

## Editorial

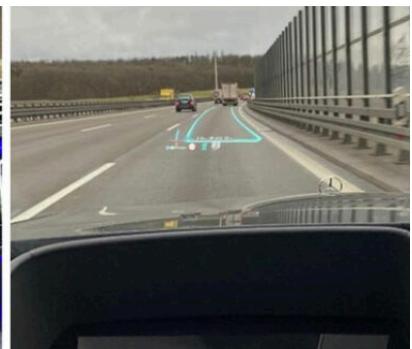
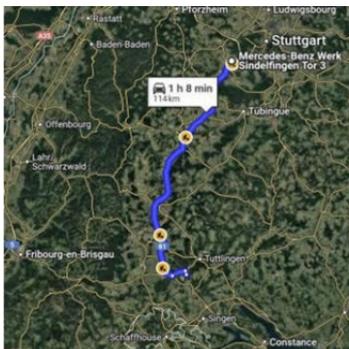
# Mercedes-Benz HD And AD: Looking, Talking, Listening And Driving



I was invited by Uwe Konstanzer's successor, Stefan Toepfer, to visit with the Mercedes-Benz lighting team and discuss lighting technology. I was curious as to the latest status of their drive simulator, which Hector Fratty visited two years ago and talked about HD lighting. To be ready, I studied the latest HD lighting developments including DLP and microLEDs—as we [reported on](#) this past January. Stefan also proposed to talk about autonomous driving with a test drive of

$L^3$ -capable Mercedes S-Class cars, and to visit their new test track at Immendingen and their new light tunnel.

It was a unique occasion to talk and listen with Mercedes-Benz  $L^3$  specialist Matthias Kaiser, to understand the various driving conditions and use cases and the UI they have developed for it. And it wasn't just talking and listening; I should say *experiment* with a full hour's real drive time!



**Paul-Henri Matha**  
DVN Chief Executive Officer and Lighting General Editor

# In Depth Lighting Technology

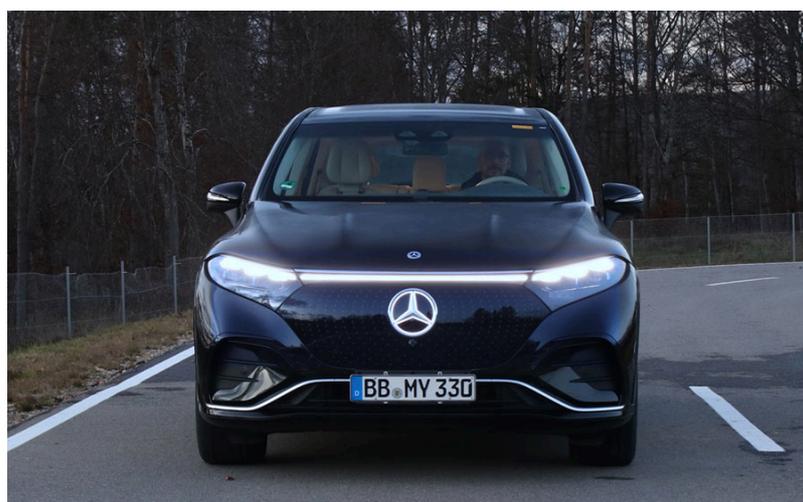
## DVN Field Trip: Mercedes-Benz Immendingen



After the short introduction of the team and office, with focus on Mercedes-Benz and AMG passenger cars, it did not take us a long time to talk about the major team delivery of the last 10 years—Digital Light. Indeed, Stefan joined the Mercedes lighting team in 2008 and worked most of the time on the intelligent lighting system, including Multibeam LED and digital light.

Since 2008, Mercedes-Benz have developed and commercialized two generations of Digital Light, with Marelli and ZKW. Since 2023, facilitated by regulatory provisions for driver assistance projections, the four legal driver assistance symbols are provided in countries applying UN Regulations 149-01 and 48. Previously, Mercedes used derogation procedures to promote this innovation.

