For immediate release

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SIM-Drive Corporation

Advanced Development Model No. 2 Achieves 351 km of Range per Charge and an Unprecedentedly Comfortable Cabin Space
— Increasing Mass-production Reliability and Demonstrating the Potential of Developing Various Models —

JAPAN--SIM-Drive Corporation (head office: Kawasaki City; president: Hiroshi Shimizu), which aims to make use of electric vehicles widespread through its high technological capabilities and new open-source business model, recently completed SIM-WIL (Table 1). This prototype is the result of the Advanced Development Project for Model No. 2, a project that commenced in January 2011 and lasted approximately one year.

The project objective was to produce an advanced development model for electric vehicles on a trial basis with the aim of starting mass-production around 2014. A total of 34 organizations (Table 2) that intend to enter the electric vehicle business in the future participated in this project.

SIM-WIL was developed not only to achieve a range of more than 300 km per charge, which was already achieved by Model No. 1 (SIM-LEI), but also to increase reliability to the level required during future mass-production as well as to demonstrate the potential of developing various models to best communicate the appeal of electric vehicles to a broader range of consumers. At the same time, SIM-WIL is an electric vehicle with new improvements in acceleration, riding comfort, and livability—requirements that must be met in order to popularize electric vehicles.

SIM-WIL, which uses two of SIM-Drive's fundamental technologies—a direct drive in-wheel motor and component built-in frame—is characterized by its:

1. Achievement of 351 km of range per charge
2. Cabin space, which is comparable to that of large cars (E segment) even though it is classified as a small car (B segment)
3. 0–100 km/h acceleration in 5.4 seconds, comparable to that of a mid-level sports car

Moreover, the following characteristics of SIM-WIL are also worthy of special mention:

1. Use of 47 different technologies contributed by participating organizations
2. Main body combining a steel monocoque structure and a steel space frame
3. Minimum turning radius of 5.4 m despite the long wheelbase

Origin of the name SIM-WIL

"WIL" is pronounced in the same way as the English word "will," which refers to "volition" and "determination," thereby suggesting a model that looks to the future. It is also an abbreviation of the phrase "With Innovation and Link." With this name, SIM-Drive intends to highlight the significance of

the innovative technologies contributed by participating organizations and their cooperation and unity. Also, SIM-Drive wished to name the model such that it symbolizes Japanese technology and the ties among the Japanese people as the company hopes for the country's speedy reconstruction from the Great East Japan Earthquake.

Design concept

SIM-WIL has an "urban groove" design concept and its target customers are "echo boomers." The model's compact design provides users with high mobility, enabling them to maneuver nimbly about the city.

SIM-WIL uses a "cabin forward" design in which the cabin is arranged in the front of the body to best make use of the advantage of in-wheel motor electric vehicles, which do not have their engines in the front of the vehicle. A 2,950-mm long wheelbase creates a well-balanced, dynamic profile, giving the side windows of the long cabin a sleek and flowing look.

Forty-seven different technologies inside

SIM-Drive's Advanced Development Project is characterized by its collaboration with participating organizations in order to create an advanced development model. Participating organizations provided 47 different technologies, which are listed in Attachment 1.

Livability

SIM-WIL offers a cabin space comparable to that of large cars (E segment) though it looks like a small car (B segment). It provides sufficient foot space because cabin arrangement is unaffected by battery placement. The component built-in frame enables batteries and other components to be installed such that they do not affect the body size.

The dashboard has three displays which serve as human-machine interfaces. Specifically, there is the display for showing information on driving and the vehicle itself, which is located in front of the driver's seat; the display used for navigation and other purposes, placed in the center of the dashboard; and the display for providing information and entertainment, which is installed on the passenger seat side. This last display is expected to provide not only an Internet connection but also various types of in-cabin entertainment in collaboration with comprehensive information and entertainment providers as well as smart houses that make liberal use of communications, telematics, and other technologies.

Main body

The component built-in frame, one of SIM-Drive's underlying technologies, has further evolved from the version used in SIM-LEI. SIM-WIL proves that several different models can be developed from the same platform. For its upper body, SIM-WIL uses SIM-Drive's steel space frame (SSF), realizing a monocoque steel space frame in an actual model for the first time. SSF enables a structure that meets all three requirements: low investment, lightweight, and high rigidity. The rear doors can be opened up to 80 degrees, the widest of any vehicle category.

Suspension system

SIM-WIL represents a further evolution of the suspension and braking systems used in SIM-LEI. In particular, the developers reviewed the geometry of these systems and improved on SIM-LEI's stability and maneuverability; the new model achieves a minimum turning radius of 5.4 m despite its long wheelbase (2,950 mm).

