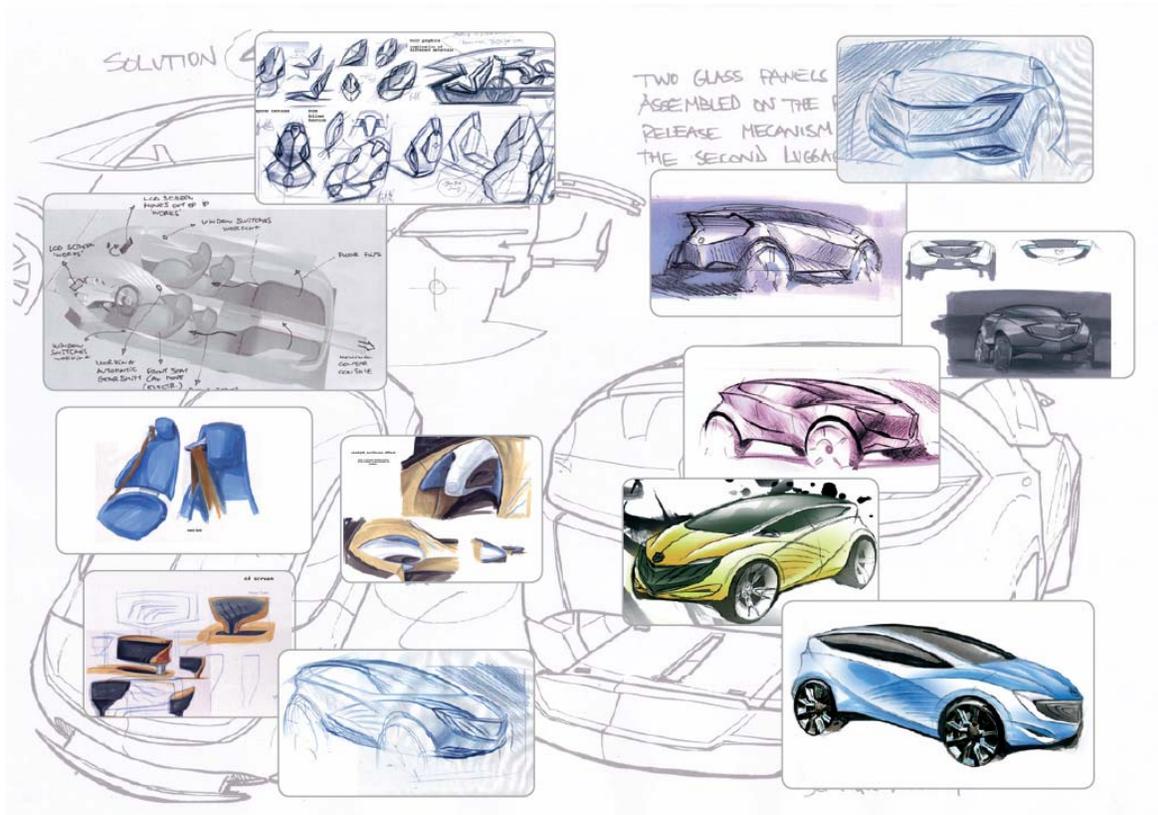




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“Nagare is the start of a new journey. A journey that will ultimately sow the seeds for an entirely new generation of Mazda vehicles. That is why it is so exciting and exhilarating. Nagare is about capturing motion, energy and beauty, and translating it into forms that people connect with and want to touch. Nagare finds its inspiration in nature, and as such is an incredibly rich source for our designers.”

Laurens van den Acker,
General Manager
Design Division



1. Introduction

Nagare Design - A New Expression of Movement

Last year Mazda wowed the show car world with a trilogy of design concepts that were talked about on three continents. From Europe's Sassou show car with its unique Shoji design principle and hidden features, to Tokyo Motor Show's Mazda Senku concept car, winner of the Grand Prix du Plus Beau Concept Car at the XXIst Festival Automobile International in 2006 in Paris, to North America's sports car study Mazda Kabura, winner of the Detroit Motor Show's Aesthetic and Innovation Award - Mazda Motor Corporation wrote another chapter in its global reputation for eye-catching, Zoom-Zoom designing.



Nagare concept
(LA Auto Show, 11/2006)



Ryuga concept
(NAIAS, 01/2007)



The **new show car season** features four concepts from Mazda that express a **new design language called Nagare**, (pronounced na-ga-reh) developed by Mazda's new global design director, Laurens van den Acker. The word **Nagare means "flow" and "the embodiment of movement" in Japanese** and applying it to car design involved analyzing motion itself and how forces like wind and water move in nature. **Natural flow lines** are all around us - wind blowing shapes in sand, wave forms seen from above - and are literally symbolic of movement itself. Nagare, then, is the application of natural flow to automotive design that combines surface language and proportion to communicate movement in a new way.