In China, Mercedes is waiting for new regulations to enter force on 1 July this year before they'll offer driver assistance projections there. But they already have front lit logos on cars like the EQE SUV shown here; that's already possible within the current regulations, with a symmetrical logo.



To develop high definition ADB, including driver assistance projection, the Mercedes team have developed a realistic driving simulator with four beamers; it's technology similar to that in a planetarium. Chassis information is implemented in the driver simulator to provide a realistic experience including rolling and chassis effects. At each moment you can export data to evaluate glare values from the beam at different distances, including chassis data.

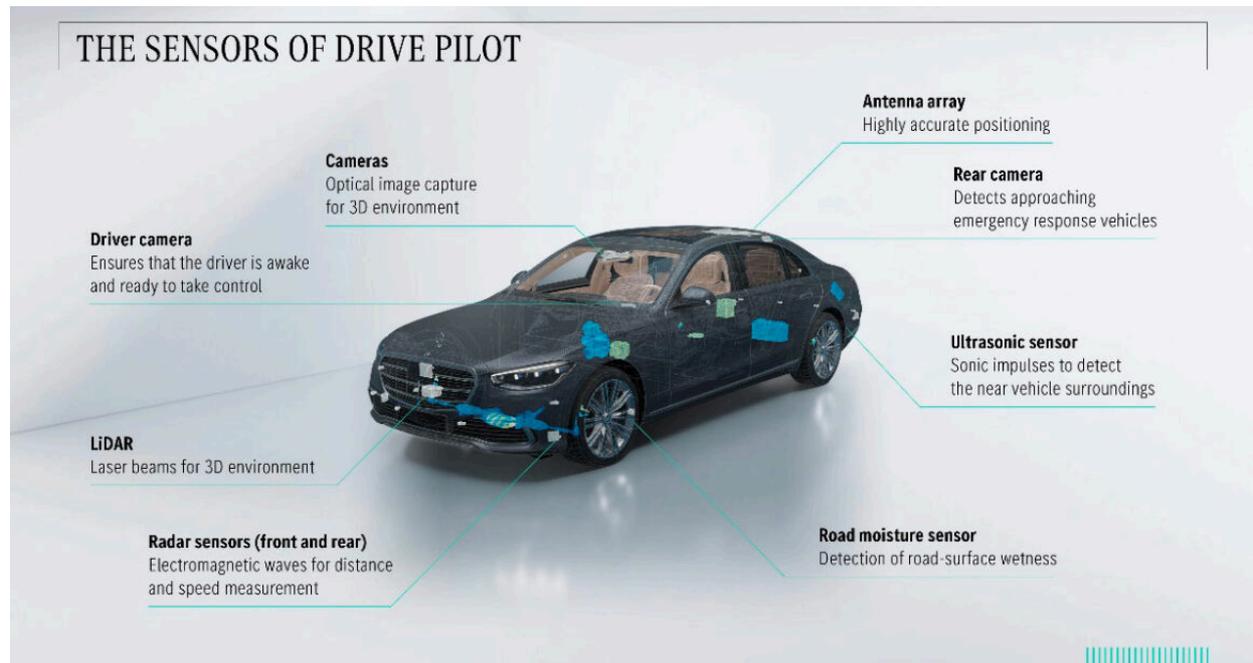
As an example, adding light above other traffic participants in ADB mode with the HD system was first tested on the simulator before introduction on vehicles. The Mercedes team needed to recognize vehicle shapes—passenger cars, LCVs, trucks—with available sensors on the cars. especially cameras, which are also trained to take the topography into account.



Once we got to the Immendingen proving ground, I took a seat in a Mercedes-Benz S-Class with the L<sup>3</sup>-capable Drive Pilot system just approved by the German Federal Motor Transport Authority to increase its top operating speed to 95 km/h.



Originally introduced in 2022 with a top speed of 60km/h, this new maximum of 95 marks the next step. The plan is to increase to 130 km/h by the end of this decade. To drive in automode, you have three layers of information—sensor perception including lidar, HD mapping (including V2X communications), and GPS via GNSS on the car's roof. In addition, there must be a lead vehicle (in this case, the orange truck ahead of me shown here) and the car must be travelling not faster than 95 km/h.



