**WORLD DEBUT OF THE LEXUS UX, A NEW GENRE OF CROSSOVER**

* World debut for the Lexus UX – the first-ever Lexus - compact crossover at the 2018 Geneva Motor Show
* A new genre of crossover, an “Urban Explorer” that offers a fresh take on luxury lifestyles
* Stylish and distinctive exterior design execution generates a unique vehicle identity, combining a secure and spacious feel yet condensed appearance
* Compact, driver-centric cockpit with commanding view of the road
* Interior includes new trim finish inspired by the grain of Japanese paper, and traditional *sashiko* leather upholstery quilting
* First Lexus to be built on the new global architecture platform, named GA-C, delivering the lowest centre of gravity in its class and exceptional body rigidity, securing agile, hatchback-like driving experience
* New, fourth generation hybrid system in the UX 250h with higher efficiency and more powerful electric motor
* UX 200 powered by new 2.0-litre petrol engine with high thermal efficiency and new direct shift continuously variable transmission

**INTRODUCTION**

Lexus hosts the world debut of the new UX at the 2018 Geneva Motor show, a free-spirited crossover crafted expressly for the modern urban explorer who seeks a fresh, contemporary and dynamic take on a luxury lifestyle.

Chika Kako, Chief Engineer of the UX said: “Right from the start, I focused on the target customer – mid-30s, millennials, men and women – and tried to understand how they would expect a premium compact vehicle to change their lives and enable new experiences. That’s what led us to the basic vehicle concept for the UX of Creative Urban Explorer – a new genre of crossover.

“Design is still the main purchase reason for every car, it is the design that promises to the customer what the car can deliver. With the UX the design team have created a style which delivers the strong safe feeling that sets crossovers apart from hatchbacks, but combined it with a very dynamic dimension.

“We also focused on giving the UX a distinctive driving feel that would resonate with the customer. I wanted to overturn the image of a crossover with a high body that requires careful manoeuvring and offer a car with nimble performance and excellent manoeuvrability that make it as easy to drive as a hatchback.”

The UX is a new gateway vehicle for Lexus, it is rich in the qualities that define the brand: brave design, superior craftsmanship, exhilarating performance and imaginative technology.

Led by Chief Engineer Kako and Chief Designer Tetsuo Miki, the development teams have worked closely to produce a car in which the exterior and interior appear almost seamlessly linked. Powerful bodywork, notable for its impressively flared front and rear wings, clothes a cabin that provides a driver-focused cockpit and an open, relaxing space for passengers. While still offering a commanding view from the steering wheel, the UX offers a driving position that makes the crossover feel more like a responsive hatchback to drive, rather than an SUV.

The UX further marks a series of technical innovations, including the first use of the new global architecture platform named GA-C, which delivers fundamental high structural rigidity and a low centre of gravity, thus securing excellent ride quality and stability. New powertrains are also deployed for the first time: a new 2.0-litre petrol engine that reaps the performance and fuel economy benefits of high thermal efficiency; and a new mid-power, fourth generation self-charging hybrid system.

**BRAVE DESIGN**

Lexus has produced a design for the UX that expresses the sense of security that is expected of a crossover, but which equally communicates agility and a fun-to-drive quality with sleek, attractively condensed appearance. The result is a model with a unique identity in its segment that makes a strong and appealing design statement. There was close collaboration among all team members, resulting in a harmonious shape that almost seamlessly links the inside and outside of the car.”

**Exterior design**

The aim for the UX was not to conform to the established, solid crossover look, but to achieve a compact design that is both strong and stylish, breaking with the conventions of the segment to deliver something more distinctive and dynamic.

This design approach can be seen at work in the way the front and rear wings flare strongly outwards in relation to the car’s basic form, which flows out from the lines of the spindle grille to envelop the cabin. The meticulously formed exterior surfaces are simple but captivating, expressing strength and dynamism.

At the front, the arrangement of the headlights and the spindle grille are incorporated into a deep, strong shape created by the hood and bumper to generate a sense of security. At the rear, a condensed styling treatment contrasts sharply with the flared wings to emphasise the UX’s dynamic and strong crossover qualities.

Details include daytime running lights, arranged in an arrowhead motif above the headlights to emphasise the Lexus L-shaped illumination signature. The spindle grille has a new block-shape mesh pattern with individual elements that gradually change in shape as they radiate out from the central Lexus emblem, giving a three-dimensional look that changes according to the angle of view.

The rear combination lamps have an original and advanced design that is not only eye-catching but also aerodynamically efficient while improving vehicle handling. The right and left units are connected by a continuous, single line of light across the back door to give the UX’s rear a unique appearance. Formed by a sequence of 120 LEDs, this tapers gently towards the centre, measuring just 3mm thick at its narrowest point. This design is set to become a world-first Lexus signature feature.

