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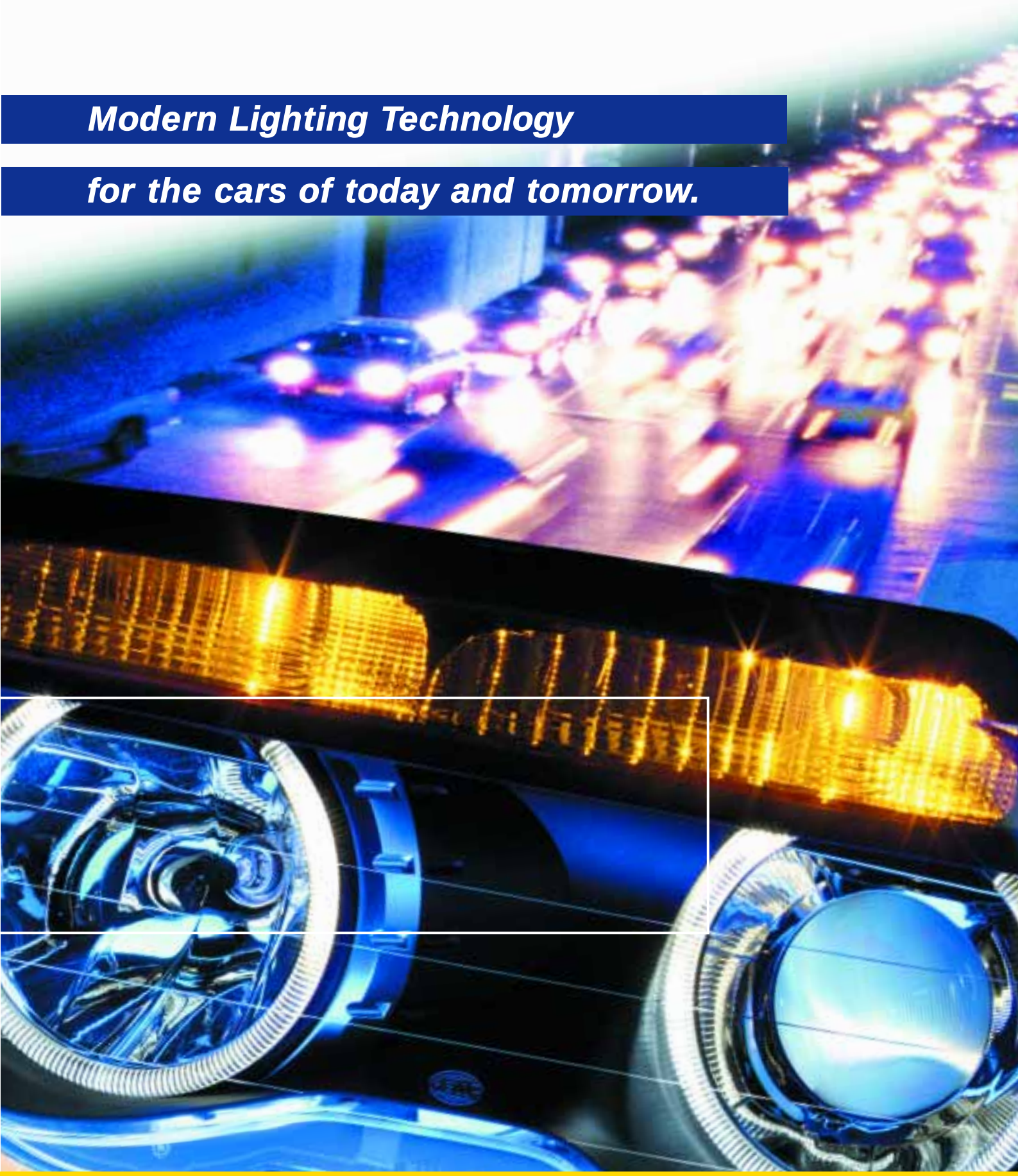
Ideas today for
the cars of tomorrow

Modern Lighting Technology

for the cars of today and tomorrow.



HELLA®

Ideas today for the cars of tomorrow

For more than 100 years Hella has been setting milestones for the future of the passenger car. Hella will continue to be one of the leading suppliers to the automobile industry in the future, too: Thanks to a high level of creativity, research, development and production all within the company. This guarantees supplies of an impressive range to the parts aftermarket and garages both now and in future; in the areas of

| Lighting | Electrical Systems | Electronics | Air-conditioning

In addition, powerful service packages provide support for our customers for successful business with a strong growth rate; in the form of

| Sales Support | Technical Service

In this brochure we are presenting the Lighting competence area.
Technologies which determine headlamps and other lamps and inspire the automobile industry, motorists and purchasers of accessories alike.

Innovative lighting technology is becoming a striking design element in modern cars. Hella develops and produces lighting and lamp systems that allow vehicles to look into the future.

Contents

Seeing and being seen well is absolutely vital.

The human eye, originally designed for seeing during daylight, has to rely on additional light sources in the dark and in poor visibility conditions. This is particularly true for participation in road traffic. Better road illumination or better possibilities of being seen thus mean vital seconds more reaction time.