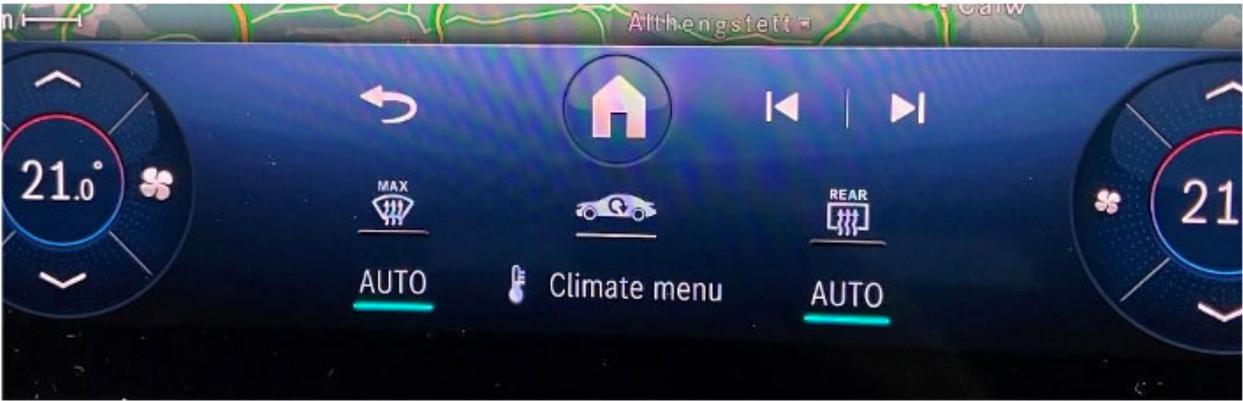
If these conditions are not fulfilled, for example, before entering a tunnel, you will get an alert message like the one shown here: "Suitability of route is ending" in white, followed by a more urgent "Take full control of vehicle!" in red.



The Mercedes UX team have developed a turquoise interior light on the steering wheel to indicate the automatic operation of the car. The A/C buttons are also lit in turquoise, and the driver cannot turn it off; it is needed for anti-fog in front of the camera. Likewise, the driver cannot manually activate the low beam or rear fog lamp; doing so will disengage the AD mode. This fog information will also be sent on the Car-to-X channel to inform other Mercedes vehicles. The only light control available is the flash to pass in AD mode.

This L<sup>3</sup> function is operable in Germany and France, plus the U.S. states of Nevada and California. Local laws have not yet been adjusted to allow it in other European countries. And only testing is possible in China for the moment.

The S-Class was also equipped with a L<sup>2+</sup> function with automatic lane-change capability. This is allowed in Europe thanks to a derogation—Commission Delegated Regulation (EU) 2022/2236 of 20 June 2022—even though UN Regulation N° 48 has not been yet modified to allow automatic activation of turn indicators; this is an ongoing discussion at GRE.



All L<sup>2+</sup> and L<sup>3</sup> functions are supported by an AR-HUD (augmented-reality head-up display) which presents information so as to appear on the road 20 metres ahead. This is a terrific feature that really improved the driving experience. Contrast is very high, and it never interfered with my field of view.

Interior lighting is also a big part of the driving experience in the S-Class. Voice recognition is supported, not only by Siri via Apple CarPlay, but also by the interior lighting set up, which looks really great.



All three of the Mercedes models we tested that night have different interior lighting components with different personalization, showing the hard work done by the interior lighting team over the past year.



**Mercedes-Benz EQE**



**Mercedes-Benz EQS**



## Mercedes-Benz S-Class

After the AD try-out, it was time to arrive back in Immendingen and visit the new *Lichtkanal*, Mercedes-Benz's new lighting facility.



The Immendingen proving ground opened in 2018. It has 55 km of test tracks, with lane markings from seven countries. 400 vehicles can be driven at the same time on the different tracks. All sort of lighting tests, including IIHS and US ADB, can be done.