"Through the success of the current generation of cars, Zoom-Zoom has managed to focus our company and delight our customers at the same time. Nagare builds on this confidence and gives it a unique and distinctive identity", says Laurens van den Acker.

Its first expressions were the Mazda Nagare concept car presented last November at the LA Auto Show, and the Mazda Ryuga, which premiered at the Detroit Motor Show this January. Both Mazda concepts are an evolving expression of Zoom-Zoom, inspired by the movement of nature's elements - Mazda Nagare's surface articulation was inspired by geological flow patterns, and Mazda Ryuga's side body texture was inspired by Karesansui, or Japanese raked gardens. Both evoke energy and lightness, translated into a beautiful language of lines and forms that are powerful yet effortless, simple yet strikingly seductive.

Now Nagare is coming to Europe with this season's third all-new concept car, the **Mazda Hakaze**, which was **designed at Mazda's European Design Centre near Frankfurt, Germany**. Mazda Hakaze is a **compact crossover coupe with roadster feel**. It combines the best attributes of three traditional types of cars. Part of its roof is removable, which gives a feel similar to a roadster; it is agile and fun to drive like a compact hatchback, and it has a high hip point and interior functionality like a compact SUV. It expresses Nagare "flow" on the outside with **sand-dune like surface iteration**, and combines these with shapes from machines that move through water or air. On the inside, it boasts "flowing" Nagare forms, natural surfaces and insightful functionality to meet the demands of **adventurous lifestyles like kite-surfing**.

"Nagare is expressed in the Mazda Hakaze, not only in the iteration on the side of the car, but also in a lot of the details," says Peter Birtwhistle, Chief Designer, Mazda Motor Europe. *"If you look at things like the execution of the wheel design, the spokes have a nice flow in*



terms of the way they move, the way the surfaces move, the way they integrate into the tire design. The interior too. The basic form of the interior is like looking at sand dunes. It's got all this movement, winds blowing. I find that inspirational in terms of trying to find a new way of expressing design. Of course, you have to think about functionality. But Mazda is all about emotion. And this is emotion."

2. Market Inspiration

A Look at Advanced Product Planning

Cross-Functionality for Concept Development

While the new Mazda Hakaze design concept is a look into a possible future compact crossover vehicle from Mazda, it is nonetheless a concept rooted in reality. It meets the unmet needs of a growing compact segment trend towards SUV-like crossovers in Europe, making it a valid proposal, despite its futuristic attributes. To ensure Mazda Hakaze and all upcoming concepts from Mazda Motor Europe are not merely flights of fancy, an **Advanced Product Planning (APP)** team was assigned to **Mazda Motor Europe's Research and Development (MRE)** centre in late 2004 with cross-functional team members from **design, marketing and engineering**.

The APP team was responsible for the initial planning phase of the Hakaze project. This began with **lifestyle and automotive trend research**, and included spending time with consumers in Germany and the UK, to see exactly what kind of lifestyles people lead, and what kind of attitudes these customers have towards their cars. Combined with market data, it became clear that compact SUVs - those able to meet emerging and more active lifestyle trends - will become more popular over the next 10 years.

"Traditional segments in Europe are declining." said Benno Gaessler, Manager APP who, along with Stefan Meisterfeld, Assistant Manager APP, was responsible for analysis and strategy. *"What the team found was that potential customers have emotional needs that are unfulfilled. They would like to drive a coupe, to drive a convertible, to drive a vehicle that is expressive. But these normally come with a very big price tag and expensive running costs. How we can fulfil these needs is what Hakaze is all about."*

The APP team clearly identified an overall concept that would appeal to these kinds of customers. It should be just as agile and fun to drive as a compact hatchback, while offering attributes like open-top driving, a higher seating position, more sporty driving attributes and a modern, upscale design.

"What is unique to this vehicle is that its realization was a tightly-knit, cross-functional effort," says Jose R.G. Santamaria, Director of APP and Consumer Insights. *"We have*

engineering, planning and design professionals working together as one group. From this point of view, Hakaze is the first of this new and effective process of future development.”

Mazda Hakaze and Kite-Surfing

Mazda’s futuring activities identified increasing popularity among Europeans for vehicles that meet the demands of active, adventurous lifestyles. To demonstrate Mazda’s expertise in meeting these needs, Hakaze was designed especially for the new crossover sport of kite-surfing that combines surfing and paragliding. The sport began as we know it today in Maui (Hawaii) in 1996 and in 1998 the first official kite-surfing competition was held there. Since then it has become the fastest-growing water sport in the world with an estimated 300,000 kite-surfers worldwide. A kite-surfer stands on a board with foot straps, and uses the power of a large controllable kite to propel himself and the board across the water. However, this simplicity also makes kite-surfing challenging. Your body is the only connection between the kite and the board and you have to control them both at the same time. Kite-surfers are used to connecting to the Internet to monitor wind conditions, and carry lots of wet and sandy surfing gear. All these needs are met by various functional attributes of the Mazda Hakaze concept.