However, these days the improvement of light output not only requires expensive research and development of lighting technologies but also the mastering of electronic systems – such as control units for xenon light or sensors for automatic headlamp levelling, for example.

The name Hella stands for the best light in excellent quality and unusual design – a fact known and appreciated by your customers, too. And the additional technical knowledge necessary for removing and installing ever more complex systems also comes from Hella.

Quick reaction time for maximum safety.

The direct comparison shows: At night information important for car drivers just disappears.

Milestones of light

Light developments from Hella have always made crucial contributions to progress in automobiles. Thus, for example, we are the European market leader for xenon light.

1971
Hella is the first manufacturer to receive approval for a H4 main headlamp.

1983
Presentation of the DE projection headlamp.

1988
Hella presented the free-form reflector (FF) for a significant increase in usable luminous flux for headlamps.

1992
The first generation of xenon head-lamps goes into series production.

1993
Approval of the first European main headlamp with a plastic cover lens.

1999
First bi-xenon headlamp goes into series production.

2000
Light guide technology introduced as a styling element.

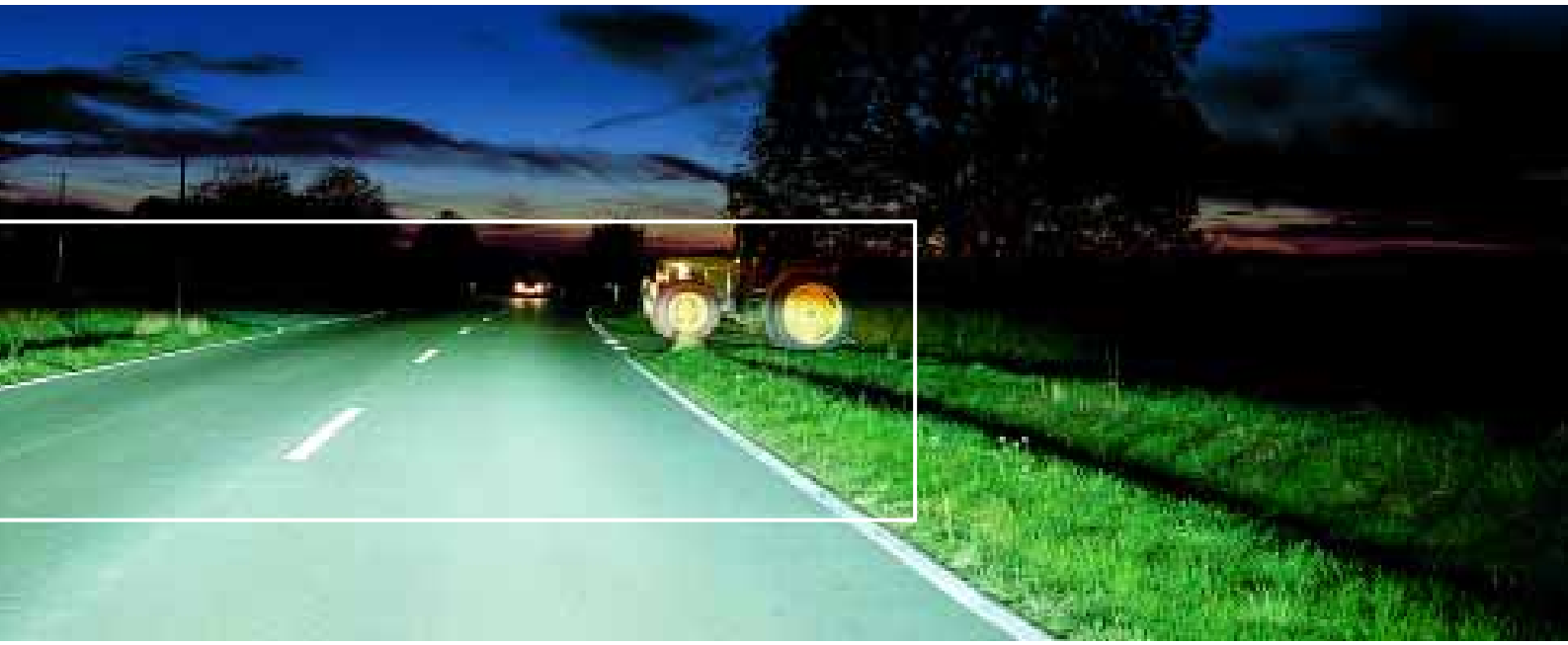
2002/2003
VARILIS®, static and dynamic cornering light.

2005
VARILIS®: Full AFS functionality.

Xenon light: Turning night into day.

The development of xenon lighting systems for main beam light was probably the largest quantum leap in terms of safety in the history of automotive lighting. A special high-performance electronic system controls the regulation of the switching on of the light, constant output and the action necessary in case of problems. The system has two decisive advantages compared with the light from conventional bulbs: a xenon bulb provides twice as much light as a modern H7 bulb but only requires 2/3 of the power. Thanks to this doubling of the light output, road illumination is brighter and wider. Xenon light even produces

Xenon light is available as optional original equipment in many vehicles. Hella also has the largest range of xenon lamps available for the parts aftermarket.



light in daylight quality in the darkest night-time conditions. The driver experiences normal visibility conditions, does not tire as quickly and is much more relaxed – even during long drives. Xenon light thus brings enormous benefits for both road safety and driving comfort.

