



Editorial

DVN Open Forum About Glare

Two weeks ago, just after the GRE 90th session meetings, Wolfgang Huhn wrote an editorial summarising two informal documents from FIA about glare ([GRE 90-20](#) and [GRE 90-40](#)). We received a lot of comments in response. Everybody has opinions about traffic glare, as it seems, and there are just as many pertinent questions.

- Is glare dangerous?
- Is it worse than before with blue LEDs, smaller lamp sizes, and higher luminance?
- Should there be a maximum luminance value?
- Is it a problem only (or especially) for older people? (see [DVN Report](#) on the world's ageing driver population)
- Will the new UN R48 requirement for automatic leveling reduce bad aim and thereby reduce glare?
- Can cameras better detect other vehicles to improve automatic high beam function?
- Do we need headlamp cleaning system to reduce glare, especially with ADB?
- Do we need automatic dynamic leveling as [proposed by Germany](#) in GRE?
- In an RAC (British auto club) survey, 91 per cent of respondents complained about headlight glare. Now the UK Government will [commission](#) an independent study on traffic glare. What direction will it take?
- What's the global scope of the problem? Same in Europe as in China with similar regulations, and North America with almost entirely different ones?

We cannot ignore it; glare is a problem—even if just because so many people are now talking about it, and some of them are in a position to influence what's done about it, for better or [worse](#). Glare is now on the table, and we have decided to publish experts' opinions, using the DVNnewsletter as an open forum. This week we publish thoughts on the subject from former GTB President and renowned vehicle lighting expert Geoff Draper; watch for more views from more thinkers on the subject in forthcoming weeks.

Sincerely yours,

Paul-Henri Matha
DVN Chief Operating Officer and Lighting General Editor

In Depth Lighting Technology

Is Not Enough Attention Paid To Headlight Glare?

A personal view from Geoff Draper

I have tried very hard to remain quiet in my retirement, even if my passion for lighting remains, but Wolfgang Huhn's editorial in the recent DVN Newsletter has provoked me to respond. The FIA report presented to the 90th session of GRE is not a surprise, but it does confirm that on the subject of headlamp glare it seems that everyone feels entitled to claim to be an expert!

Of course, headlamp glare complaints have existed from the earliest days of the motor car. In my 60 years' experience working in the vehicle lighting world, I can recall many examples where significant lighting innovation has been accompanied by lobby groups complaining about glare.

- In the late 1960s, the first tungsten-halogen light sources were subject to many complaints about the 'disturbing white light' creating glare.
- In the 1980s, there was a big campaign by groups in the UK advocating a 'dim-dip' system to overcome glare in town and city environments.
- The installation of HID light sources was accompanied by protests about the extreme blue-white light and a campaign group, led by a London taxi driver, persuaded the BBC television to [feature the concern](#) in 2011.

Now we have the 'LightAware' group lobbying the UK Parliament, including the government and a prominent and well-respected member of the House of Lords, the highly respected UK Royal Automobile Club (RAC), and the members of the globally-respected FIA. These lobbyists may be eminent experts in their particular fields, but they clearly demonstrate that they do not understand the issues relating to vehicle lighting. An expert concerning street lighting has a completely different skillset to that of a vehicle lighting engineer. There are many errors and misunderstandings in the RAC report, but I don't see the point in highlighting them!

As GTB President, I tried to keep the significance of the lobbying in proportion with the reality and avoid my natural urge to go out fighting to present the facts and not opinions. However, now I feel that I cannot stay quiet any longer because it is unacceptable that the lobbyists are feeding misleading and completely wrong information to the public, the abovementioned organisations, and governments.

The lobbyists are not conducting opinion surveys in an impartial manner. Obviously if you tell people that headlamps are causing glare problems, even young drivers with good eyesight will start looking for glare and start complaining.

