Third Brake Light into your vehicle's wiring harness. A variety of colors and styles are available depending



Fig23. Customized tail lights 2 <http://www.carid.com/spec-d/>

on your vehicle, and you can rest assured that your third brake light bar will be 100% street legal.

(Spec-D® - LED 3rd Brake Light n.d.)

The aftermarket industry is witnessing several technological changes and upgrades with an advent of Custom Tail Lights. These have become an indispensable part of all kinds and brands of vehicles available in the market. Moreover, these are perfect replacement to non-performing and damaged lighting acces-

sories of your vehicles.

What are the features that tail lightings preferred choice than other auto lights available in the market? The tail aftermarket lightings are blessed with various functional features, which allow drivers to experience smooth driving even on darker tracks. These are matchless blend of innovative design and user friendly attributes. You can avail lights in numerous colored lenses like smoke, chrome, black and JDM black finishing, which reflect light even in harsh weathers. Some of the

other attributes include:

- UV protected polycarbonate lenses
- Dissemination of powerful radiance
- Longer serviceable life span
- Competency against water, heat & shock
- Improved performance than typical LED bulbs.

What are distinguished advantages of fitting these lighting in your vehicles? The Custom Tail Lights come with a range of copious benefits, which make these highly acknowledgeable among drivers. Foremost, these lighting accessories are efficient in the dispersion of intense beam of light to drivers, which allow them to enjoy safe protected driving experience. You can name these lighting accessories as life saviors because these help in safe navigation of vehicles on tracks with less lighting facilities. The illuminations are vital in acknowledging your presence on tracks and thus, prevent you from any possible accidents. Besides, these are natural looking aftermarket accessories that are also installed to enhance appearance and style of vehicles. The drivers are bestowed with different kinds of custom features and finishing, which allow them match these lights according to their brands' models.



Fig24. Customized tail lights 3 <http://www.carid.com/spec-d/>

(Xtralights, Why it is necessary to install Custom Tail Lights in your vehicles? 2014)

Dispersion of intense radiance

The Custom Tail Lights are known for proferring intense and bright beam of lights on tracks, which support drivers to experience unblemished visibility in day as well night time ride. Based on light emitting diode technology, these come with UV protected polycarbonate lenses that reflect improved brightness as compared other aftermarket lights.

Insure safe and protected drive

The tail aftermarket lightings are pivotal in insuring complete safety and security of drivers, especially when they are driving on dim pathways. Owing to their powerful dispersal of brightness, the drivers are able to view bumps and hazards present on their ways. These act as life saviors of drivers as well as commuters by making them alert and aware of one another presence.

Provide alluring and eye catching appearance to vehicles

You can avail tail lightings in varied colored lenses like clear, smoke, red & smoke, red, red & clear and red & yellow. Besides providing illumination, these are also vital in endowing vehicles with attractive and eye catching appearance. These come in innovative design and finishing, which make your vehicle look different from others.

Offered at reasonable market rates

The exorbitant prices of lightings play major hindrance that stop people to purchase these auto accessories. However, they can now avail these lighting at affordable market prices from various retailers. Moreover, they

can also purchase these from various websites that provide auto lights with several discounts and offers.

(Xtralights, Four Distinguished Benefits of installing Custom Tail Lights 2014)

Customized lights have quicker light-up time, brighter light output, weather resistance, more energy efficiency, direct plug and play, high quality manufacturing, durability and reliability with innovative and unique designs.

(1451)

My comments:

Customized tail lights are for those customers who need special attention from the people on the road, or they don't like traditional common tail lights for their cars.

The following reasons may explain why some groups of people don't like in built tail lights:

- 1. They love their car so much and want it to look different from others.*
- 2. They have their emotional attachment with the car and want to doll up their vehicle.*
- 3. Want to receive numerous compliments for their car.*
- 4. Sometimes people get bored of their car and want a change in the look in some ways, hence it is very hard to change the car instead they modify their car.*
- 5. Another reason for changing the light is that people are not happy with these non functional lighting accessories of their vehicle and want to give a stunning experience to their model. So they replace their lights with functional custom tail lights, which are specially designed to provide clearer and safer discernibility to the drivers.*

Futuristic tail lights



Fig25. Audi swarm tail lights <http://goo.gl/c4yiR5>

Audi

Audi is no stranger to futuristic tail light concepts. At last week's CES, the company put an update on its OLED tail light for cars that takes inspiration from a swarm of fish.