Xenon light is already included in the original equipment options for more and more cars in the compact and medium-size classes. As the European market leader, Hella also has the largest range of xenon products available for the independent parts after-market.

In addition, Hella's range of retrofit auxiliary headlamps and vehicle-specific conversion kits is continually being expanded. Which means Hella has opened up a new dimension in retrofit and conversion business for the aftermarket and garages.

Extract from an investigation carried out by the opinion research institute Emnid:

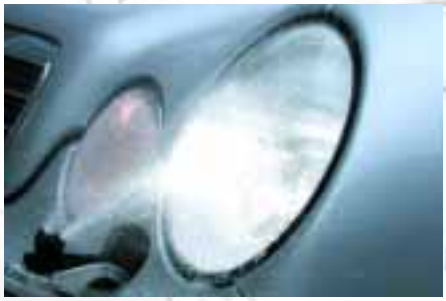
94% of all users of xenon light had a positive opinion of xenon light, brightness (42 %) and general illumination (35 %) were factors mentioned here.

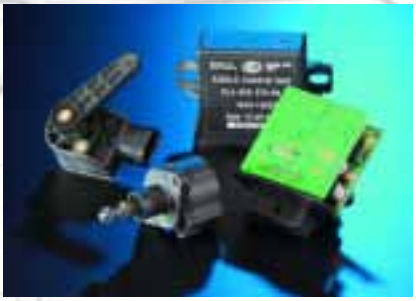
85 % of all users of xenon light said they could see better at night.

83 % of all users of xenon light would order their next car with xenon light again.

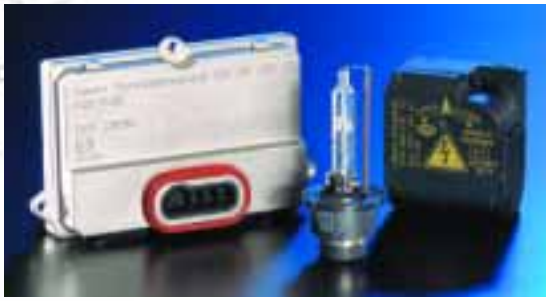
80 % of all users of xenon light said they were able to see better in the rain.

Market research proves: once people have driven with xenon light, they never want to drive without it again.

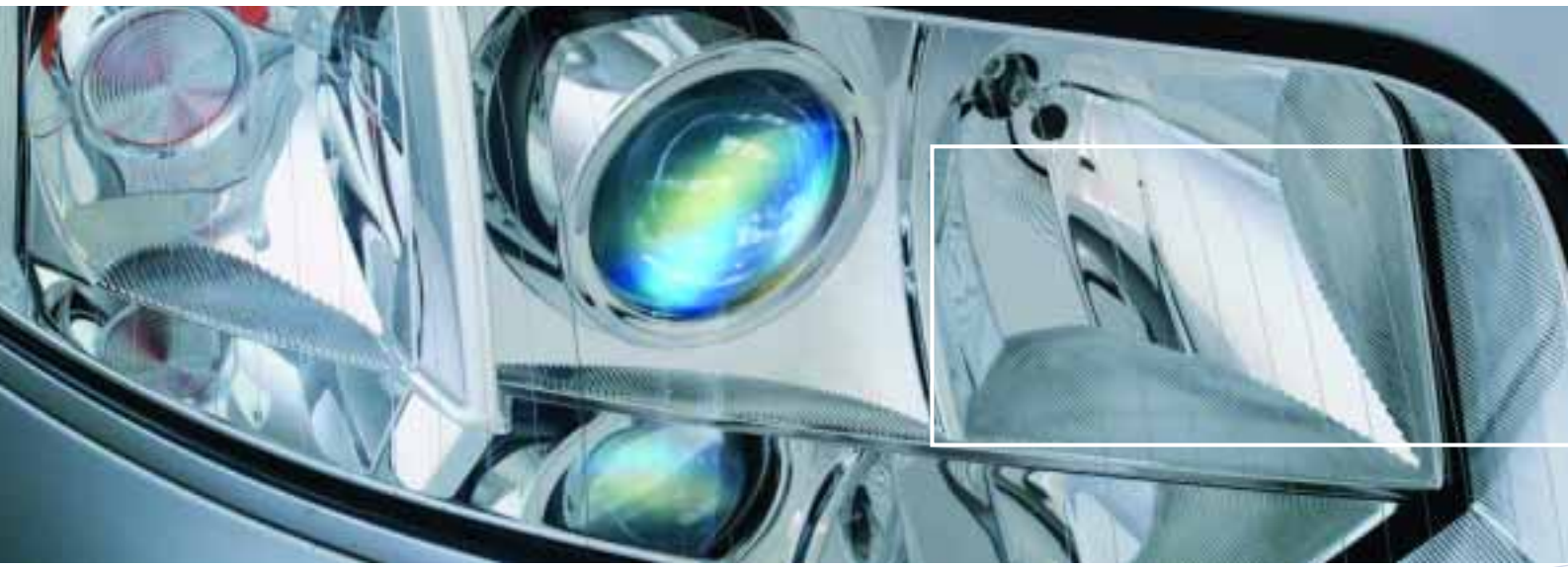




All xenon and bi-xenon systems have integrated dynamic headlamp levelling and a headlamp cleaning system.