Four new aluminium wheel designs have been produced for the UX, with 17 and 18-inch diameters. The five-spoke 17-inch wheels have a world-first aerodynamic design, details of which are given in the Imaginative Technology section below.

**Dimensions and packaging**

The UX measures 4,495mm long, 1,520mm high and 1,840mm wide and has a 2,640mm wheelbase. An 870mm couple distance ensures ample space for rear seat passengers, while the load area is a generous 791mm long.

The car’s proportions allow for excellent manoeuvrability, with a best-in segment 5.2m turning radius. For the driver, a reduced distance between the hip and heel points gives the feel of driving a hatchback rather than an SUV-type vehicle.

**Interior design**

The interior of a car is the place where the driver and the car connect. As such,the designers sought to eliminate the boundary between exterior and interior, creating a seamless continuity. The effect gives the driver an excellent field of vision with a clear sense of the vehicle’s body dimensions.This concept is most evident from the driver’s seat, where the upper section of the instrument panel appears to extend out beyond the windscreen. Conversely, seen from outside, the hood looks as though it connects directly to the instrument panel. This is inspired by a traditional Japanese concept which blurs the boundary between the inside and outside of a house.

The human-centred approach extends to the design of the UX’s interior, with a “seat-in-control” concept that focuses operation of all the principal vehicle functions around the driver’s side of the cabin.

At the same time, this helps create a more relaxing atmosphere around the passenger space. The instrument panel has a low, unobtrusive design and the slim A-pillar mouldings have been shaped to improve visibility and give the kind of commanding outward view that is expected of a crossover.

Chief Engineer Kako has drawn on her earlier experience in materials development and time spent working in Europe to help define the quality and appearance of the interior, in particular applying an uncluttered “less is more” approach to achieve the desired effect.

She explained: “In the course of (my earlier) work, I learned that even if the elements that make up the interior, such as the seats, instrument panel and ornamentation, are all made to a high specification, that doesn’t necessarily mean that the overall look will give an elegant impression. When it comes to determining whether an interior is good or bad, controlling the overall balance between the continuity, unity and contrast is more important than the relative specifications of individual components.”

The human-centred design thinking included paying particular attention to the appearance and ease of use of the centre console that integrates audio switches into a palm rest. The seatback shape has been defined to make operation of controls possible while maintaining a comfortable, natural posture.

Getting in and out of the vehicle has been made easier and more comfortable through optimal placing of the hip-point, a cut-off profile for the rocker panel below the doors and shaping of the seat cushion.

**SUPERIOR CRAFTSMANSHIP**

The superior craftsmanship that defines Lexus vehicles is evident both in the overall high build quality of the new UX – built at Lexus’ Kyushu factory, home also to production of the CT, NX and RX models - and in fine detailing, such as the application of different, unique finishes in the cabin.

***Sashiko* leather quilting**

The smooth leather upholstery available for the UX is inspired by *sashiko*, a traditional Japanese quilting technique that is also used in the making of judo and kendo martial arts uniforms. The quilted leather is decorated with new perforation patterns that form mathematical curves and gradations in perfect alignment, enhancing the appearance of the seats.

**Ornamentation inspired by Japanese paper grain**

The UX’s sweeping instrument panel covers a large area, connecting the driver and passenger sides of the vehicle. This provides an opportunity to accentuate the atmosphere of the cabin using fine-quality ornamentation, with a choice of two grain patterns and four colours.

The UX is the first Lexus model to offer a new trim grain finish that’s inspired by the grain of Japanese paper, known as *washi*, familiar in traditional Japanese homes. Created using slush-moulding and a carefully chosen surface finish, it evokes a calm and warm feeling.

A leather grain finish is also available, shared with the LC coupe and LS flagship sedan and building a consistency of quality across the Lexus brand.

**EXHILARATING PERFORMANCE**

The UX has been engineered to deliver “elegant performance with peace of mind” consistent in all Lexus models. The foundation is the new global architecture platform named GA-C, used for the first time in a Lexus.

Two new powertrains make their debut: a new, fourth generation self-charging hybrid system with 178 DIN hp/131kW[[1]](#footnote-1) and the choice of front wheel drive or E-Four in the UX 250h; and a new 2.0-litre petrol engine with high thermal efficiency, available with a new Direct Shift continuously variable transmission in the UX 200.

Suspension, steering and tyres have also all been developed to support Lexus’ dynamic and performance ambitions for the UX.

**First use of new global architecture platform named GA-C**

The UX is the first Lexus to be constructed using the new global architecture platform named GA-C, the foundation for the car’s dynamic performance. Its development focused on giving the UX nimble and instant response to the driver’s inputs, while communicating a sense of stability and safety.