The BBC was encouraged to demonstrate the alleged glaring effect of HID light sources by recording the scene with a camera located on the road surface and looking upwards into the headlamps! On many occasions, such as in the RAC report, headlamp glare is portrayed with a photo taken directly in front of, and along the axis of, the vehicle.

I still cannot believe an argument I had with a very senior government civil servant responsible for technical lighting issues, who stated that whilst walking through

London and observing approaching vehicles, it was obvious that HID headlamps cause unacceptable glare.

As a dinosaur in relation to the younger generations, I feel that social media and the popular newspapers are presenting misleading and biased information and opinions to the general public. This information is taken as fact and then shared across the discussion groups. I have met friends who know my involvement in automotive lighting who tell me that LED headlamps cause glare because it is mentioned frequently in the media, and therefore there is a safety problem.

I am also concerned about reports that young road users are complaining about disabling glare and this leads me to share my own glare experience over the past three years that I hope will help the discussion. In 2020 I started to lose confidence to drive at night due to the difficulty to see features in the road and because glare was an increasing issue. I continued driving but did not feel safe and restricted my nighttime driving as much as possible.

In 2022 I discussed my problems of deteriorating sight and increased sensitivity to glare with my optician and, although I had assumed that I had a cataract, I was assured that my problem was one of ageing eyes and I was given a change in prescription for my glasses that really did not help. I was told that I did not have a significant cataract. Subsequently I visited three different opticians and was again told that my cataract was not sufficiently mature to be a problem, so I concluded that it was an ageing problem and I stopped driving in sunny daytime conditions and at nighttime. I recalled the [report](#) I wrote for DVN in 2022 on worldwide demographic development and the ageing population. My condition seemed to correspond to the eyesight deterioration described in the report and initially presented at the 2018 Tokyo DVN Workshop by Dr Bodrogi. It is interesting that the only reaction I received to my report was from Dr Ralph Schäfer, who commented that my problem would be solved by surgery to remove the cataract. I replied to Ralph based upon my optician's advice. Now I realise that I should apologise to Ralph, because his comment was correct.

The anxiety of giving up my driving licence, for my safety and that of others, resulted in my decision to pay for a private consultation with a very good ophthalmologist. He confirmed that I had a very significant cataract and three weeks ago I had private surgery. Now my sight is perfect, and I have no problems to drive in daytime or nighttime, and I no longer have difficulties with glare from other vehicles.

My experience with the UK National Health System raises concerns about how many other ageing drivers are being discouraged from having cataract surgery. Of course, the NHS is under extreme pressure in general, but in particular with the demand for cataract surgery, with a threshold for qualification to be entitled to referral for an appointment with an ophthalmologist. There is a waiting list of around 50 weeks.

In conclusion I believe that it is time for the vehicle lighting community to react robustly to the actions of the lobbyists, by launching a factual information campaign. We need to inform the public about how the lighting technologies are actually focussed on delivering the compromise between the need to see and to be seen in nighttime traffic, and to clearly acknowledge that in the real world there will always be an element of glare to be managed but never completely eliminated.

As result of my recent personal experience, I have confirmed my longstanding belief that there is not a serious glare issue to be resolved. The work actually undertaken by GRE and GTB has been misrepresented by the lobbyists, and the regulations are in good shape. Accident data does not indicate a major glare problem, and all governments outline the importance of educating the driver how to act when confronted by glare. There is no doubt that the lobbyists are giving the public a very bad impression of the effects of the new lighting technologies. To be honest, until I

had my surgery, I was becoming convinced that there was a problem with glare but now I can see the actual benefits of the good work being done by the vehicle lighting community.

I do believe that there is an issue with the sight of ageing drivers to be addressed. With my 'new eye' I have excellent vision and I no longer find driving at night to be a problem. At the age of 78 years, I am lucky to have such good eyesight but this leads me to conclude that in general terms, younger drivers must have even better eyesight and should not be complaining about disability glare if they are properly informed on how to react in a glare situation.