At this proving ground, there are plans to open a new *Lichtkanal*, which is the name for the Light Technology Centre. It will be at a whole new level for testing functionality and lighting performance. DVN was able to have a preview of the new location, and we are excited about the official opening later this year (watch for our coverage when it's time!).



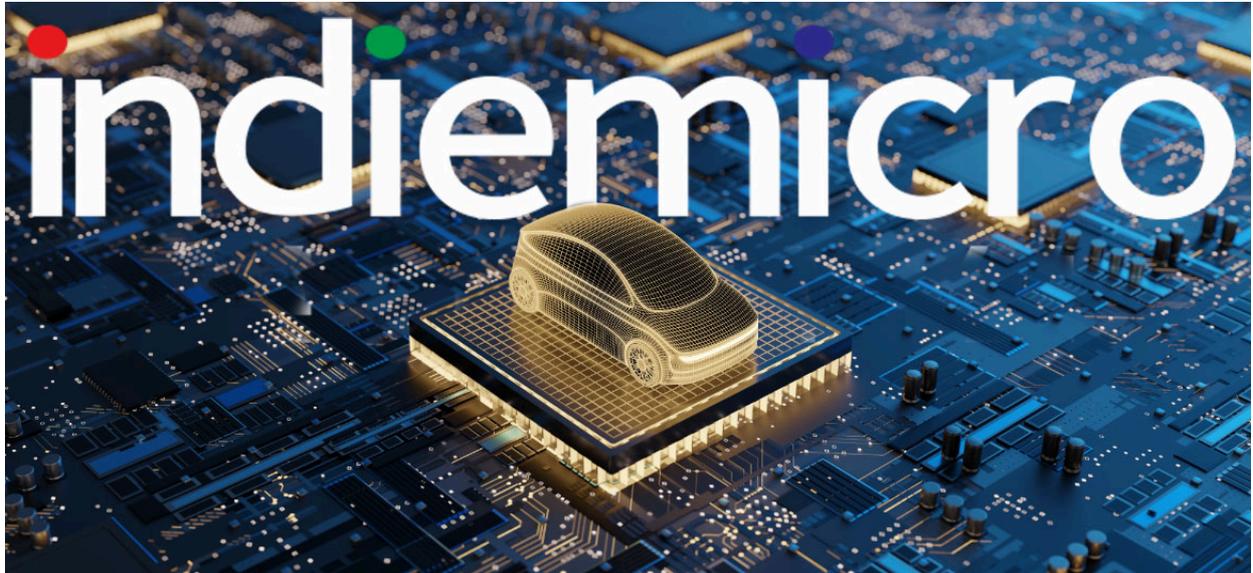
The Mercedes team did a demo of the various welcome functions and driver assistance projections you can get with the Mercedes Me app, including a Valentine's Day mode available only on 14 February.

All these new app-accessed functions can be downloaded while driving with OTA. However, unlike with some Chinese brands, Mercedes owners cannot create their own signature or welcome. The Mercedes philosophy is to control the technical content.

# Lighting News

## Indiemicro's New LED ICs

LIGHTING NEWS



Indiemicro's 24-channel iND83010 automotive LED driver chip has obtained the ISO 26262:2018 ASIL-B functional safety product certification and is in mass production for a variety of projects. It is a high-side linear constant-current driver integrated with a CAN transceiver, with a maximum current of 100mA per channel. It can cover application scenarios for exterior lighting including full-width tail lights, interactive grille lights, daytime running lights, turn signals, and more.

Recently, Indiemicro launched their newest 12-and 24-channel automotive high-side constant-current drivers iND23012/24. These share the functional safety design of the iND83010. Their 12-bit ADC provides 4096-level high-precision measurement across a temperature range of -40 to 150 °C , covering both high and low-temperature monitoring scenarios.

24-channel products have realized mass production, and Indiemicro have multiple new products under development to be released.

