

Let's get wet!

**RINSPEED'S ZERO-EMISSION WORLD DEBUT
AT THE GENEVA MOTOR SHOW—
A GREEN "FISH" WITH Q-FACTOR**

This could be just the ticket for a hot summer day out at Saguaro Lake. Thirty years after the movie thriller "The Spy Who Loved Me" hit the silver screen, sQuba is the first car that can actually "fly" underwater.

If the situation got too hot for 007 he'd go underground—or underwater, as demonstrated by Roger Moore in the 1977 James Bond movie, when he dove below the waves in a sleek vehicle that moments before seemed to be an ordinary car. The only catch: the scene never really took place; it was an animation.

With the sQuba, the world's first real submersible car, the movie trick now becomes reality. Rinspeed boss Frank M. Rinderknecht is known for extraordinary automotive creations. The acknowledged James Bond enthusiast and Swiss automobile visionary kept revisiting this scene in his mind over and over: "For three decades I have tried to imagine how it might be possible to build a car that can fly under water. Now we have made this dream come true."

And it is this submerged stable flight at a depth of 10 meters that sets the sQuba apart from military vehicles. While the latter can go underwater, they are limited to driving slowly over the submerged ground. Rinderknecht: "It is undoubtedly not an easy task to make a car watertight and pressure resistant enough to be

maneuverable under water. The real challenge, however, was to create a submersible car that moves like a fish in water."

It also had to be a sports car. The original was converted by Swiss engineering specialist Esoro. First, the combustion engine was removed and replaced by several electric motors. Three are located in the rear, with one providing propulsion on land, the other two driving the screws for underwater motoring. These are supplemented by two powerful Seabob jet drives in the front, which "breathe" through special rotating louvers. The rotating outlet jets were designed to be extremely light yet twist-resistant, using high-tech carbon nano tubes.

KEEP RIGHT >>

TECHNICAL DATA

MEASUREMENTS

Length	3'785 mm
Width	1'940 mm
Height	1'117 mm
Wheelbase	2'300 mm
Track front	1'470 mm
Track rear	1'520 mm
Ground clearance	130 mm
Empty weight	approx. 920kg

PERFORMANCE

Top speed	> 120 km/h
Acceleration 0-80 km/h	7.1 sec
Water speed	> 6 km/h
Under water speed	> 3 km/h
Dive depth	10 m

ENGINES

Street	Electric
Power output	max. 54 kW
Wat	4'500 /min
Torque	160 NM at 1'500 /min
Water—stern propellers	Electric
Power output	2 x 800 W
Diving—bow jet drives	Electric
Power output	2 x 3.6 kW Rotinor
Batteries	Lithium-Ion
Voltage	6 x 48 Volt

PROPULSION

Power train	Rear wheel drive
Gearbox	R - N - F

SUSPENSION

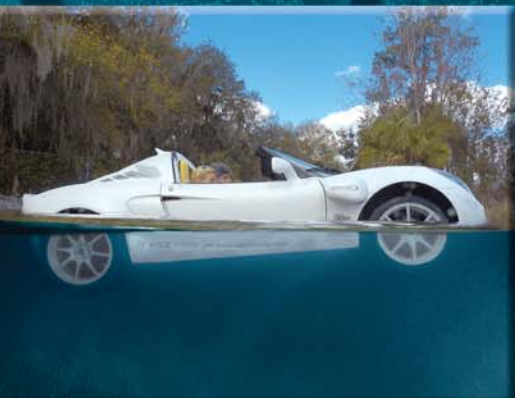
Chassis	Steel
Body panels	Carbon Nano Tubes
Seating capacity	2
Front suspension	Double wishbone
Rear suspension	Double wishbone
Dampers/springs	KW automotive
Steering	Rack & pinion

TIRES

Front tires	Pirelli P Zero 205/40 R17
Front wheels	AEZ 7.5 x 17"
Rear tires	Pirelli P Zero 225/40 R18
Rear wheels	AEZ 8 x 18"

MISCELLANEOUS

Air supply	1x 15 liter + 1x 18 liter ScubaPro
Laser scanner	lbeo
Lubricants	Motorex
All data without guarantee .	