The tail light concept is aptly called "The Swarm" and consists of an array of OLEDs that change according to the car's movements. Making left and right turns see the OLEDs flow in the corresponding directions. Braking will display the lights flowing forwards and accelerating will force the OLEDs to speed up.

Audi says the concept tail lights are meant to provide more information to other drivers on the road, but are they more distracting than helpful? Check out the gallery and some new video below and see what you think.

(Wong 2013)

Audi Swarm Youtube link <http://www.youtube.com/watch?v=SiN9cehPjvQ>

Audi has gone and created an OLED concept lighting called The SWARM that resembles blood flowing through the rear of the car. The light stream, when looked at closely could be electric current, but you can't help but visualize Vigo and the pink stream of slime from Ghostbusters 2. The genius of the concept lies within the movement of the stream and direction of the car. SWARM's OLED system moves in sync with the direction the car is moving, which may prevent blind-side side swipes and help a rear driver make passing decisions. All in all it's a step in an innovative direction, but thinks transforming the entire rear of a vehicle into a large continuous OLED surface is cool, but could get pricey when getting rear ended, after a truck driver tries to get a closer look at the stream.

OLED technology is yet another example of Audi's pioneering work in the vehicle lighting area. The abbreviation stands for organic light emitting diode. Unlike the LEDs currently in use, which consist of semiconductor crystals, OLEDs are made from an organic material.

The material is spread extremely thinly — the coating is only a few thousandths of a mil-



Fig26. Audi swarm <http://www.dvice.com/2013-1-16/audi-swarm-tail-light-dazzling-and-distracting-wonder>

limeter thick — on an absolutely flat surface such as highly polished display glass. When an electrical voltage is applied, the molecules emit photons and the surface lights up. The light distribution is very homogeneous and very energy-efficient. They are ideally suited for use inside the vehicle or in rear lights.

External light design using OLED technology, which Audi is aiming to adopt, will be as intelligent as it is attractive. It can, for example, react to the approaching driver, follow his or her movements and highlight the main contours of the vehicle or the door handle. When the driver has entered the car, restrained OLED lighting will become active inside.

(Roosevelt 2013)

This light recalls (as the title of this post implies) the fantastical visions of the brightly-lit future of the Speed Racer movie from the Wachowski tag team of excellence back a few years ago - complete with wild color combinations. What we're not sure of at the moment is if this greatness will inspire better driving or more distracted crash-ready action.

The lights move forth and faster as the car accelerates, this creating a more "swarm" fabulous effect as you reach top speed. Instead of hitting the turn bar in your car, the swarm moves forth to the left or the right according to where your wheels are aiming - in other words, if you're leaning toward turning to the right, there'll be more lovely lights on the right side of the back of your vehicle. If you're veering left, there won't be any lights on the right.

(Audi Swarm tail-lights put Speed Racer on the docket 2013)

LED rear lights

Rear lights using LED technology are available either as standard or as an option for all Audi models. They produce a distinctive light pattern that in many cases also produces three-dimensional effects. The light-emitting diodes reach their full light intensity almost instantaneously – if the driver has to brake suddenly, the driver behind gains valuable fractions of a second.

Fig27. Laser lights <http://goo.gl/sqT7Om>



Indicator light with dynamic display

When revamping its high-performance sports car, the R8, Audi recently brought the indicator light with dynamic display to series production. It sends clear signals to its surroundings – unlike today's indicators.

The wipe-action indicator controls the LEDs sequentially in blocks in the turning direction, from the inside to the outside edge of the vehicle. Other road users benefit from the clearer indicator direction.

The function is provided by 30 LEDs arranged linearly, which are driven successively in seven segments at an interval of 150 milliseconds. The advantages: additional direction information, more intuitive indicator signal and more road safety.