Parameters	iND83010	iND23024	iND23012
Input voltage	4.5V-40V	4V-24V	4V-24V
Current	24CH,100mA	24CH,100mA	12CH,100mA
ADC Accuracy	12bit	12bit	12bit
Communication	ELINS	ELINS /UART	ELINS / UART
Baud rate	Up to 2Mbps	Up to 2Mbps	Up to 2Mbps
Maximum devices	32(optional 63)	32	32
5V LDO	YES	YES	YES
Integrated CAN PHY	YES	NO	NO
	8kV HBM ESD		
Memory	MTP	EEPROM	EEPROM
Fusa	ASIL-B Compliant	ASIL-B support	ASIL-B support

Indiemicro will attend 2025 ALE Exhibition on 26-28 March at Kunshan, an hour's drive from Shanghai.

# Inova Housewarming

## LIGHTING NEWS



Housewarming reception (L) · CEO Robert Isele in new office (C) · DVN's W. Huhn, Inova's U. Rahn Rutronik & R. Isele, PGUB's P. Gresch (R)

### **By Wolfgang Huhn**

Last week, DVN were invited to the Inova House Warming Party with around 100 guests. Inova are a longtime member of the DVN lighting and interior community. They have moved to the south of Munich, to an impressive new high-tech area where they have three floors in a brand-new building. Labs, prototype manufacturing, and testing are on the ground floor, with offices for the development engineers and other staff, meeting rooms, and some recreational space with table football and darts on the two floors above.

Inova's new facilities have room for at least 90 people; the current headcount is 65, but growth is obviously planned.

# Renault Espace 2025 facelift

## LIGHTING NEWS



Renault just presented their new 2025 Espace with a major restyle including the brand's latest front and rear signature—there's a new hood, bumper, tailgate, and all new lamps expressing this strong new Renault identity already seen on the Clio, Captur, Symbioz, and Rafale models.



Renault Espace (L), Rafale (R). Familial design with model distinction.



Renault Symbioz, Rafale, and Espace—also showing familial design with model distinction.

# 2025 VW Teramont Pro

LIGHTING NEWS



VW Teramont 2025 facelift has in China a really interesting lighting content including MicroLED HD lamps from Hasco Vision, front and rear lit Logo and RGB interior lighting in doors, central console, dashboard and door panel



# Task Force on Lamps Under Parked Conditions (TF LUPC)

## LIGHTING NEWS



Images from document LUPC-02-02 (OICA)

### **By Eric Blusseau**

Up to now, there have been no clear requirements in UN Regulations regarding activation of lighting and signalling devices on parked vehicles. Currently, there are many vehicles with various lights and lamps activated when locking and unlocking the doors. It may cause distraction or glare to other road users.

During the 84<sup>th</sup> Session of GRE in April 2021, Japan expressed concerns about this issue. The expert from Japan presented a draft new series of amendments that introduces park conditions and an answer-back signal in the scope of UN Regulation N° 48 (relevant documents: [ECE/TRANS/WP.29/GRE/2021/2](#) · [GRE-84-29](#) · [GRE-84-30](#)). The Chair concluded that the proposal needs adjustment, and so GRE proposed to establish a special interest group on these topics: SIG R48-09, co-chaired by the experts from Finland and the Netherlands.

The SIG met 9 times between June 2021 and March 2023. A final proposal was submitted to GRE during the 88<sup>th</sup> session in April 2023 (document [ECE/TRANS/WP.29/GRE/2023/2](#)). Following an in-depth consideration of the document, GRE adopted the technical content as laid down in [GRE-88-16-Rev.3](#).

Highlights include—

Introduction of a new signal in R48, the Answer-back signal:

- “2.6.4. Answer-back signal” means a signal used to assist the vehicle user to identify and find his/her car under the park condition of a vehicle.
- 5.9.4. Answer-back signal may flash and/or vary in luminous intensity and/or apparent surface.
- All the specific technical requirements are listed in §6.27 of R48 series 09.

Modification of the activation rules of the exterior courtesy lamps:

- *The exterior courtesy lamps may be switched ON and/or switched OFF manually or automatically.*
- *The exterior courtesy lamp or lamps may vary in luminous intensity and/or apparent surface.*
- *The exterior courtesy lamp(s) shall not flash.*

These modifications have been introduced in the new series 09 of R48 which was submitted to WP29 and adopted during the March 2024 session. The R48 Series 09 including these modifications has been in force since 22 September,2024.