In-wheel motor

The internal structure of the motor was reexamined in order to reduce torque ripples (vibrations due to the uneven revolution of the motor upon starting operation), which was a problem with SIM-LEI. SIM-WIL significantly reduces such torque ripples. The in-wheel motor maintains balance among the three basic performance indicators: output, efficiency, and noise level.

Table 1. Spec of SIM-WIL

Overall Length/Width/Height	4150mm/1715mm/1550mm
Number of seat	5 people
Vehicle Weight	1580kg
Drive System	Outer rotor direct drive in-wheel motor
Drive	4WD
Minimum turning radius	5.4m
Range per charge （JC08 mode）	351km
Driving energy consumption （JC08 mode）	99.7Wh/km
0→100km/h acceleration	5.4 seconds
Maximum speed	180km/h
Battery capacity	35.1kWh（Lithium ion battery）
Charging time	3h（CHAdeMO）、12h（200V）

Table 2. Participating Organizations

Advantest Corporation	Nihon Parkerizing Co., Ltd.
Asahi Kasei Corporation	Oiles Corporation
Bosch	Polyplastics Co., Ltd.
CAR MATE MFG. CO., LTD.	PSA Peugeot Citroën
Chiyoda Corporation	Somic Ishikawa Inc.
Dassault Systems K.K.	Sunstar Engineering Inc.
Du Pont Kabushiki Kaisha	Takata Corporation
Du Pont-Mitsui Polychemicals Co., Ltd	TBK Co., Ltd.
Hitachi Advanced Digital, Inc.	Tohoku Electric Power Co., Inc.
Hitachi Chemical Company, Ltd.	Tokyo MK Corporation
Kawasaki Industrial Co., Ltd.	TOPPAN PRINTING CO., LTD.
Kuraray Co., Ltd.	Toray Industries, Inc.
Mikuni Corporation	Toyota Tsusho Corporation
MITSUUROKO CO.,LTD.	T.RAD Co., Ltd.

(Alphabetical order)

34 participating organizations in total, including non-disclosure organizations

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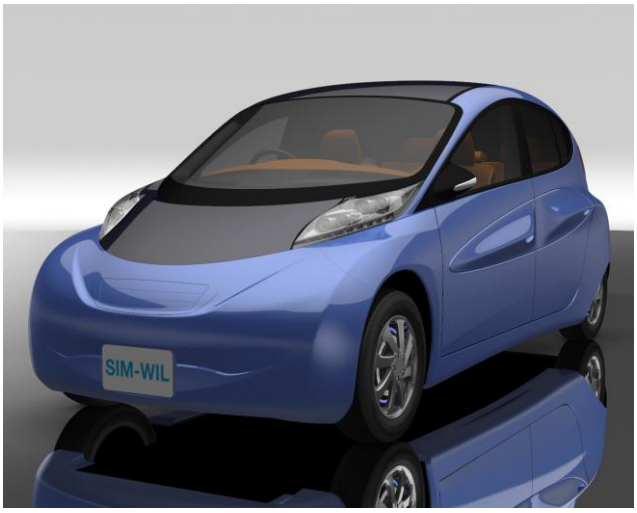
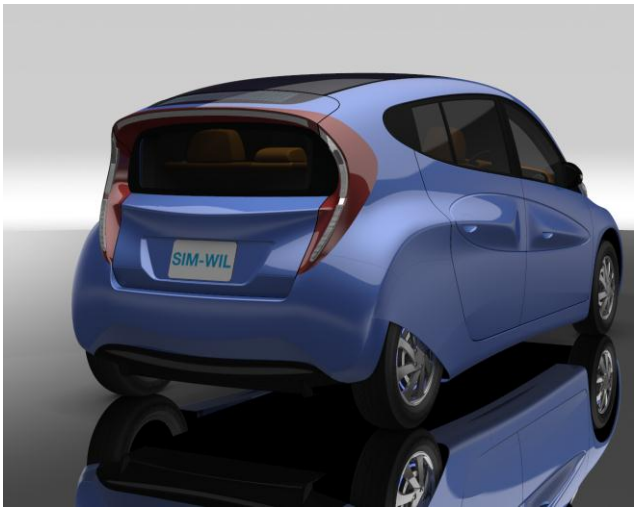