Laser tail light

The laser tail light is generated by a laser diode and provides drivers behind with a bright, clear signal. In good visibility the fan-shaped laser tail light that shines slightly downward is perceived as a red line on the road and prompts the driver behind to maintain sufficient distance – similar to a stop line. In fog or spray, the laser beam strikes the water droplets in the air and makes them visible; the line is then seen as a triangle. The laser tail light looks like a large warning triangle.

(audi 2013)



Renault New Design Tail lights

The Renault displays some teasers of a futuristic prototype that will be presented at industry event design in Milan (Italy), from April 8, the Triennale. This is a conceptual model whose lines anticipate the style that the brand will adopt in future releases. The car was designed by the department brand design in collaboration with Lovegrove Studio.

The head of Lovegrove, Ross Lovegrove, is an industrial designer known for his works that valoriam organic forms and explore new languages. "Working with contemporary designs, made by computer, we intend to prove innovative formats," the manufacturer said in a statement. More details and photos of the prototype of Renault, still untitled, will be released soon.

(Andrew 2013)

Fig28. Renault tail lights

<http://www.carskings.com/renault-2/renault-shows-new-design-trend/>

My comments: These designs are inspired from organic components of nature. Renault design explores a new language of tail lights which is totally different from contemporary formats of design. More and more detailing is done to make this design futuristic.



Mercedes

The Mercedes-Benz Concept Coupé SUV presented at the Beijing Show showcases the typical proportions of this particular segment. The surface treatment and design language are typical of the brand, with a sculpted look, flowing side lines, the trademark radiator grille with the central chrome louvre and the Mercedes-Benz star in prominent position and a distinctive rear end that introduces a new lighting signature, with an uninterrupted horizontal element.

Gorden Wagener, Head of Design at Mercedes-Benz, commented: "The Concept Coupé SUV stands out thanks to its extreme proportions and in doing so interprets our hallmark Mercedes coupé design idiom perfectly. With its superior sportiness it conveys a sense of modern luxury and aesthetic aspirations of sensual clarity".

The coupé-like nature of the Concept Coupé SUV is also emphasised by the design of the rear end with its obvious elements of the design line first presented with the S-Class Coupé, which will be followed by all coupé models from Mercedes-Benz in future.

Fig29. Mercedes tail lights

<http://www.carbodydesign.com/2014/04/mercedes-benz-concept-coupe-suv/>



The styling characteristics of this include the slim band of rear lights with their ruby-like, three-dimensional look and the registration plate now incorporated into the rear bumper.

Another feature that has for generations distinguished the large coupé models from Mercedes-Benz is the typical shape of the rear window which is rounded off at the top.

A discreet SUV reference is made by the simulated under guard into which the tailpipes of the dual-flow exhaust system are integrated. Polished aluminum predominates here, as on the integral door handles, the side sills, the front air intakes and the edging of the greenhouse.

(Mercedes benz 2014)

Fig30. Mercedes tail lights

<http://www.carbodydesign.com/2014/04/mercedes-benz-concept-coupe-suv/>

Conclusion

The Features of car play a major role in the identity and the brand value of the vehicle. One of the major features is tail lights. If some car passes by it leaves an impact on the people of the trailing vehicle and passersby. And when the car zooms away the last feature people see is the tail lights and the impact of tail lights should be so powerful that people can recognize the model and even the brand of the car.

Signature tail lights are the tail light that helps to put visual impact on the people. They also increase the brand value in the market among the other brands. Some companies like Audi, Bmw, Corvette, Rolls Royce, etc. are very keen in maintain their brand value through ages. It also continuing their design language with the improved technology and manufacturing process.

But in the Indian scenario many of people are unable to recognize a car by its features or maybe they don't care about it. The following reasons can satisfy why cars are not recognizable by its features:

- India is still a developing country and only a special group of people are using four-wheeler here. Even they don't care much about brand and features. They buy it just for its usability and luxury.
- Indian auto manufacturers are not aware about the concept of signature design language. They are still designing according to its usability, manufacturing issues and to save costs.

So in India it will take some more time to create awareness about brand value and the passion about the cars and auto mobile among the people, but the journey has started and Indians will surely talk about these things soon.

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