After identifying the key attributes of the new concept, the APP team turned the plan over to two cross-functional members of the team - a designer and a packaging engineer. Together, they worked to develop a vehicle concept that meets the needs of the target customer mentioned above, while making sure it stayed true to C-segment hatchback values. This robust process at the beginning of development was a major asset to the actual designers of the Mazda Hakaze, when they took over realization of the project at a later stage.

3. Exterior Design

The Compact Crossover Coupe with Roadster Feel

In Japanese, the word Hakaze (pronounced Hah-kah-zay) comes from “ha” for “leaf” and “kaze” which means “wind”, a fitting combination for a vehicle that looks like it is effortlessly cutting through the air while standing still. Mazda Hakaze has **very compact proportions**. At 4,420 mm, it is roughly the same length (+15 mm) as the Mazda3 hatchback - which ensures agile, sporty handling - but is wider (1,890 mm, + 135 mm), and taller (1,560 mm, + 95 mm) with a high seating position, a very large glass area and large suspension travel - all attributes usually associated with a C-segment SUV.

This insightful package is clothed in a modernistic body work with **no door handles and no mirrors - which are replaced with exterior cameras** - very compact proportions and flowing major feature lines and side textures that create a muscular and taught look. Mazda Hakaze has **no B-pillar** either and the rear **two-thirds of the glass roof can be taken off in two parts and stored in a slide-out compartment in the rear bumper**. Lowering the car’s four frameless windows then converts the concept into a fun to drive, four-seat coupe with roadster feel.





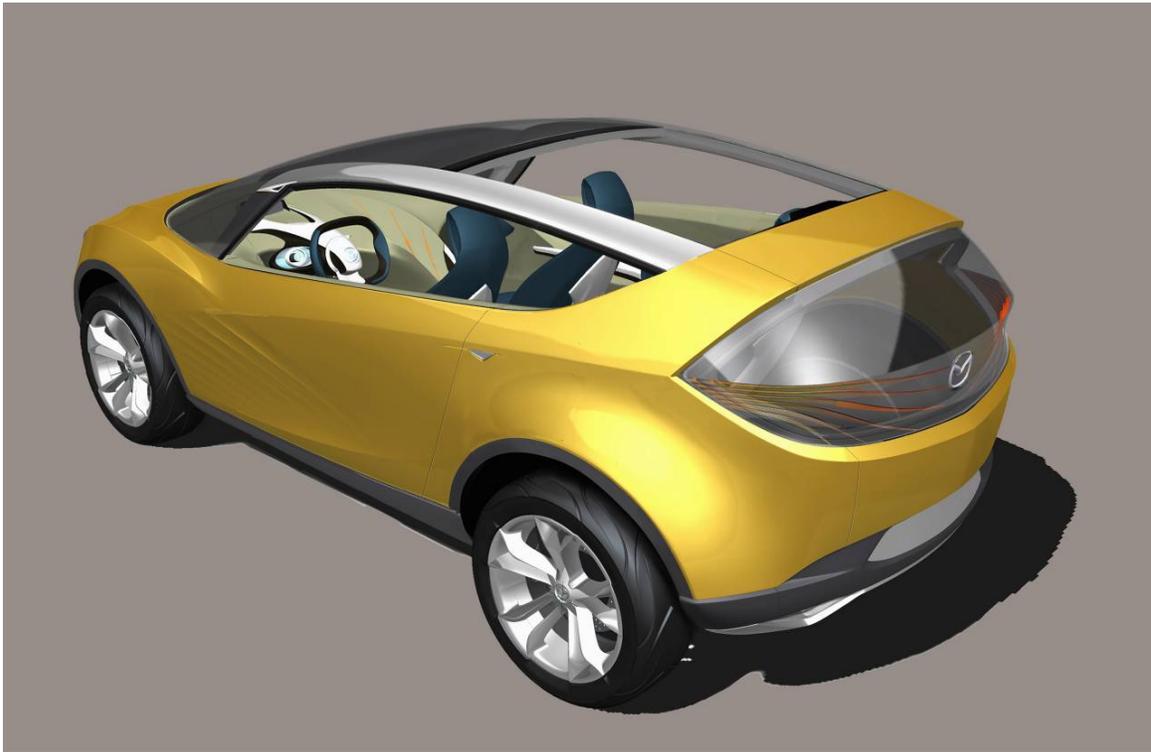
Mazda Hakaze's exterior design was a cooperative effort from the same successful duo that designed the Mazda Sassou, presented at the 2005 Frankfurt Motor Show: Mickael Loyer, whose design was selected this time for the final proposal, assisted by Luca Zollino. *"The design team took inspiration from sports and outdoor activities in the wind or in the water giving the sensation of being free and allows us to break boundaries,"* says Mickael Loyer, *"like kite-surfing, flying, diving, driving a jet-ski or a motorbike. We were looking for shapes moulded by natural elements, and how the wind shapes the sand is a key element in the exterior design of this concept."*