Mark 4 ballast with a xenon bulb.



Bi-xenon for maximum lighting quality.

Bi-xenon: One system for main and dipped beam light.

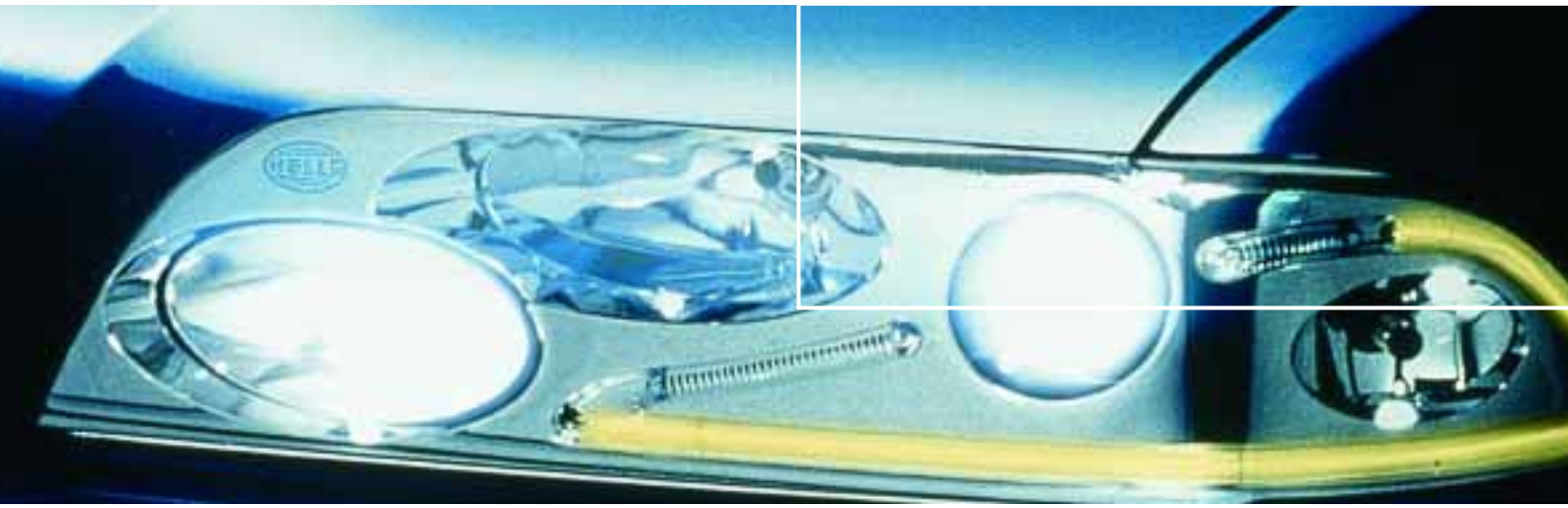
As the European market leader in the sector of xenon technology, Hella has pushed development even further. The result of this development was the creation of the bi-xenon projection module. In this module, the light of one single xenon lamp is used for dipped beam and main beam light at the same time. A movable shutter is responsible for the beam pattern according to the function selected: When the shutter is raised it produces the cut-off prescribed for dipped beam light, when lowered it makes room for the main beam light. An additional halogen main beam light takes over the flashing headlamp function. The bi-xenon light is projected onto the road through a large glass lens with a diameter of 70 millimetres.

The bi-xenon principle ensures that dipped beam and main beam light have an identical light colour. It has been adapted optimally to the light quality of daylight. As with the xenon system, the main beam is extensive and intensive. In addition, the dipped beam light also provides wide and extremely bright illumination for the road, thus improving the view around corners and bends.
All without dazzling oncoming traffic, of course. All xenon and bi-xenon systems have integrated dynamic headlamp levelling and a headlamp cleaning system.

Aesthetics and safety
do not exclude one another.

Headlamps with bi-xenon module. Dipped beam light and main beam light from only one xenon bulb.

Vehicle lighting systems are becoming more and more sophisticated in terms of technology. For this reason, Hella provides support for its partners with a wide range of training and service offers. A lead in know-how that pays off permanently.



VARILIS®: The variable intelligent lighting system of the future.

The next milestone to emerge from Hella's research and development laboratory is called VARILIS®, the variable intelligent lighting system. It will increase driving comfort and above all safety on the road at night. What exactly do the terms variable and intelligent mean here? VARILIS® automatically adapts to a wide range of different situations and visibility conditions. There are several lighting functions available to achieve this. The vehicle automatically switches on the most suitable lighting function – thanks to sensor control. Factors such as speed, weather conditions, bends and corners, motorway and country road driving are all taken into consideration. VARILIS® is bringing new types of light and more safety onto the roads, at the same time taking some of the burden off the driver, who no longer has to operate these lighting functions.

