



# Design and functionality, illuminated

## Innovative headlamp design with polycarbonate

When it comes to headlights, taillights, and everything in between, polycarbonate (PC) is the powerhouse material revolutionizing design, functionality, and sustainability in automotive lighting.

Polycarbonate has a proven track record in headlamp design and offers impressive design freedom to improve both function and aesthetics in automotive lighting applications. To highlight just how versatile this high-performing material is, Covestro designed an automotive headlamp made exclusively out of Makrolon® polycarbonate-based materials. Makrolon® can be made thermally conductive, infrared (IR) transparent, and solar blocking. It can offer high diffusion, low-CLTE, and is laser etchable and metalizable. Additionally, with it being a recyclable, mono-material design that uses less parts, tooling and manufacturing steps, polycarbonate checks every box from performance to planet.

Polycarbonate is also the driving material behind the following automotive headlamp solutions:

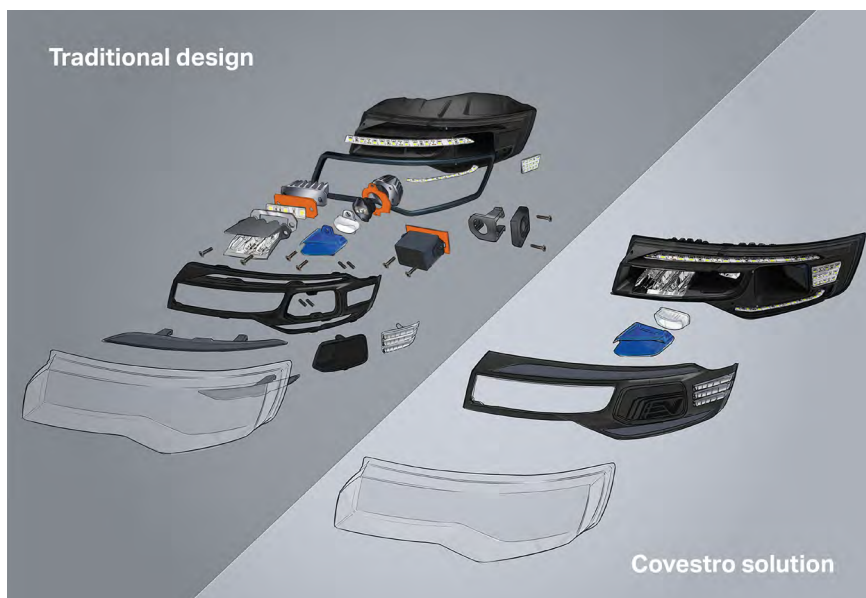


Sensor Integration

Consolidated Assemblies

Reduced Manufacturing Complexity

Heat Management



### Novel automotive headlamp module:

- Significantly fewer parts: 5 components vs 18 parts and screws
- Approximately 1 kg weight savings per lamp design by eliminating metal
- Thinner design with heat sink integration
- Styling options such as bright metalization, black and/or dynamic lighting effects
- Mono-material, polycarbonate-based design aids sustainability and recycling

Experts from Covestro can help designers and engineers materialize a finished product from concept to commercialization. [Click here](#) for more information.

Performance, cost, weight and recycling are optimized with the progressive styling of this polycarbonate-focused headlamp. Our lighting solutions enable dimensional stability, consolidation of parts and processes, integrated electronics, progressive color and lighting options, improved photometrics, and above all, cost-savings.



### PC-Centric Headlamp

Outer Lens Cover

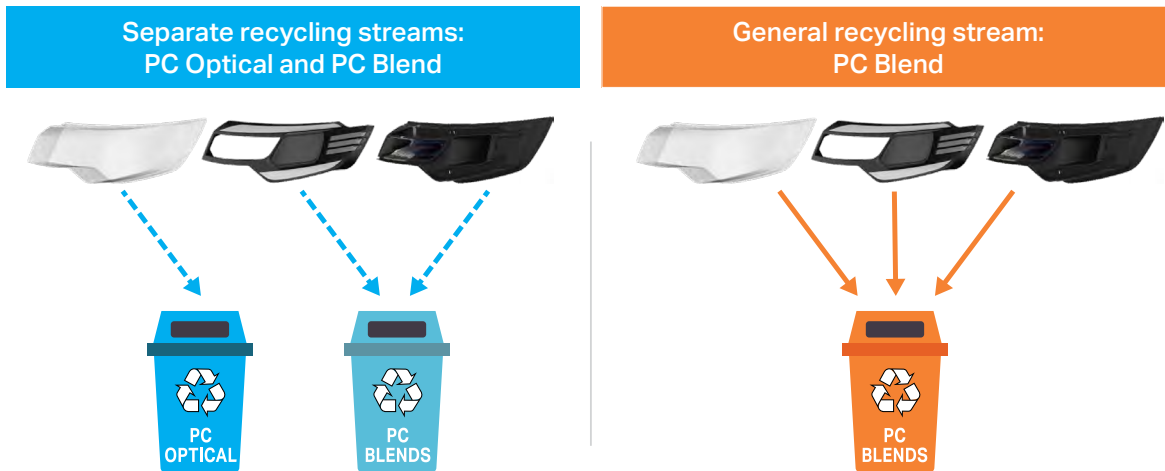
2K Bezel

2K Reflector/Housing

### Sustainable Solutions

At Covestro, sustainability is woven into everything we do. Our PC-centric headlamp was thoughtfully designed with sustainable and simplified material use in mind. By considering factors such as material selection, part design, forming technologies and secondary operations, this headlamp design uses over 10 fewer parts and optimizes assembly versus other common designs. Simplified manufacturing eliminates several injection molds and various stampings, castings and numerous secondary operation steps.

This design also allows for sustainable manufacturing, tooling, and assembly along with lower energy usage and easier recycling.



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