You drive the sQuba into the water and it floats—that is, until you crack the door to let the water in. Immediately, the car starts on its way to the underwater world. The occupants' breathing air comes from an integrated scuba tank. "For safety reasons we have built the vehicle as an open car so that the occupants can get out quickly in an emergency," says Rinderknecht. "With an enclosed cabin, opening the door might be impossible." But safety wasn't the only reason for choosing an open-top design: with an enclosed volume of just two cubic meters of air the vehicle weight would have to increase by a full two tons to counteract the unwanted buoyancy, giving the sQuba the land mobility of a turtle. Without occupants the sQuba surfaces automatically. It is even capable of autonomous driving on land, thanks to a sophisticated laser sensor system—without any help from the driver or passenger.

The sQuba is a zero-emission car. Power is supplied by rechargeable lithium-ion batteries. The Swiss are world pioneers in hydropower—the sQubas' filling station is the water reservoir. It is no surprise that the vehicle features powerful yet energy-saving LED lighting technology. Even the Motorex lubricants used in the 'sQuba' are biodegradable. For the Rinspeed boss that is a meticulousness stemming from conviction: "The sQuba lets me be one with the elements and lets me immerse myself in a new and fascinating world... It is our duty to protect this world in which we are guests, to the best of our ability," says Rinderknecht.

For shore leave the sQuba relies on a stainless coil-over suspension from KW automotive and large Pirelli tires mounted on custom-made forged light-weight wheels from AEZ with 17- and 18-inch diameters. But the sQuba is really at home in the water. There is an innovative salt-water resistant interior with genuine mother-of-pearl trim and diamond-plated non-slip inlays, normally used in high-tech abrasives. The high-tech VDO instrument cluster and controls create a futuristic ambiance and allow controlling all vehicle functions even while submerged.

For the ninth time in Rinspeed development, Swiss engineering company Esoro was hired to serve as general contractor for the entire project, responsible for project management, implementation of new

technologies, engineering, rendering, design and manufacture of the Rinspeed sQuba. Esoro has been a contract developer of concept vehicles, components and products for 17 years, with a primary focus on lightweight construction and mobility. Esoro develops fiber-reinforced components from initial conception through pre-production samples.

Motorex specialists put together a very special lubricant plan, with all the lubricants and greases in use rapidly biodegradable. A goal from the beginning was to minimize pollution in every aspect, especially in the water.

Seabob makes the world's fastest diving and water scooter, which powers through the water with 10 gears and up to 7 hp. Its maximum speed is up to 22 km/h on the surface and 16 km/h under water. Seabob draws its power from 14 lithium-ion accumulators. Their internationally patented electric jet-stream system makes a water vehicle which is entirely silent and emission-free in its performance, the basis for a 100% environmentally friendly claim. Seabob is manufactured by Cayago AG in Stuttgart, Germany.

The underwater world, with its fascinating light and interplay of colors, was the inspirations for the sQuba's interior design. The color palette takes its cue from the dazzling color of the Yellow Tail Snapper; its iridescent silver and its bright yellow contrast with the deep blue of the sea. Knitted fabric has been designed with a silver/yellow fish scale texture; the padding has been finely quilted and has a distinctive herringbone pattern. A diamond-coated non-slip surface in silver/yellow—with a "sushi roll" on the edges for additional grip—has been used on the pedals, combining safety with a mysterious shimmer.

One of the most attractive, luxurious materials the sea has to offer has been used for the door linings, steering wheel and gear knob: mother-of-pearl. Veneered like a fish scale the elegant organic material on the gear knob corresponds to the pearly fibred yarn, also manufactured using the "tweaving" process, which discreetly shimmers under the textile coverings and on the display. Pure luxury for any vehicle.

It took the highly skilled development team just six months to realize the entire sQuba concept car project. ■