Night driving without VARILIS®

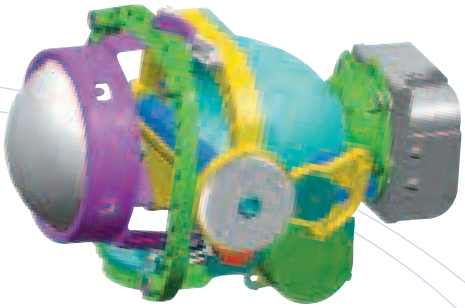
When driving around bends, obstacles on the inner radius of the bend are always difficult to see.

When turning off, you always drive "blind" into the next road.

Obstacles cannot be perceived very well during fast motorway drives.

In town situations wider illumination is more important than far-reaching illumination.

Spectacular inventions and research results have ensured that Hella has become a reference brand in the national and international media. An image that has a positive effect on all our business partners.



Hella VARIOX swivelling module.

The technology of VARILIS® is based on the innovative Hella headlamp system VARIOX. With VARIOX, up to five different beam patterns can be produced by one single xenon headlamp – several types of dipped beam light, for example, special motorway light, main beam light, as well as being able to switch from right-hand to left-hand traffic. Hella is playing a major role in developing these intelligent lighting systems in partnership with the automobile industry.

The first headlamp in the world to be approved with a cornering light fitted as standard as a preliminary stage to the intelligent headlamp system VARILIS® for the new Audi A8.

Driving with VARILIS®

With VARILIS® the inner radius of the curve is also completely illuminated.

VARILIS® also shines light into the road you are turning into.

VARILIS® lights up the whole road without dazzling.

At junctions, VARILIS®, helps drivers to recognise situations more quickly.

Daytime running lights: Be more visible automatically.

European studies and long-term road tests, for example in Lower Saxony, provide clear proof: when vehicle lights are switched on during daytime drives, the number of potentially fatal collisions is 25 percent lower than when vehicles have no lights on.
If less serious accidents are included in the statistics, more than 50 percent of collisions caused by other road users being overlooked could be avoided. Daytime running light saves lives.
It is already mandatory in numerous countries and has now been officially approved in Europe.

For this reason, Hella daytime running lights can now also be installed in Europe. The daytime running lights are activated automatically when the key is turned in the ignition, which means they cannot be forgotten. Since the lamps are based on 6 Watt halogen bulbs, they go easy on the battery and alternator.

Every safety-conscious customer who enters a garage is a potential purchaser of Hella daytime running lights. He will be glad of information about the advantages which lead to less accidents. The figures speak for themselves. In other words, informative conversations are a worthwhile investment in subsequent orders.

Easy to be seen:
With daytime running lights.

Difficult to be seen:
Without daytime running lights.

Daytime running lights
offer a plus in
safety thanks
to increased perceptibility.

DynaView®: Corners are getting bright.

For the first time ever a driving lamp is able to illuminate corners and bends on the road independently and "intelligently". Its name: DynaView®. The DynaView® system actually consists of four headlamps: two for the conventional main beam light and one on each side which can move according to the direction required to illuminate the curve ahead.

The system is controlled by an intelligent chip which constantly calculates the current transverse accelleratin of the vehicle and automaticall triggers the cornering lamp as required - absolutely independently of external technology such as GPS-controlled systems.

The result is sensational and amazing at the same time: "driving blind" around corners is now a thing of the past; driving down winding roads in the dark will become much safer and thus more relaxing for the driver.

The auxiliary headlamp DynaView® is based on the revolutionary VARILIS® technology which makes lighting and lamp systems into “thinking”, intelligent functional units.

Ideal for safe night-time driving.

The introduction of DynaView® to the market creates an enormous turnover potential for the aftermarket and garages in the sector of retro-fitting. Hella of course provides thorough training and tried-and-tested service concepts to support its partners in this area, too.

At the heart of the intelligent switching technology: the transverse acceleration sensor.

Always one look ahead: DynaView® for safe driving around corners.

Modern design and innovative lighting technology: beauty and safety in perfection.

Combination rear lamps: The interaction of colour, shape and technology.

The current Audi A4 is a successful example for Hella competence in the lighting sector. The completely newly developed combination rear lamp unites a striking design, successful colour harmony and excellent technology. The lamp is divided into three main fields which have different patterning and colours. The integrated reflex reflector has been emphasised as an individual element. Small hexagons reflect the light in different directions depending on the angle of incidence. The light from the tail light function, also in a hexagonal design, surrounds the reflex reflector.

Such innovations from Hella are also setting impressive standards in terms of design. The increasing importance of design elements is causing more and more drivers to request Hella components in order to upgrade both the visual appearance and the functions of their vehicles. A market has developed in this area which opens up great turnover perspectives for wholesalers and garages.

Numerous design possibilities shape the rear view of modern cars.

Combination rear lamp on a Mercedes CLK.

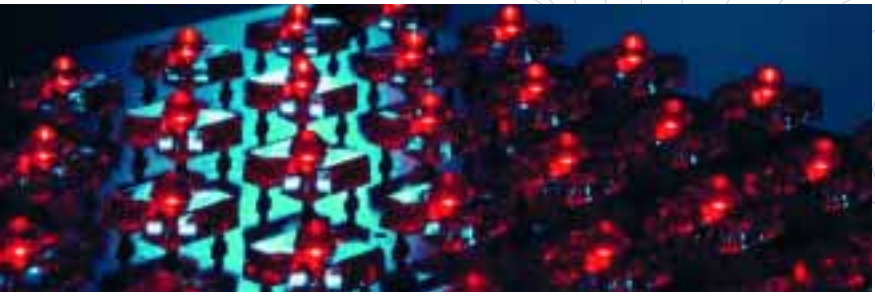
Conversion combination rear lamp on an Opel Astra.