During its 89<sup>th</sup> session, GRE agreed to transform SIG 48-09 into the task force on lamps under parked conditions (TF LUPC) with a mandate until December 2025. Japan and the Netherlands act as co-chairs, while OICA acts as secretary.

The objective of TF-LUPC is to review the current suite of lamps under parked conditions requirements and to develop within the framework of R48 a proposal pertaining to energy indicator (state of charge) and lamp test modes. These new signals were submitted to GRE during the 88<sup>th</sup> session, but not adopted.



Examples of existing charging status indicators

The task force will submit an informal document to GRE during the April 2025, session and the formal document shall be submitted to GRE during the October 2025 Session.

Five TF-LUPC meetings have been held since January 2024:

<b>Session Date.</b>	<b>Outcomes.</b>
LUPC1 17/01/2024	Drafting of the Terms of Reference. (ToR) The objective of TF-LUPC is to review the current suite of lamps under parked conditions requirements and to develop in UN R48 a proposal pertaining to Energy Indicator and Lamp test mode.
LUPC2 12/03/2024	Review Terms of Reference for GRE. Proposal for modification of UN R48
GRE 90 29/04-03/05/2024	TF LUPC reported on their activities ( <a href="#">GRE-90-18</a> ) and presented a proposal for the Terms of Reference and rules of procedure ( <a href="#">GRE-90-03</a> ). GRE adopted the proposal.
LUPC3 22/05/2024	Finalization on the questionnaires linked to both functions (energy indicator and lamp test mode). Questionnaire to be shared among GRE experts.
LUPC4 03/10/2024	Analysis of the answers from the contracting parties to the questionnaire dealing with Energy indicator & Lamp test mode. Preparation of the Status Report for GRE 91 <sup>st</sup> session.

- GRE 91 22-25/10/2024 Progress report of the TF LUPC ([GRE-91-09](#)), in particular the outcome of its survey on the lamp test mode and energy indicator. GRE experts are invited to provide feedback to TF LUPC and to take part in its activities.
- LUPC5 16/01/2025 Review of the answers from the Contracting parties to the questionnaire. Remaining points addressed during the meeting about the energy indicator lamp: Operating conditions / modes Activation method Position on the vehicle Luminous intensity (daytime max 7 cd, nighttime max 3 cd) Colour (white, red, amber, yellow?) Size (max to be defined, but discussion is between 4 and 25 cm<sup>2</sup>) No consensus found for colour or size during the meeting. See [LUPC05-03 documents](#). The task force will come back on the two open items in the next session and on the lamp test mode.
- LUPC6 12/03/2025 To be announced

# Driver Assistance News

## Volkswagen Group cooperates with Valeo and Mobileye to enhance driver assistance in future MQB vehicles

### DRIVER ASSISTANCE NEWS



Volkswagen Group just announced that he is working with Valeo and Mobileye to upgrade the advanced driver assistance systems up to Level 2+ ("enhanced partially automated driving") in its upcoming vehicle portfolio based on the MQB platform. Launching in the next few years, this cooperation will improve safety and driving comfort in high-volume vehicles, addressing both customer expectations and regulatory requirements.

"This cooperation supports us on our road to transformation: by sourcing hardware and software together, we streamline procurement, reduce complexity, and improve efficiency. It also empowers our performance program by enhancing technology while keeping costs competitive, ensuring high-quality solutions for our customers," says Volkswagen executive.

The new system features a 360-degree ring of multiple cameras and radars, along with software-defined capabilities, enabling hands-free driving on approved roads, smart parking, and improved occupant and pedestrian safety.

Valeo provides high-performance ECUs, sensors, and parking solutions, while Mobileye contributes its [Surround ADAS™ platform](#), including the EyeQ™6 High processor and mapping technologies. For the first time, these elements are integrated into a single system, replacing multiple ECUs with a centralized unit. This improves efficiency, system performance, and allows for over-the-air updates to meet evolving safety standards.