The FIA initiative to involve GRE is justified, but not for the reasons presented. GRE will clearly need to establish an informal working group and I foresee the need for a completely impartial chairperson and the support of GTB to bring all stakeholders to the table.

It will only be possible to avoid direct conflict with the lobby groups by taking the issue to the UN World Forum in Geneva. The proposed GRE group is unlikely to develop new solutions for the perceived glare problem, but it may be useful to reach a government-level consensus of the real issues based upon latest independent science-based research findings. In 2018 GTB organised and led a glare and visibility forum in conjunction with a GRE session and this could be a foundation for the new initiative.

Lighting News

Night drive session @ DVN Detroit, June 11-12

LIGHTING NEWS



For the really first time during a DVN workshop, you will be part of a night drive session and vehicle exhibition.

We have gathered a unique line up of vehicles with lighting contents from different companies.

- ADB democar compliant with ECE and/or FMVSS108
 - S-Matrix with 12 segments per side from GM
 - HD-Matrix with 25,000 pixels per side from Valeo
 - M-Matrix with 84 pixels per side from Lincoln
 - S-Matrix with 12 segments per side from Ford
 - UHD-Matrix with 1,3 million pixel per side from Audi
- AD-S democar from Mercedes-Benz
- Emergency mode of hazard lamps from ESS
- High light intensity foglamp from MagWerksVision
- Front and rearview camera system from Adasky / Gentex

The list is not yet close, and we should have more vehicles.

This night drive session will start at 10pm at the end of the first day, just after the deep ADB session including round table and 14 lectures, focusing on how to develop, test and launch FMVSS108 compliant ADB system.



ADB Development Vehicle

- Fitted on a 2023 Buick Enclave
- 12 Segments per Side
- FMVSS Compliant Beam Pattern
- Low Headlamp Mounting Height



HIGH DEFINITION PICTUREBEAM MONOLITHIC MODULE

Premium Adaptive Driving Beam maximizing light in all conditions for improved comfort and safety. Roadmarking features integrated to improve safety for drivers with alert and guidance displayed on the road and for vulnerable road users.

Enabling differentiation thanks to goodbye and welcome scenarios.

*Demo car homologated UNECE, ongoing certification FMVSS.



Adaptive Driving Beam (ADB)

2022 Lincoln Navigator equipped with Adaptive Driving Beam.

Feature is executed by LED pixel module with 84 segments.





Adaptive Driving Beam (ADB)

2023 Ford F-150 Lightning equipped with Adaptive Driving Beam.

Feature is executed by LED pixel module with 12 segments.



AUDI DIGITAL MATRIX LED LIGHTING

The innovative digital matrix LED headlights provide even more precise illumination of the road thanks to a higher resolution than other matrix LED headlights. The digitally controlled light elements enable adaptive driving beam functionality as well as the capability of producing light projections such as: advanced leaving home/coming home light, traffic information, and light guidance through lane/lane orientation illumination.



Mercedes-Benz

ADS Marker Lights

Mercedes-Benz has developed blue-green (turquoise) colored Automated Driving Marker Lights, based on SAE J3134 Recommended Practice, that would activate when DRIVE PILOT (an SAE Level 3 ADS System) is engaged.

ADS Marker Lights signal the activation of an autonomous driving system to other road users. Mercedes-Benz's concept car has these lights integrated within the headlamps, side mirrors and rear lights to provide 360° visibility.





H.E.L.P.[®] Lighting Alerts:

- Advance warning of *vulnerable and disabled vehicles ahead*
- Emergency Mode of Hazard Lamps
 - ✓ High Flash Rate (4-5 Hz. Vs. 1-2 Hz. Standard)
 - ✓ Auto Activated (air bag, engine failure, tire deflation, etc.)
 - ✓ Manual Activation - *wiper in Park*
- FMVSS 108 compliant
- US Launch Oct. 2023 – Tesla



When approaching a disabled vehicle with H.E.L.P.[®] activated, oncoming drivers...