LEDs: New dimensions in function and design.

The BMW 7-series has a total of 74 LEDs in the rear-end.

The use and ongoing development of LED technology is a further major field of Hella research work. LEDs have decisive advantages over conventional bulbs: low energy consumption, long service life, quick reaction time. More freedom for the design of combination rear lamps, new possibilities for the accessories sector. In addition you will be giving your vehicle's rear-end a brilliant appearance.

Example BMW: LED light guide technology is being used on the front-end area in the position light to emphasise the contour of the BMW 5-series, in the combination rear lamp LEDs and specially developed prism lenses guarantee an unmistakable appearance. The BMW 7-series has a total of 74 LEDs in the rear-end, arranged three-dimensionally in the combined tail/brake light. The LED tail light is continued along the lid of the luggage compartment as a slim red light strip. The rear fog lamp which uses a halogen bulb has been able to be integrated into the light strip.



LED technology is taking over more and more vehicle areas. It has created a retrofit market that is growing all the time.

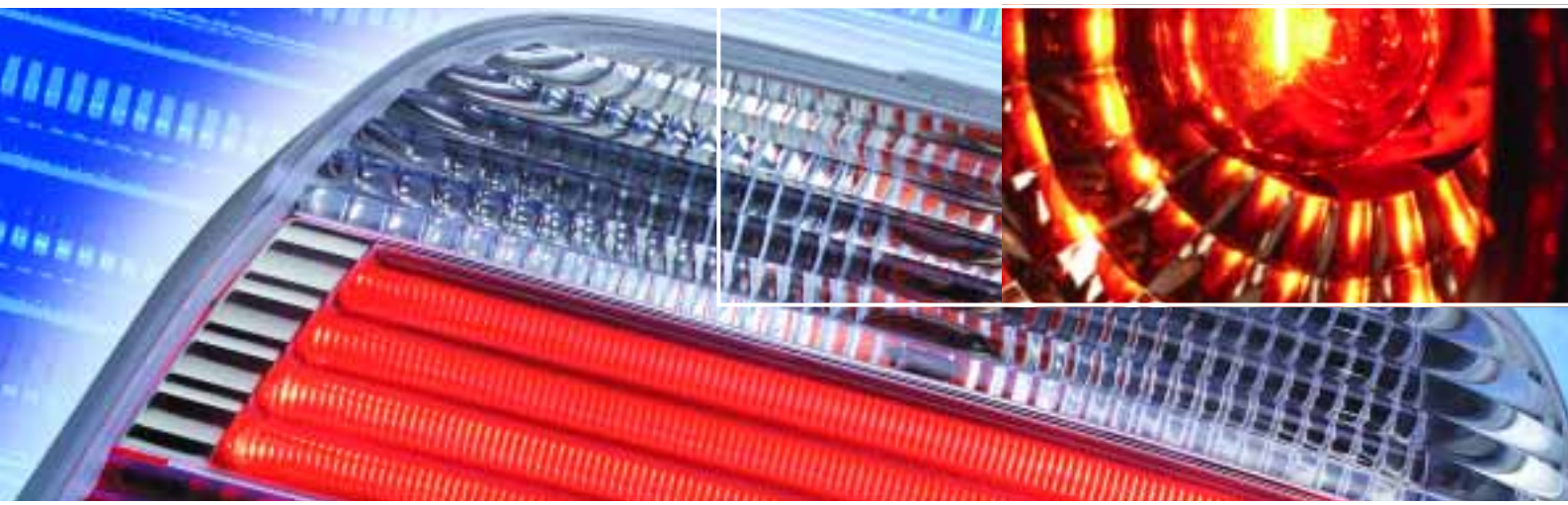
Magic Colours: For more individuality.

With slim plastic light guide strips using CELIS technology Hella is setting new standards on vehicle bodywork as well as in the interior. In combination with LED technology, car occupants experience a completely new ambient feeling of well-being – which at the end of the day also serves to increase safety. Additional accents of light on the outer bodywork increase the visibility of the vehicle, important mainly for pedestrians and cyclists.

With Hella Magic Colours car drivers can give their headlamps and combination rear lamps an individual look.
Whether with black xenon main headlamps or combination rear lamps in design colours using LED technology – a wide range of possibilities is opening up here for a very personal customer advisory service.

Whether a dark front-end or light rear-end: Hella Magic Colours give cars their own particular style.

What's true for DynaView® and daytime running lights is also valid for this large range of products. It's worth speaking to every customer about the possibilities available for giving vehicles an individual appearance.