At the front, they pushed forward the design idea of the Mazda Sassou - with a large grille design that has chevron-shaped front indicators and headlights - to which they added **Nagare flow lines**. At the rear of the car, a **unique illumination system** is used with light flowing directly into the lower part of the rear window. Because the rear lights have flowing shapes integrated into the design here, this creates an impression of **floating light**. Mazda Hakaze's silhouette features Nagare flow lines at the front of the door panel, with a visual link to the front of the car created by a line falling over the top of the front wheel well and into the side panel. These are combined with a rising beltline extended into the hatchback door, a steeply angled windshield similar to Mazda's crossover SUV CX-7 and a roof line that gives Hakaze a modern body shape that integrates the strong look of a Samurai sword when seen from the side.

All the concept's Nagare flow lines combine to **visualize movement** by making it seem as if the wind itself has etched natural flow lines into the car's surface. Even when parked, Mazda Hakaze looks as if it is moving - as if wind is blowing over the front wheel wells, down and along the side panels and across the bottom of the rear window.

Mazda Hakaze not only took its inspiration from Nagare natural flow, but also from technological objects like helicopters, speed boats, jetfighters. These are strongly related to flow and examples of human interface to fast movement through natural elements. The design team combined these kinds of forms with shapes directly moulded by flow in sand and water. Examples of this are Hakaze's glass roof cockpit and its 20-inch wheel design. The wheels use a mixture of forms inspired by sand dunes and propeller shapes to express flow and movement - including extensions of the spoke design into the tire rubber bordering the

wheel - and adds a three-dimensional depth to lend Mazda's new show car a modern sophistication.



"The Hakaze is an agile yet tough coupe that takes you wherever you want to go," says Luca Zollino. "Its design is also unique because of the unconventional shape of its hatch. The continuity of the beltline through the hatch allows us to close all the volumes above it: this together with a very angled and long windscreen enhances the compactness of its proportions."

Exterior Colour and Materials - Nagare Surface Treatment enhanced by "flop" technique
Mazda Hakaze's exterior forms are combined with colours, materials and surface treatment that also express Nagare flow. A desert image is the source for its golden colour, reminiscent of a desert at sunset.

"The exterior colour was selected to support the surface language, its articulation and its texture," says Maria Greger, Senior Designer for Colour and Materials, "so that the whole



surface impression is one of natural flow. We want to have a feeling of sand. So if you look closer at the colour, you see small particles like sand."

The natural look to the exterior surface was further underscored by employing a "flop" technique in the colour treatment of all panels that are bent at an angle to form two sections with a smooth edge between them. The paint used for such panels was designed to give the upper part of the panel a more transparent feel, which is created by a transparent layer over the colour. Then the colour "flops" over towards a darker impression below the edge, an effect achieved by additives to the paint and by a slightly different use of particles in the paint. The final effect is similar to a sand dune or a wave in sand, which is lighter above and darker below.

Mazda Hakaze - Kite-Surfing Practicality

Mazda's latest show car was designed to show how a possible future C-segment crossover would meet emerging lifestyles trends, and no other trend sport is as perfect a fit as kite-surfing, the latest big **crossover sport**. It is designed for typical surfer flexibility. For instance, you can **take the roof off in two parts and stow them in a slide-out compartment in the rear bumper**. This makes Mazda Hakaze a perfect vehicle, not only for a cool roadster feel while driving, but also makes it a sun-filled place to relax on the beach between sessions. Also, the doors and hatch have no handles and are opened without a key. They use a "data shell", which is a **wireless, multi-functional device** that the car recognizes, which unlocks the doors automatically. The driver then simply touches the surface where the handle would be, and the **door moves outward away from the car by 30°, and opens upward by 45°**. This is especially practical when lugging gear to the car.

