

# neosonic

21<sup>st</sup> century automotive audio design – powered by neosonic

## SLS AMG Coupé Electric Drive



World's first electric vehicle manufactured in series equipped with an interior sound generation system

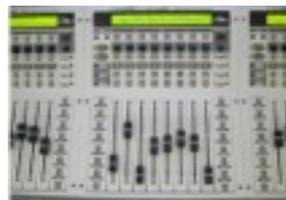
### Sound Generator Front



### Sound Generator Back



### elvis<sup>3</sup> Hardware Editor



### iPad Remote Control App



### iPad Wireless Editor Apps



The **Mercedes SLS AMG Coupé Electric Drive** is the first electric vehicle manufactured in series equipped with an interior sound generation system on the market.

**neosonic** has developed the Audio Design, has specified, implemented, and fabricated both the hardware and the software.

**neosonic** delivers the systems for the vehicle's series production.

**neosonic** is offering its highly flexible proven **elvis<sup>3</sup>** software platform for vehicle sound development. This encompasses electric, combustion, and hybrid vehicles.

### sportscarillustrated.com

"Even without a V8 engine underneath the bonnet, the SLS ED still sounds like a high-performance car with its sound module. The occupants can enjoy a tailored sound pattern to suit each driving situation: incredibly dynamic when accelerating, subdued and restrained when cruising and intuitively comprehensible during recuperation phases. Using, in the main, authentic real noises is of great benefit here as they do not sound artificial, as is usually the case with synthetic noises. This form of sound generation is thus far unprecedented in the field of production car development, and gives the driver emotive feedback."

### auto.de

"Die Akustiker haben einen Sound komponiert, der das enorme Leistungs- und Drehmomentangebot des Mercedes SLS AMG Electric Drive auch akustisch erlebbar machen sollte und gleichzeitig das für den Elektroantrieb typische Singen und Summen ausschaltet.

Wie gelangen das ist, bemerkt man, wenn man den Sportgeräusch-Hintergrund ausschaltet. Bis dahin passte das jeweilige Geräusch genau zu dem, was man der Fahrzeugtechnik gerade aufgegeben hat. Es klingt dynamisch beim Beschleunigen und zurückhaltend bei gleichmäßiger Fahrt."

### faz.de

"Nun hätte man das Klangbild eines V8 verwenden können, aber der klingt wie ein brunnftiges Monster aus der Vergangenheit. Und so hat der SLS Electric Drive die Töne der Zukunft drauf, der tiefe Bass einer gestrichenen Saite wird moduliert, dient als Basis für das Starten, für die Beschleunigung, für Topspeed und für die Tätigkeit der Bremsen."

### spiegel.de

"Ab geht's: Das Beschleunigungsgefühl ist speziell, weil der SLS Electric Drive so spontan und ohne jegliches Zucken vorangeht. Und natürlich weil dazu nur ein dezenter, synthetischer Sound erklingt."

### autoplenum.de

"Der exklusiv entwickelte Soundtrack des SLS Electric Drive macht dieses einzigartige Fahrerlebnis auch akustisch zu einer emotionalen Besonderheit. Driving Performance in einer neuen Dimension – überzeugendes Synonym für das Markenversprechen von Mercedes-AMG."

### autonet.ca

"Unlike lesser electric vehicles, which operate silently, the SLS ED will be music to the driver's ears, equipped with a special soundtrack which captures the acoustic thrill of driving an electric car, even without a V8 under the hood."

# SLS AMG Coupé Electric Drive



## Unmistakably AMG: the sound of the 21<sup>st</sup> century

Powerful, resonant, dynamic, emotional and authentic: the acoustic performance of the SLS AMG Coupé Electric Drive epitomizes the sound of the 21st century. Following exhaustive series of tests as well as numerous development test drives, the AMG experts have composed the "SLS eSound" – a unique soundtrack which captures the outstanding dynamism of this exceptional super sports car with electric drive.

Even without an AMG V8 engine underneath the bonnet, the SLS AMG Coupé Electric Drive satisfies all expectations of a genuine AMG high-performance car and proves itself to have a full set of AMG genes with its "SLS eSound". To put it quite simply: the tremendous power and torque unleashed by 552 kilowatts and 1000 Newton meters is music to the ears too.