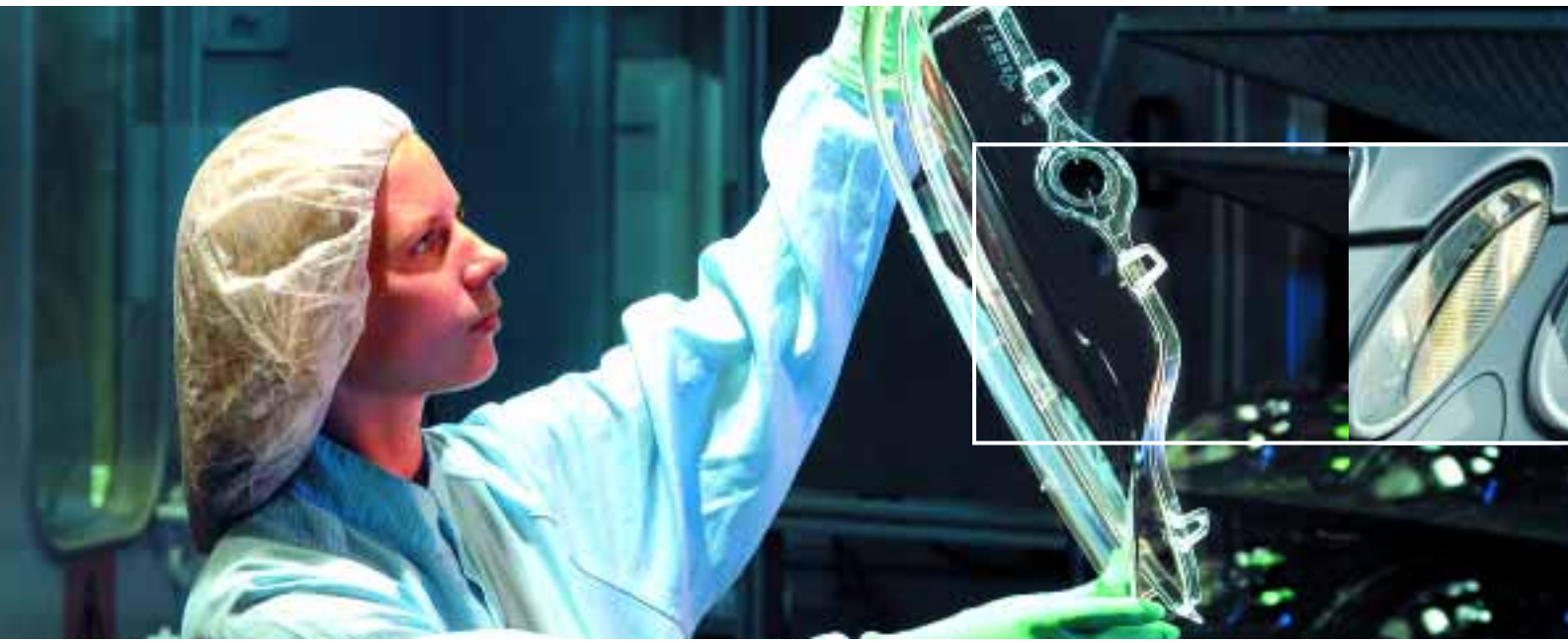
Free-form reflectors: The vehicle's second face.

The design of the rear-end is influencing the impression made by vehicles more and more. Together with the design of the front-end, it makes a major contribution to the personality of the brand as a whole and the character of individual models. Thanks to the development of free-form reflectors, transparent lenses and new colour-shape combinations, Hella has created more styling freedom for vehicle design.

The light is deflected by extremely complex, very precise free-form reflectors. Their surface is divided into countless segments and allocates an exactly defined share of the light to each point in the visual field of the rear-end lamp. A wide range of accessories has been created in this technological sector, allowing vehicle lighting to become more and more individual.

Free-form technology from Hella.

The car's personal look is emphasised particularly by the use of free-form reflectors. Hella can fulfil all your wishes.



Quality is irreplaceable. Except by quality.

Hella has made a name for itself in the international automobile industry as a company of progress and guarantor for quality according to the zero fault principle. Which is why headlamps and lamps from Hella are first choice for repairs and retrofitting, too. The wide and deep range offers three-fold guarantees: 1. best functionality, 2. optimum fit, 3. lasting customer satisfaction.

An extensive technology and design package rounds off the Hella range. From retrofit sets for xenon and DynaView® through special headlamps and lamps to designer products that can be used to upgrade any vehicle. Speak to your customers specifically about these possibilities.

We do not restrict quality to our products, however, but also provide technical service and training in all aspects of headlamps and lamps.