4. Interior Design

A Natural Environment

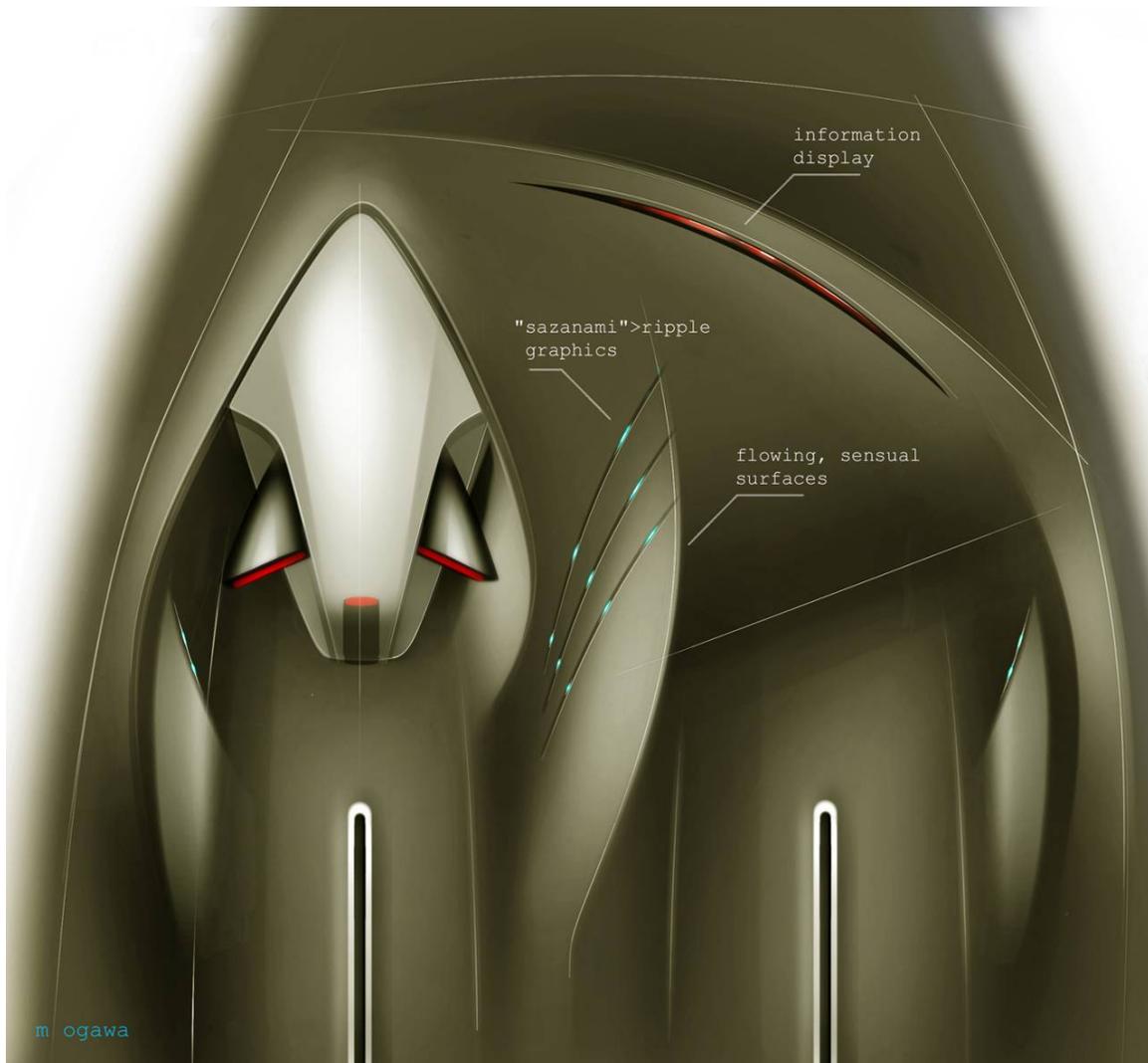
The interior of the Mazda Hakaze is a triumph of form, texture and functionality. Its **two large, pop-up doors are keyless, one-touch** and give a wide opening into one of its **four bucket seats**. Once inside, Hakaze's interior gives an **intense open feeling, even with the roof on**. The windscreen extends to behind the front occupants, creating an enormous viewing angle. The A-pillar dives into the instrument panel just in front of the door, making this feeling even stronger.

"Nagare is visible on the interior in the main surfaces, which are a combination of gently flowing volumes with edges that slowly fade away," says Jo Stenuit, Assistant Chief Designer who, along with Masato Ogawa, Lead Designer from Hiroshima, designed Mazda Hakaze's interior. "Inspiration was taken from a dune landscape with the technical parts, like the steering column, being pushed into the surface like a shell that is partly covered in sand on the beach. Also the textures follow this gentle flow of form in a natural manner. All this creates a sensual feeling for the interior and makes sitting in Hakaze like sitting in a natural environment."