SLOW DOWN

66 Without H.E.L.P. | 60 With H.E.L.P. Activated

Oncoming drivers slowed down an average of 7% in response to H.E.L.P.[®] Lighting Alerts

MOVE OVER

LEFT LANE OCCUPANCY: 30% w/o H.E.L.P.[®] → 87% with H.E.L.P.[®] Activated

EARLIER

12 SECONDS

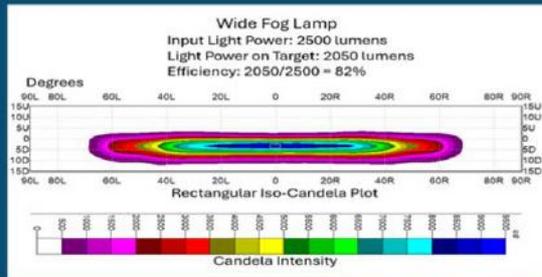
Oncoming drivers observed slowing down and moving over 350 meters (at least 12 seconds) from vehicle equipped with H.E.L.P.[®] Lighting Alerts



Fog Lamp Technology

Introducing the latest vehicular lighting innovation, a fog lamp built around efficiency and sustainability.

- Small package size, only 65mm
- Weighs a fraction of conventional lamps (exact weight application dependent)
- Greater performance than 90mm lamps on the road today
 - Less than 50% power normally required
 - Brighter – 2050 effective lumens per module.
 - Wider beam pattern – 140 degrees of effective illumination.



Technology

The demo car features two forward-looking Adasky Thermal cameras and one rearward-facing Adasky thermal camera integrated with the Full Display Mirror[®] by Gentex Corporation. During the live demonstration, you'll witness the exceptional capabilities of Adasky's thermal camera in real-time. We'll explore various driving scenarios to showcase how the camera generates impressive thermal images. Our detection software, utilizing the video stream, accurately identifies all road users – pedestrians, cyclists, motorcyclists, and vehicles – by size. Additionally, it calculates Time to Collision (TTC) and signals the need to brake when necessary. The Full Display Mirror[®] by Gentex Corporation seamlessly blends Adasky's rearward-facing Thermal Camera image with the digital mirror's rearward-facing camera image for enhanced visibility and safety.



DVN @ Flex-N-Gate Audincourt

LIGHTING NEWS



By Paul-Henri Matha, DVN COO and Lighting General Editor

Yohan Garnier, Head of Europe Research and Innovation team, invited me last month at Audincourt, France to discuss about lighting and Flex-N-Gate latest product releases.

Flex-N-Gate : A historic player in Europe and US market

Audincourt plant was formerly a Peugeot plant founded in 1897 and is now focused on exterior components production (bumper, exterior trims) to Stellantis plants, with a 850 employees workforce.



Flex-N-Gate, founded in 1956, is a well know company in North America. Private ownership Shahid Khan started, and has owned and operate the Illinois-based company since 1980, with introduction of its famous "one-piece bumper design".

They entered the lighting business in 2012 with ACH acquisition (ex-Ford Sandusky Plant). In 2017-18 they started lighting business in Europe (Spain), while expanding

their footprint in Europe with acquisition of 7 European plants from Plastic Omnium.

The company employs 27,000 people globally and operates 76 production sites. In Europe, Flex-N-Gate employs 3,800 employees across 16 production sites.

The company supports four R&D centers specializing in plastics, metals, mechanical assemblies, and lighting

Focusing on lighting technology, Flex-N-Gate is able to produce complete rearlamp and headlamp in Europe, with its complementary footprint:

- Sabadell (Spain, 250p.): Plant dedicated to Lighting, with PVD and assembly lines
- Marines (France, 320p.): Plant with a long bumper experience, and specialized since 2018 in complex decoration technologies, especially on transparent parts. Painting line and Thermal coating line.
- Treviso (Italy, 350p.): Former Osram plant specialized in Electronic components, for PCBA production and module assemblies. This late acquisition (2023) allows a vertical integration, and is meant to serve our US and EU markets.