SIM-WIL


SIM-WIL

Attachment 1. Forty-seven different technologies inside

Company	Proposed Technology	Outline of Technology
CAR MATE MFG. CO., LTD.	Sending car information module	The module send the drive-by data by wireless LAN [DriveMate Connect for SIM]
CAR MATE MFG. CO., LTD.	Application for Smartphone	The application that visualize the test data of vehicle as developing tool「DriveMate Diagnosis」、 The application shows electricity consumption at real time on monitor「DriveMate EView」
CAR MATE MFG. CO., LTD.	Zero-wiper	Hyper water-shedding glass coating with no wiper
Chiyoda Corporation	Project management method	
Du Pont Group	3D substrate	Kapton® JP: Ultralight 3D substrate
Du Pont Group	Reflector	Kapton® JP: Ultrathin and light refrector
Du Pont Group	New design parts	Corian®: Translucent Solid Surface
Du Pont Group	Insulater for bus bar	Kapton®: Highly reliable polyimide insulation tape with high thermal resistance and high electrical insulation
Du Pont Kabushiki Kaisha	Paint for body	Cromax®Pro (Waterborne basecoat), ChromaClear® G2-4700STM Hyper CureTM: Top coat system enables reduction of VOC and energy consumption. Waterborne Basecoat＋Hyper Cure Technology clear coat.
Du Pont Kabushiki Kaisha	Floor mat	Sorona®: Fiber, made, in part, with annually renewable plant-based ingredients, reducing dependency on oil.
Du Pont Kabushiki Kaisha	Bobbin	Zytel® HTN: High performance polyamide resin which are well balance mechanical , electrical insulation and chemical resistance. Specially, superior toughness provides coil winding speed up (which support to increase productivities.)
Du Pont Kabushiki Kaisha	Varnish	Voltatex®: Low emission styrene-free 1K impregnating resin
Du Pont-Mitsui Polychemicals Co., Ltd.	Solar cell with HIMILAN®ES	New sealant eliminating cross-linking process to enhance the merit of the flexibility of the PV. It can be formed continuously, and with long life durability.
Kawasaki Industrial Co., Ltd.	Suspension parts (knuckle)	
Kuraray Co., Ltd.	MAGILOCK™	To fasten seat covers on car seats and in construction
Kuraray Co., Ltd.	Insulator	Void Insulator
Kuraray Co., Ltd.	acoustic material Insulator	[FLEXTAR®] Formability and form sustainability are superior to glass wool
Kuraray Co., Ltd.	Surface emitting LED	To be supplied as a set module with LED; Acrylic surface photogene formable to the surface shape
Mikuni Corporation	Vacuum Pomp	Silent vacuum pomp
Mikuni Corporation	Grill Shutter	Active Grill Shutter（Combine both aerodynamics and AC efficiency）
Mikuni Corporation	Water Pomp	Non-seal structure. Small and high reliability. Choose from Pierburg MIKUNI Pump Technology product lineup.
Nihon Parkerizing Co., Ltd.	Phosphate corrosion control film forming operation chemical	Preparation chemical for ED painting
Oiles Corporation	Acceleration pedal with improved merchantability	Driving feedback function is added on the acceleration pedal, which will substitute with the conventional indicator inside the instrument meter. It would compensate to promote economy driving style.
Somic Ishikawa Inc.	Upper arm	Including ball joints
Somic Ishikawa Inc.	Rotary damper	Seat reclining speed control damper
Sunstar Engineering Inc.	Brake Rotor	Stainless maid brake rotor
Sunstar Engineering Inc.	Seal material Adhesive material	Iron×CFRP (different material bond) Weldbonding（reduce spot） Surface stiffness glue
T.RAD Co., Ltd.	Invertor Radiator	Radiator with the most suitable heat capacity and radiator fan for [SIM-WIL]
Takata Corporation	Steering wheel	Steering wheel with soft fabric airbag module cover; SIM-WIL does not mount airbags, but will develop in case of airbag adoption
Takata Corporation	Child Seat	
Takata Corporation	Seatbelt	Similar product of stock car（Non air bag）. New fitting point.
Takata Corporation	CAE Analysis	Simulation which is individual to single occupant will be done by the acceleration rate data of vehicle model obtained with SIM-LEI model.
TBK Co., Ltd.	Brake pad	Make the brake pad for SIM-Drive's request spec.
TBK Co., Ltd.	Water Pomp	High efficiency impeller, mechanical seal less, non-ball bearing, correspond variability flow control
Toray Industries, Inc.	CFRP	CFRP prepreg
Toyota Tsusho Corporation Hitachi Advanced Digital, Inc.	TTTech ECU	ECU mass-produced in Austria mainly for construction machines with standardized hardware/software. High reliability and stable functions.

Including non-disclosure technologies, (Alphabetical order)