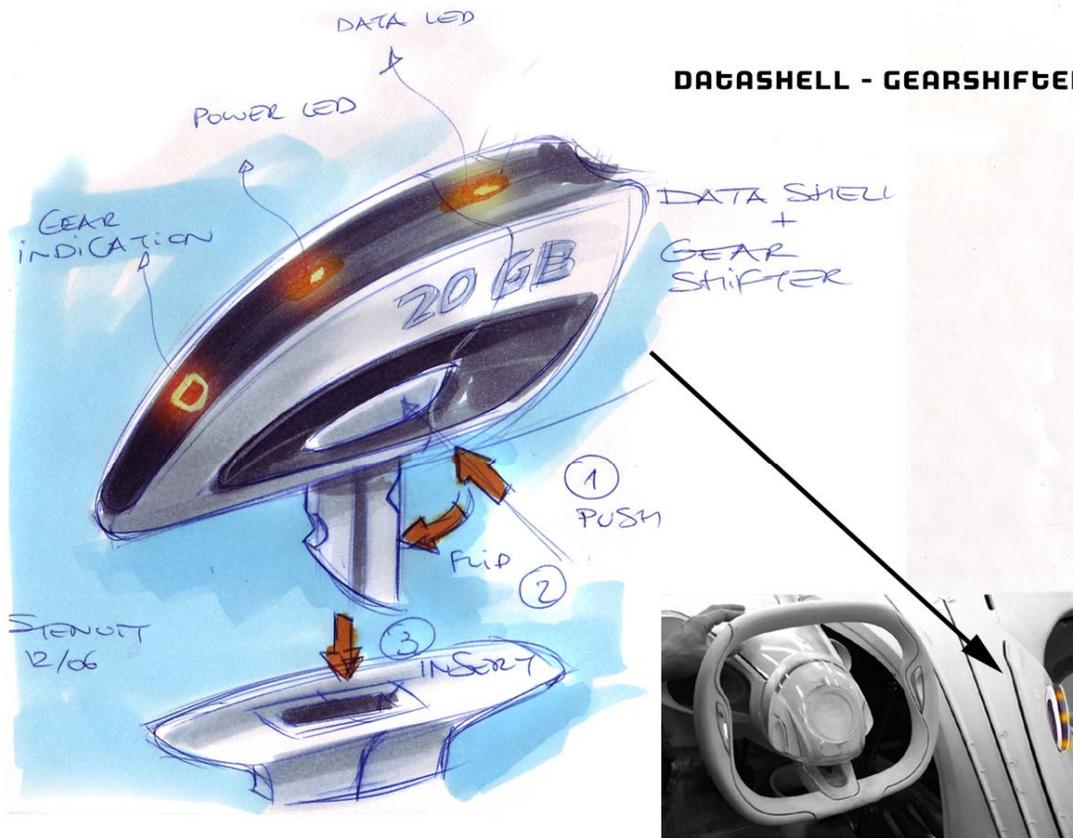
The interior design, and especially the instrument panel, is asymmetrical with a strong focus on the driver. The **wrap-around cockpit** features a long steering unit that gives a feeling of sportiness and depth. It has orange-lit meters on each side of the steering wheel - speedometer and tachometer - and in the centre of the steering column is an LCD screen with navigation information, images from the car's rear view and side cameras and warning indicators - all of which give an enhanced feeling of control to the driver. The centre of the steering wheel is fixed, only the rim and the lower arm can rotate.

There are also **unique sliding controls** to the right of the driver on the centre console, which follow the three illuminated lines in the surface. These lines have a dune wave design to make it easy for the driver to slide his finger up or down along the surface. Doing so adjusts seat positions, heating, audio and multimedia devices, with light below the surface moving up or down with the finger. The wave strip furthest from the driver has the controls for the car's hard disc drive multimedia system and an LCD screen that electrically rises up

and out of the dashboard surface on the passenger side. This screen can be turned by hand so the driver can also see it when the car is parked.



Data can be transferred to and from the car's computer with a **personal "data shell"**, which is a further development of the USB stick concept used on the Mazda Sassou design car.



It is a wireless device that allows the driver to open the car simply by carrying it in his pocket, and also allows him to save his **personal driving settings and data** from his home computer (route, music, movies). After getting in the car, the driver pushes the switch on the side of the "data shell" causing the connector to pop out (in way similar to a key). This he sticks into a designated slot in the centre console and it automatically downloads the stored information wireless using Bluetooth® technology and provides ignition. Once in place, the "data shell" also functions as the gear shift lever for the concept's automatic gearbox. Mazda Hakaze concept also has a **wireless charging pad** located in the glove box (also using **Bluetooth®**) to recharge the batteries of a mobile phone, PDA, camera or MP3 player. This insightful solution does away with annoying cables hanging everywhere, and keeps the device out of view and safe while it recharges automatically.