Flex-N-Gates currently produces DS 7 bumper lamp, Lancia Ypsilon rearlamp, Ford Kuga rearlamp, Renault 5 E-Tech charge display module.



Flex-N-Gate has also developed interesting skills and technologies for exterior components that may be integrated into lit grill and lamps, such as coating and body-color painting, laser etching, hot stamping and other advanced decoration technologies.

Best examples are:

- Opel Vizor grille (smoke transparent PC lens + A-surface UV coating + B-surface back painting) including 3D effect



- Renault Scenic E-Tech grille (B-surface painting and complex 3D decor, A-surface clear PC + UV coating)



- Mini Cooper tailgate (complex decor)



- DS 7 front bumper lamp (Clear PC + UV coating on A-surface, painting + laser etching on B-Surface)



- GMC lit logo (PC + Hardcoat Outer Lens, painted ABS grill, High-gloss black MIC, diffusive film, Chrome additional bezel)



- Ford F250 headlamp, including full Led headlamp technology



In parallel, Innovation team is developing several new concepts like:

- FlexPANEL 3D (left side): Light curtain on illuminated ink
- FlexMAGIC (right side): Hidden-until lit effect through body-color painting with 3D effect



Thanks to its expertise in exterior trim, Flex-N-Gate has developed many new possibilities to bring light on exterior components, including grills, logos and bumper and is able to provide complete front fascia.

First image of Škoda Elroq with lit grill

LIGHTING NEWS



Škoda will soon present their second electric model after the Enyaq. Like the Enyaq, the Elroq compact SUV will be based on the Volkswagen Group's MEB modular platform. It will be a bit shorter at around 4.5 metres. The official presentation will take place this autumn, but teaser images have been trickled out to keep interest up.

There's a two-part design to the front lamps. The slimmer upper section extends to the sides. Škoda lettering is clearly visible on the bonnet, and where a grille used to be is the brand's innovative 'Tech-Deck Face', with matrix LED headlamps. The car's appearance is flat and wide.

Head of Škoda's Head of Auto Design Oliver Stefani says he's confident the Elroq "will give the brand new impetus and will be a real eye-catcher".

This year's new Škoda model is the Elroq; next year will be the Epiq, and in 2026 a 7-seater SUV to be positioned at the top of the range, which will be closely linked to the Vision 7S presented at Prague.

Volvo's New Autonomous Truck Has Lit Logo

LIGHTING NEWS



Volvo unveiled what they're calling a "production-ready" self-driving semi tractor at the ACT Expo in Las Vegas. The truck was developed together with Aurora Innovation, an AV startup founded by former Uber, Tesla, and Google executives.

The truck is based on a specially-designed version of Volvo's VNL class 8 long-haul semi, with provisions for Aurora's self-driving hardware and software.

The technology behind the automation is known as Aurora Driver, an L^4 system that uses AI software, cameras, imaging radar, sensors, and lidar.

The most important feature, to a lighting specialist's eye, is the great big illuminated front logo. Unlike in the rest-of-world UN Regulations, there is no size limit on lit logos in the North American regulations.

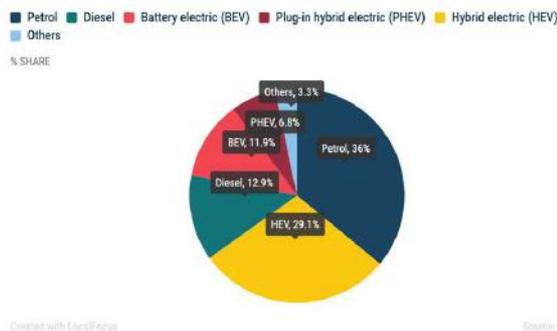
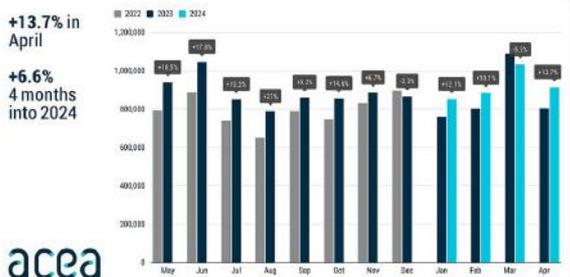