The platform allowed for an increase in rigidity, including a high-tensile and ring structure around the rear and back door openings. Highly rigid adhesive and Laser Screw Welding have been used in key locations, greatly enhancing overall rigidity.

**Low centre of gravity**

The UX has the lowest centre of gravity of any vehicle in its class, thanks to the design of the GA-C platform. This characteristic, central to the car’s fine ride and handling quality, is also supported by weight-saving measures in the body construction, including the use of lightweight aluminium for the side doors, fenders and hood, as well as a resin material for the back door.

**Suspension and steering**

MacPherson strut front suspension and a double wishbone arrangement at the rear have been designed and tuned to promote ride comfort and sharp response. Special attention has been paid to shock absorber performance and the quality of the damper oil, oil seals and friction control.

An Electric Power Steering system with a new compact and highly rigid column assist has been adopted for the UX, with a larger diameter column shaft. This supports handling with crisp, immediate response to driver inputs, with good steering feel.

**UX 250h with fourth generation self-charging hybrid powertrain**

The Lexus UX 250h will also use a new fourth generation hybrid electric system that features a new 2.0-litre four-cylinder petrol engine and an electronic continuously variable transmission (CVT). It will be available both with front-wheel drive and with Lexus’ E-Four.

The new engine is notable for its high thermal efficiency and output, with provisional performance figures for the full hybrid self-charging system (engine and electric motor combined anticipating a maximum 178 DIN hp/131kW).

The powertrain development programme focused not just on outstanding fuel economy, but also on a high level of driving appeal. Particular efforts were made to reduce any “rubber band” effect in the operation of the hybrid system and transmission, by optimising the level of electric motor assistance and engine rpm to generate a linear acceleration feel without the engine running at high revs. Engine rpm are synchronised with the increase in vehicle speed to create an immediate and continuous acceleration feel, responding to the driver’s intentions and creating a pleasant driving feel.

**New hybrid transaxle, power control unit and battery**

The system has a compact and lightweight new transaxle and Power Control Unit, designed to minimise power losses through heat and friction.

A new nickel metal-hydride (NiMH) battery is used with a revised construction and more compact cooling system that allows for smaller dimensions overall. This allows the battery to be located below the rear seat, minimising intrusion in the load space and supporting the UX’s low centre of gravity.

**E-Four**

The E-Four system gives the UX 250h all-wheel drive capability by placing an additional electric motor on the rear axle. Power distribution between the front and rear axles is automatically optimised when accelerating, cornering, or driving on slippery surfaces. When a loss of front-wheel grip is detected, the amount of power that can be directed to the rear of the car has been increased from 60 to around 80 per cent, at speeds up to 70km/h, contributing to excellent handling stability.

**UX 200 with new 2.0-litre petrol engine**

The UX 200 is powered by a new 2.0-litre petrol engine, engineered to provide a high level of dynamic and environmental performance with excellent fuel economy. The in-line four-cylinder unit uses high-speed combustion to achieve enhanced thermal efficiency.

Features which enable this across a wide range of driving scenarios include multi-hole direct fuel injectors, a continuously variable capacity oil pump, a variable cooling system and VVT-iE intelligent variable valve-timing on the intake side. The result is a maximum thermal efficiency of around 40% - a best-in-class level for a passenger vehicle engine.

**Direct Shift-CVT**

The new 2.0-litre engine featured in the UX 200 is matched to Lexus’ first Direct Shift-CVT, engineered to provide the smooth, fuel-efficient performance of a conventional continuously variable transmission, but with a direct driving feel.

A conventional system uses two pulleys, connected by a belt, that can change their radius seamlessly, and thus change the effective gear ratio, without any “step” effect.

The new Direct Shift-CVT has additional gears to achieve acceleration at start-up like a manual transmission. This gives the smooth acceleration of a CVT, but with a direct acceleration feel.

In addition, this use of gears for acceleration from start-up reduces the need for the CVT’s pulleys and belt mechanism to be used in the low gear range. This allows more room to be dedicated to the higher gear range.

High-speed, high-response gear-shifting technology, using a multiplate wet clutch developed for use in automatic transmission, is used to switch power from the gear to the belt and pulleys. This secures performance in response to different situations, from smooth and fuel-efficient driving to sporty performance with fast shifts.

The design also maintains the benefits of a CVT, which can freely adjust the gear ratio to simulate changes like multi-gear automatic transmission under heavy acceleration. This gives linear acceleration feel with synchronisation of the increasing engine revs and vehicle speed.