The "SLS eSound" includes the characteristic start-up sound, which rings out on pressing the "Power On / Off" button on the AMG DRIVE UNIT: this sound triggers a sense of excitement and indicates that the vehicle is ready to start. When the driver shifts from "P" to "D" with the E-SELECT lever, the acoustics change and transform into a specially designed driving sound as soon as the SLS AMG Coupé Electric Drive moves off. The occupants can enjoy a tailored sound pattern to suit each driving situation: incredibly dynamic when accelerating, subdued and restrained when cruising and intuitively comprehensible during recuperation phases – i.e. when the driver decelerates using the steering-wheel shift paddles and energy is being recovered.

Using, in the main, authentic yet denaturalized real noises that cause the driver to make a subconscious association is of great benefit here as they do not sound artificial, as is usually the case with synthetic noises. This form of sound generation is thus far unprecedented in the field of production car development, and gives the driver emotive, instantly comprehensible feedback on the vehicle's current behavior.

The "SLS eSound" is not only dependent on road speed, the electric motors' speed and load conditions, it also reflects the driving situation and the vehicle's operating state with a suitable driving sound. Cornering, load changes, kick-down or powering along the motorway at top speed: the driver is always assured of superb, informative feedback by the intelligent combination of the specially composed sound and the vehicle's existing inherent noises together with the elimination of undesirable background noise – or "sound cleaning" as the experts call it. The four electric motors in the SLS AMG Coupé Electric Drive generate a rather hushed, high-frequency sound pattern that seems inappropriate for a super sports car. These motor-speed-dependent frequency components are therefore harmoniously integrated into the "SLS eSound" in such a way that they have a positive impact on the vehicle's overall soundtrack instead of sounding incongruous.

## Groundbreaking work for Mercedes-AMG

Four individual layers, granular, order and wavetable synthesis, overshoot models, 3D parametric formants – these are just a few of the technical terms from the world of sound engineering that demonstrate just how much specialist knowledge the acoustic experts at Mercedes-AMG have acquired. Composing the "SLS eSound" took the development team into uncharted territory, requiring them to carry out some pioneering work. Seldom has so much work been invested in defining the acoustic characteristics for a production car. Over 20 individual sound elements were devised, composed, arranged, evaluated and finalized. During the concept phase, a carefully selected range of futuristic sounds were also shortlisted. At the same time, the final soundtrack had to replicate the highly dynamic performance of the electrically powered gull-wing model in order to produce the acoustic experience that AMG high-performance cars are renowned for. Over the course of the complex development phase, the acousticians at AMG also called on the skills and experience of

professional musicians, signal theory experts and IT specialists. The multitude of parameters and the tuning required for the individual operating and driving states presented the Mercedes-AMG team with a major challenge that they overcame with flying colors.

Apart from the sound itself, the "SLS eSound" control unit needed to be developed from scratch too. This self-contained component communicates with the other control units in the vehicle via the CAN bus (CAN: Controller Area Network), allowing it to be fed with all information relating to the current driving status with lightning speed. The integral Digital Sound Processor (DSP) then relays the generated "SLS eSound" signals to the standard-fit AMG sound system, comprising eleven high-end loudspeakers and with a total output of 690 W.

The tweeter, mid-range and woofer speakers combine together with a twin subwoofer to generate the convincing, authentic sounds heard aboard the SLS AMG Electric Drive. Of course, it's not just the "SLS eSound" which is heard via the standard COMAND APS multimedia system: the audio signals from the radio, CD, mobile devices such as the iPod® as well as the phone are controlled by the COMAND system and ultimately mixed together with the "SLS eSound" in a microprocessor-controlled high-performance DSP amplifier with special sound tuning. This setup enables two different sound genres to be reproduced for the occupants in one and the same vehicle: the three-dimensional "SLS eSound" together with the sound staging used for the entertainment acoustics. Purists furthermore have the option of completely muting the "SLS eSound" in COMAND to listen to nothing more than the whir of the electric motors, the wind noise and the sound of the tires on the road. The AMG high-end sound system can be identified by its special, weight-reduced, black anodized aluminum grilles.

–Mercedes Benz Press Information 2013

## Contact us for a live demonstration!

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