General News

New EU Car Registrations Up in April; BEVs Gaining Traction

GENERAL NEWS

NEW EU PASSENGER CAR REGISTRATIONS



ACEA have just released figures showing that in the first four months of 2024, new car registrations in the European Union increased by 6.6 per cent to reach nearly 3.7 million units. Solid growth was recorded in the region's largest markets, with Germany and Spain each seeing a 7.8-per-cent increase, followed by France (+7%) and Italy (+6.1%).

In April, BEVs were nearly 12 per cent of EU new-car sales, and hybrids rose from 24.9 to 29.1 per cent. The combined share of petrol and diesel vehicles dropped from 52.8 per cent to less than half the market, at 48.9 per cent.

BEV registrations rose in April by 14.8 per cent to 108,552 units; France and Belgium saw significant increases of 45.2 and 41.6 per cent, respectively, while Germany remained stable (-0.2%). From January to April, a total of 441,992 new BEVs were registered, a 6.4-per-cent increase from the previous year.

Hybrid-electric cars also saw robust growth, with registrations up 33.1 per cent in April. The largest markets for this segment, France (+48.1%), Spain (+38.5%), Germany (+25.9%), and Italy (+22.8%), all recorded double-digit increases, with registrations totalling 265,992 units.

Plug-in hybrid car registrations saw a modest increase of 3.7 per cent. Belgium experienced a significant decline of 17.6 per cent; France remained stable (-0.1%), and Germany saw a 28.4-per-cent increase. In April, plug-in hybrids accounted for 6.8 per cent of the total car market, with 62,148 units sold.

Fresco XL

GENERAL NEWS



By Paul-Henri Matha, DVN COO and Lighting General Editor

I recently chatted with Adrian Fresco, COO of Fresco—a new automaker from Norway. I was intrigued by the design of this car I discovered some weeks ago, with interesting lighting concepts. I lived in Scandinavia during my last five years at Volvo, and it was interesting for me to discover a new automaker there in Norway, the biggest EV market in Europe.

Fresco began as a research project at the Norwegian BI business school, to test theories and hypotheses related to the automotive industry. Following extensive research and market tests, they discovered that manufacturing low-volume supercars and unique cars for a select few was the only financially viable solution in Norway. The research indicated that locally handmade cars would be the most feasible option.

After forming the company, they conducted a market test by showcasing their initial design, the Reverie, to gauge public interest. The response was positive, with significant international attention from both the press and individuals. This feedback confirmed a strong desire for a Norwegian car, though it also indicated that they needed to adjust their design.

Despite challenges such as the pandemic and Russia's war on Ukraine, they showcased more of their work. they redesigned their logo and visual identity, and are now focusing extensively on the Fresco XL project, which features unique design elements and innovative features.



The company believe their commitment to safety and design, and the Fresco XL's combination of advanced lighting and camera systems, will set them apart in the EV market. The XL features innovative lighting elements that are both functional and aesthetically pleasing. At the front, there's a long LED strip that spans the width of the vehicle. Not only a design statement, but it also houses crucial components for vehicle operation. In the centre of the strip is an inlet for the HVAC system, ensuring optimal airflow and climate control for the passengers. Small cameras are embedded within this front lighting fixture, enhancing the vehicle's safety and catering for ADAS features.

The XL's rear lighting comprises three LED strips; one on the right side, one on the trunk, and one on the left side. These strips work together to create a cohesive lighting signature while also accommodating rear-facing cameras strategically placed to offer a comprehensive view of the vehicle's surroundings, aiding in parking and increasing overall safety.