**IMAGINATIVE TECHNOLOGY**

The unique character of the Lexus UX is expressed in the application of imaginative technology in detailed aspects of the car, emphasising its depth of quality to customers, particularly those who might be buying a premium brand vehicle for the first time.

**Safety**

The UX is available with the latest version of Lexus Safety System +, including a Pre-Collision System (PCS) developed to be able to recognize pedestrians at night.  Additionally, PCS radar detection has been extended to enable detection of cyclists during the day – road users who are involved in a high number of traffic accidents[[2]](#footnote-2). The package provided on the UX also includes Lexus Co DRIVE (featuring Lane Tracing Assist and Adaptive Cruise Control), Automatic High Beam/Adaptive High-beam System, and Road Sign Assist[[3]](#footnote-3).

A Parking Support Brake detects the risk of the vehicle coming into contact with a stationary object in its path, or another vehicle approaching from behind, and will automatically reduce drive force, initiate braking and trigger sound and visual warnings to help reduce the likelihood of a collision, or lessen the damage if an impact does occur.

**World-first aerodynamic design details**

Lexus took a new approach to achieve the best possible aerodynamic performance from the UX’s rear combination lamps, wheel arch mouldings and, in a world first concept, aerodynamic wheels.

The Aero Stabilizing Blade Lights in the rear incorporate fins with a distinctive design that helps prevent airflow from wrapping around the rear of the vehicle. They make a noticeable contribution to keeping the rear of the car stable when turning and driving in crosswinds.

Painstaking adjustments were made to the lamps’ curved profile, with each change evaluated and verified in wind tunnel and real-world driving tests.

The wheel arch mouldings have flat sides and a stepped top section, which generates an airflow that helps keep reduce roll and keep the vehicle stable when the car is cornering, changing lanes or being driven in a straight line. Millimetre-precise adjustment of this step feature kept an optimal balance between the stabilising effect and design considerations.

The UX’s aluminium wheels have a world-first aerodynamic design that helps both keep the brakes cool and reduce wind resistance. Computer simulations and wind tunnel testing produced a profile shape for the wheel’s spokes that increased the amount of airflow that could be directed to cool the disc brakes, without compromising the coefficient of drag (Cd).

**Single knob ventilation control with wireless lighting**

The UX’s air vents have a new single-knob control for air flow direction and volume, illuminated using a new wireless system. By combining the two functions in a single control, the vents could be made larger, improving performance. Each control has an LED light source that is powered wirelessly, using electromagnetic resonance between two coils vibrating at the same frequency. Using the same design principle as the LC’s rear combination lamps, the vent lights use mirror optics to create the effect of floating lighting depth, even though the reflector element is only 3mm thick.

**UX F SPORT**

The F SPORT versions of the UX are clearly differentiated by styling treatment that emphasises a low and wide form, evoking sporty driving performance. At the front, an exclusive mesh grille references the Lexus F SPORT bloodline, with extra impact generated by large fog light bezels with L-shaped chrome mouldings and detailing that repeats the F-mesh pattern of the grille.

At the rear there is an exclusive bumper design with chrome highlights, projecting a secure, sporting image. Using a jet black ornamentation on the front and rear mouldings created a unified appearance, while the sporty quality is further reflected in exclusive 18-inch alloy wheel designs.

In the cabin the F SPORT-exclusive features include sports seats, made with a highly supportive integrated foaming technique, an eight-inch TFT colour display and an instrument meter with a moving outer ring. The F SPORT steering wheel has a dimpled leather covering (featured also on the shift knob) and there are sports aluminium pedals and footrest.

The F SPORT models benefit from exclusive tuning of the suspension, with adjustment to both springs and stabiliser bars, and the use of rear performance dampers to provide accurate, stable and responsive handling. They are also available with a specifically adapted version of the new high-response Adaptive Variable Suspension system featured on the Lexus LC flagship coupe. The aim is to provide a level of damping force that contributes to a rewarding drive, but doesn’t detract from comfortable ride quality. This damping force is reduced in straight line driving and increased when cornering or changing lanes to provide stability with minimal roll. Where AVS is fitted, its functionality is linked to the Sport S+ mode in the car’s Drive Mode Select.

The driving experience can be further enhanced with Active Sound Control (ASC), generating an audio feedback that gives the aural effect of up and downshifts like those experienced with a geared automatic transmission. And additional Sonic Interaction Design (SID) function adjust the sound the vehicle makes when drive in Sport S+ mode (S+ Sound). This can be switched off, if desired, using the ASC switch.

1. Preliminary figures. [↑](#footnote-ref-1)
2. Availability of features might differ depending on local market specifications. [↑](#footnote-ref-2)
3. Availability of features might differ depending on local market specifications. [↑](#footnote-ref-3)