“At Valeo, we are committed to advancing innovation in driver assistance technology. We are excited to embark on a new journey and to offer to Volkswagen, together with Mobileye, this complete solution of affordable, state-of-the-art, advanced driving features for their end-users,” explains Marc Vrecko, CEO of Valeo Brain Division.

“Working with Valeo and Volkswagen Group, this software and hardware integrated approach puts AI innovations to work in the real world.” said Prof. Amnon Shashua, president and CEO of Mobileye. “By improving efficiency and costs while upgrading capabilities for safety and comfort in driver assist, this system points the way to a new class of driving technology.”

# General News

## Tata AutoComp Expands Global Footprint with the Acquisition of IAC Sweden

### GENERAL NEWS



Tata AutoComp Systems Ltd said it will acquire International Automotive Components Group Sweden AB (IAC Sweden), in a bid to strengthen its presence in Europe's automotive sector.

This proposed acquisition reinforces Tata AutoComp's presence in Sweden and enhances the company's relationships with key European Original Equipment Manufacturers (OEMs) in both the passenger vehicle and commercial vehicle segments, further expanding its global footprint, the company said in a statement.

The company, however, did not disclose any financial details.

IAC Sweden has a turnover of approximately \$800 million and is a well established manufacturer of interior systems and components to the automotive industry, it added.

"This acquisition aligns with our long-term vision of expanding in global markets and strengthening our relationships with European OEMs," Tata AutoComp Systems Vice Chairman Arvind Goel said.

With this acquisition, Tata Autocomp said, it will consolidate its position as one of India's largest automotive component manufacturers and strengthen its presence in Europe's automotive sector.

"IAC Sweden has a strong legacy of delivering high-quality interior solutions, and we look forward to working together to drive innovation and excellence in the automotive industry. This move reinforces our commitment to driving sustainable, high-quality, and customer-centric automotive solutions across geographies," Goel said.

The acquisition of IAC Sweden will present strong synergy opportunities, allowing Tata AutoComp to leverage advanced manufacturing capabilities, technology, and well-established customer relationships in the premium automotive space, the company said.

# Dr. Rolf Breidenbach is New ZF Chair of Supervisory Board

## GENERAL NEWS



In a key leadership transition, the Supervisory Board of ZF Friedrichshafen have elected Dr. Rolf Breidenbach as their new Chair, effective 19 March 2025.

The decision marks a strategic move to ensure long-term leadership continuity as ZF continue transforming within the evolving automotive landscape.

Breidenbach, a seasoned automotive industry expert and former CEO of Hella, has been a member of ZF's Supervisory Board since March 2023.

“Dr Breidenbach brings a wealth of experience from the global automotive sector and is exceptionally well-positioned to guide ZF through its ongoing transformation,” said Simon Blümcke, Lord Mayor of Friedrichshafen and representative of the Zeppelin Foundation, which holds a 93.8-per-cent stake in ZF Friedrichshafen.

Born in Bochum, Breidenbach holds a doctorate in mechanical engineering from RWTH Aachen University and has held senior roles in consultancy and automotive manufacturing, including a long stint at McKinsey & Company.

His predecessor, Dr Hiesinger, was praised for his strong leadership during challenging times, helping steer ZF with strategic insight and stability. He had earlier indicated that he would not seek a second term ending in 2028 due to personal plans and proactively offered to step down early to enable a smoother transition at a crucial time for the company.

“We are deeply grateful to Dr Hiesinger for his outstanding contribution and leadership,” said Blümcke. “His early decision to pass the baton ensures continuity and stability as ZF pursues key transformation initiatives.”

To go further ...

## Speed of Light: Electrifying spectacle with David Guetta

TO GO FURTHER ...



The celebrated French DJ and music producer David Guetta stars in a new campaign by Porsche Middle East and Africa. In the futuristic Mohammed bin Rashid Al Maktoum Solar Park near Dubai, the latest Macan and Taycan models are showcased with dynamic beats and impressive laser effects. Three 'Making of' episodes will be released alongside the campaign film.