All of Mazda Hakaze's seats are **mounted on the centre tunnel** and are electrically adjustable, sliding fore and aft. For more room in the boot, the rear seats slide forward

with their lower cushions under the front seats, which give ample space in the hatch for all kinds of gear necessary for a day at the beach. With the windows down and the top off, there is a true roadster feel wherever you happen to be sitting in the car.

Mazda Hakaze - Kite-Surfing Functionality

Kite-surfers are “wind chasers.” They get up in the morning, switch on their computer and search for the right wind conditions on the Internet for the best place to surf, call their friends, grab their gear and go. Mazda Hakaze meets the needs of such a lifestyle in several ways. For example, part of Hakaze’s **centre tunnel in the boot slides rearwards and out of the car**, to which a kite-surfboard can be attached, slid back in and transported. On the inside is an **Internet connection** on the integrated LCD screen in front of the front passenger. A **small digital camera** is mounted in the LCD screen, which can be rotated to film the road or the people in the car. The idea is that you can film a nice surfing spot or the route to it, then share it afterwards with your friends. The concept’s boot also has a practical **double floor construction** on both sides of the centre tunnel in the boot, whose underside is **made of rubber** making it ideal for transporting wet and sandy items. And finally, most of the switches in the car are **sensors that are under the surface**, meaning there are no shut lines. This prevents water or sand from getting into the switches and makes cleaning the vehicle on the inside easier as well.

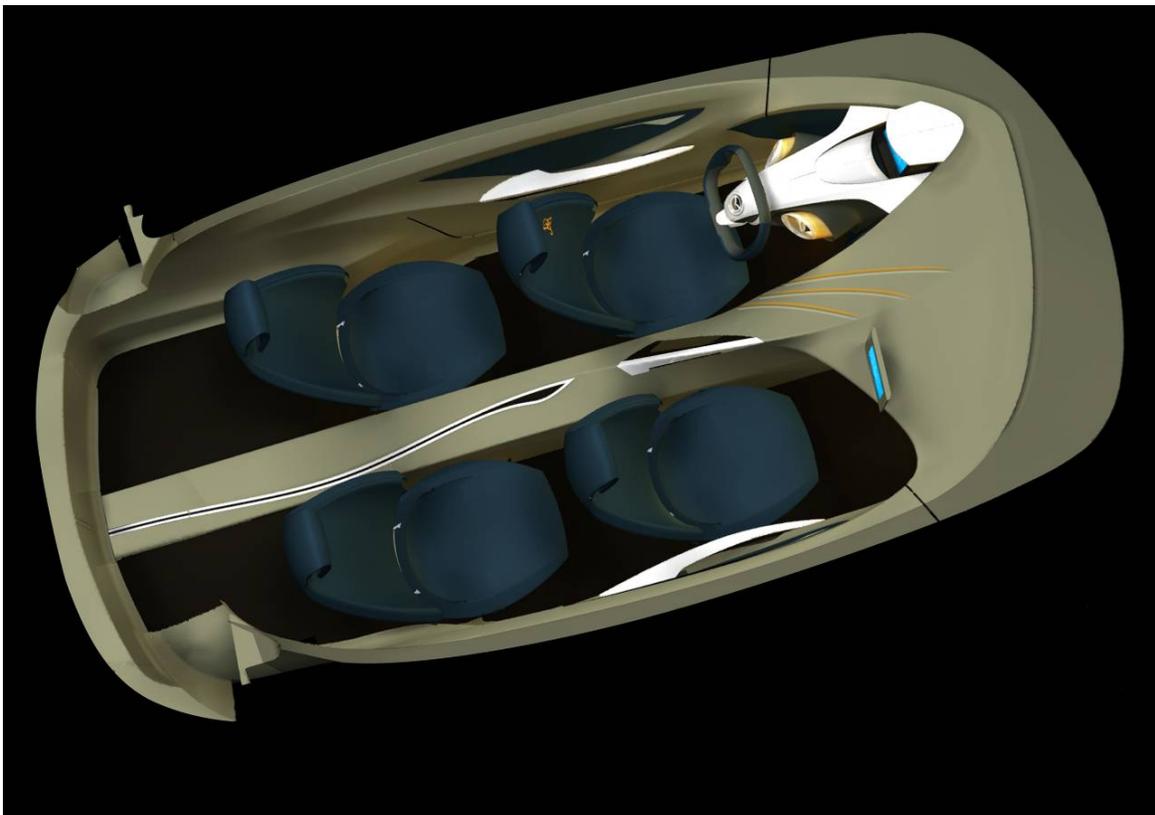
Interior Colours and Materials

“We want the interior to be a heightened touch experience full of natural-feeling surfaces. Natural in the sense that you come to the car and you have one impression. When you look a second time, you see new things happening everywhere,” says Luciana Silves, Designer for Colour and Materials who, along with Maria Greger, designed the colours and materials for Mazda Hakaze.