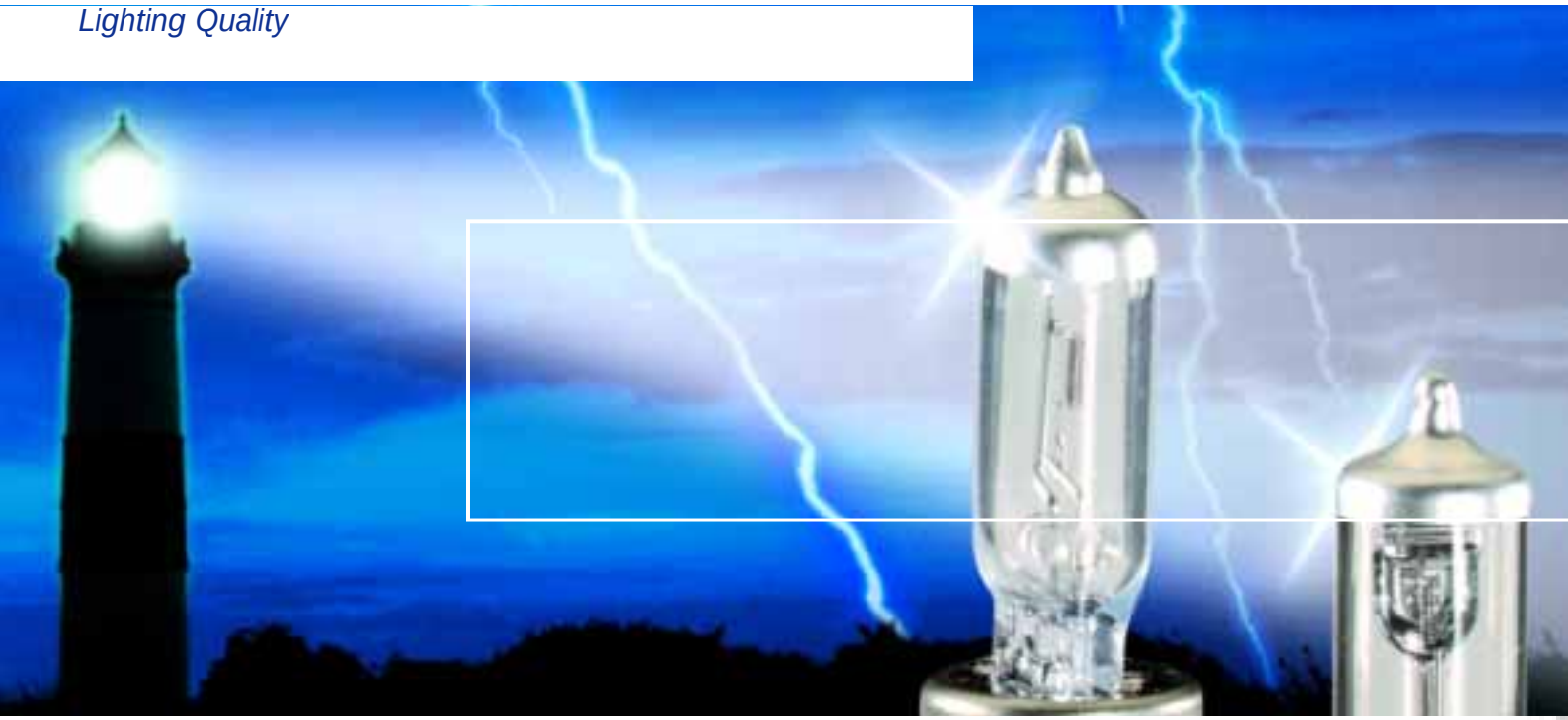
Benefit from Hella's original equipment quality: The same stringent standards are valid for all Hella retrofit and accessory products.

Combination rear lamp Audi A6.

Xenon headlamp
BMW 5-series (E39) Facelift.

Bi-xenon headlamp
Mercedes-Benz E-Class.

Combination rear lamps
BMW 5-series (E39) Facelift.



Bulbs and plastic cover lenses: clear as glass and very strong.

Bulbs, these small technical masterpieces, have to perform extremely well and fit perfectly into the lighting system. Which is why only top quality bulbs should be chosen. What choice of bulb brand could be better than that of Hella, the lighting expert? Hella's range of bulbs covers all aspects, including the matching bulb sockets, and is of course updated continuously.

For technical and stylistic reasons, more and more vehicles are being fitted with plastic cover lenses. Hella is one of the world's leading manufacturers in this area, too. Plastic cover lenses are manufactured under extremely strict clean room conditions, similar to the conditions for microchip production. In contrast to the manufacturing of glass, only absolutely pure basic materials are used. This is the reason for the higher brilliance and value in comparison to glass lenses. The advantages of the material are obvious: Plastic is around 2/3 lighter than glass – a specially developed hard coating protects the lenses from damage through stones and scratches. Vehicle designers appreciate a further aspect: plastic offers more design freedom for vehicle styling than glass.

All Hella bulbs are completely and thoroughly tested.

The extensive range of bulbs and company-own production of the cover lenses are the best proof of how important Hella regards all components involving automotive lighting to be. An increase in safety that cannot be replaced by anything.

Hard coating of the plastic cover lens.

Technical support, workshops and training are part of the Hella partnership programme and guarantee highest levels of efficiency in garages.

Hella is the right partner for real garage added value.

Ever more complex lighting systems mean garage's capacities are well filled – and they create more freedom for detailed advice. Every check made on the lighting equipment and every repair visit offers you the chance of extending your order. There are enough different possibilities available: for example conversion to xenon, retrofitting of DynaView®, the replacement of headlamps and bulbs, vehicle upgrading through side marker lamps and individual design. To make sure everything works out without any problems, Hella offers top training and technical information.

Hella is your guaranteed value partner. Thanks to research, innovation, quality, service, reliable availability and brand recognition throughout the world, you too can benefit from the strength of the Hella brand. Use every possible opportunity to inform your garage customers about the Hella range for safety, comfort and individuality. The next lighting service will give you the opportunity you need.

Thanks to intensive, inter-divisional development processes, ideas are turned into new, marketable products very quickly.