The colour scheme on the inside of Mazda Hakaze was chosen to enhance the natural flow forms and to underscore the car’s **kite-surfing functionality**. They reflect the ocean, continuing the beach and dune theme, with the floor a dark brown, the trim, dashboard, doors and centre panel a greenish beige, the four seats in a deep blue. This is combined with unique texturing of materials meant to enhance the Nagare flow strategy with natural feeling surfaces and patterns. Many of the concept’s interior materials are grained using new Flotek® technology, which can create different textures on a single surface. Before, materials had to be embossed using the same repeating patterns. With this new graining technology, the Colour and Material’s team was able to make asymmetrical and creatively-patterned surfaces that mimic natural irregularities.

The floor, for instance, is made of soft, natural leather - great for bare feet just off the beach - embossed in a flow pattern with a patina of various textures and slight imperfections that give a natural feel compared to artificially homogeneous material like carpet. The dashboard also has a special grain over it that feels sandy in some places and has line texture in others, which enhances the flowing Nagare forms by making them not only look natural, but feel natural as well.

This touch experience also extends to the seats of Mazda Hakaze, which are made of smooth, high-tech leather with a surface coating to make them feel similar to the material used for wet suits, but with a higher quality. The driver's seat is surrounded in a cocoon-like cockpit and continues the kite-surfer appeal with wet suit stitching and badging in orange Kanji script, while the other three seats have water droplets printed on them for a wet and wild look. The result of all these efforts is a very interactive, even sensual interior surfacing where passengers can discover new touch sensations every time they get into the car.

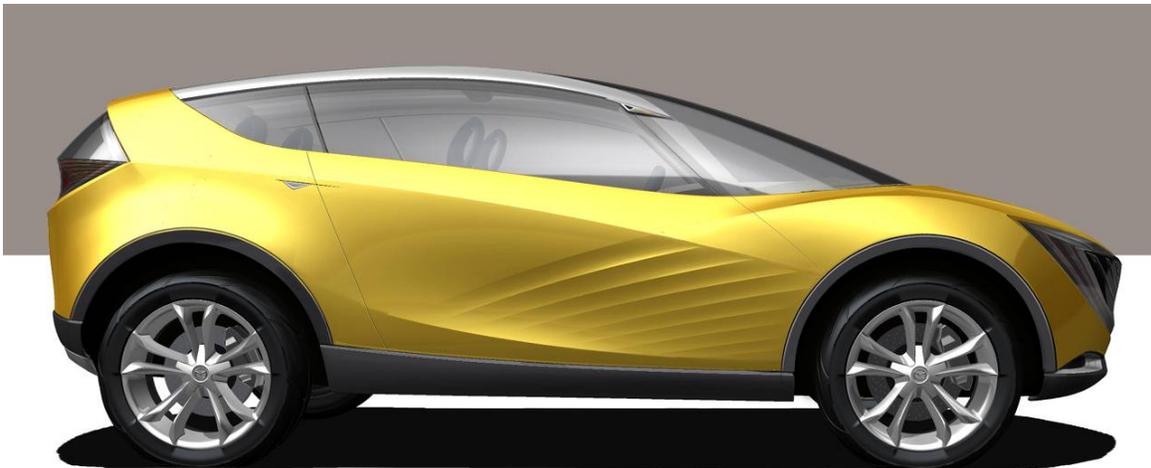


5. Powertrain & Chassis

Ready for Off-road Fun

The Mazda Hakaze design concept has been conceived to be equipped with either a **powerful DISI* petrol engine or a diesel engine**. The MZR 2.3-litre DISI petrol is a high-performance turbocharged engine with direct injection that is coupled to Mazda's active torque-split all-wheel drive transmission. This is Mazda's latest MZR petrol powertrain technology and is an ideal match to the adventurous and fun nature of Mazda Hakaze. It delivers high torque and power, 6-speed sport automatic transmission and beach-ready four-wheel drive traction.

Combined with Mazda Hakaze's aerodynamic shape and lightweight body, the engine would not only be fun to drive, but would also use acceptable amounts of petrol. It has MacPherson front struts and multi-link rear suspension for agile, Zoom-Zoom handling, whether at the beach or in the city.



* Direct Injection Spark Ignition

6. Technical Data

Dimensions	Overall length	4420 mm
	Overall width	1890 mm
	Overall height	1560 mm
	Wheelbase	2650 mm
	Seating capacity	4
	Boot volume	400 l
Engine	Type	MZR 2.3 DISI turbo petrol
Transmission	Type	6-speed electronically controlled sport automatic gearbox. Mazda's active torque-split all wheel-drive transmission
Tires & Wheels	Type	Dunlop 255/50 R 20 20" x 9 J