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OPTICAL PLATE

CASE STUDY: 1

OPTICAL DESIGN

Evolution of a Polycarbonate optical plate using 3D CAD and optical simulation

Source defined, material selected, near field collimator created and emission verified

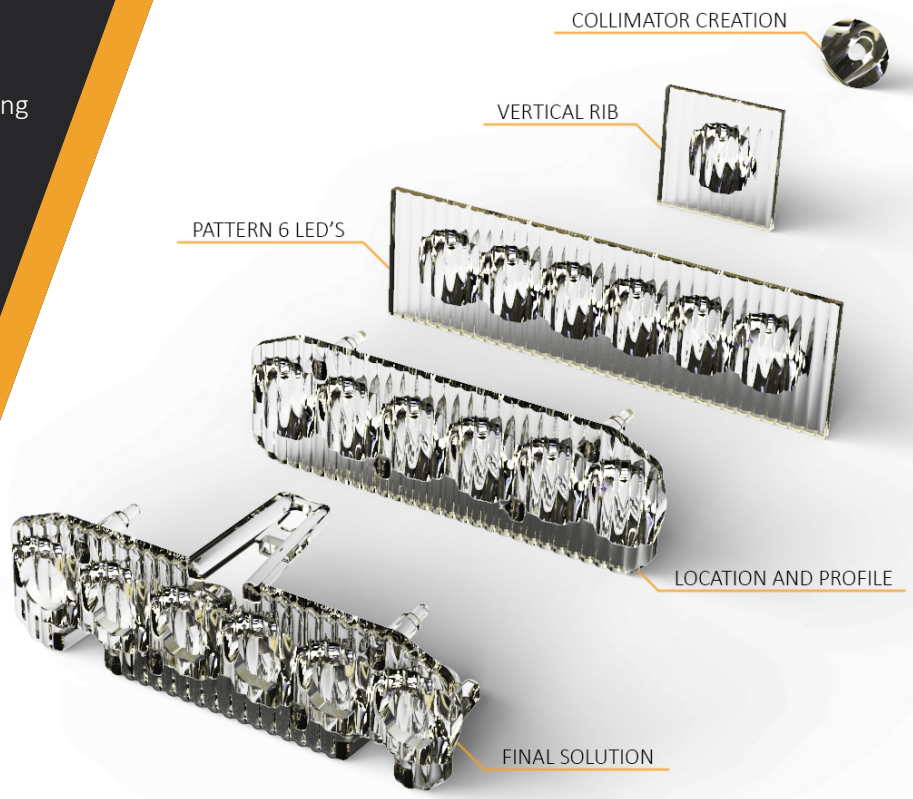
Prismatic section added to tilt beam vertical ribs applied creating horizontal oval beam profile

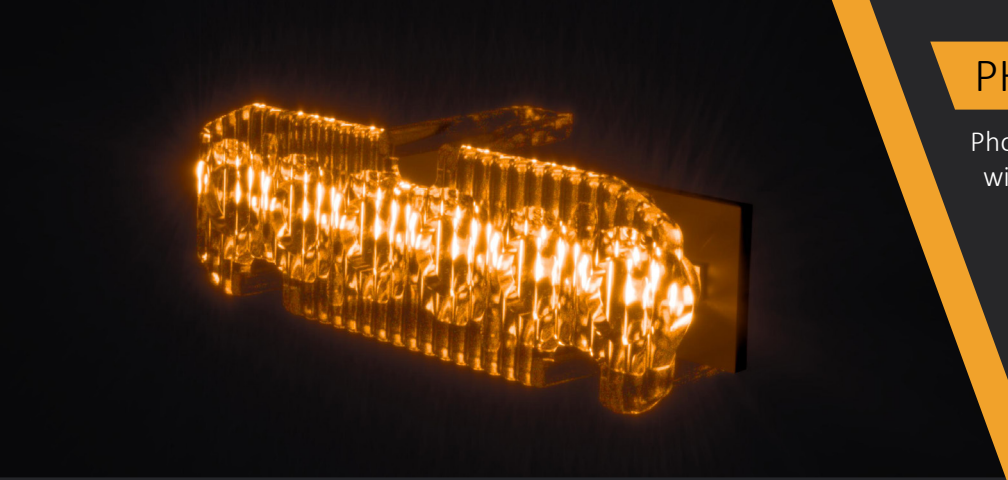
Optic patterned to create an array

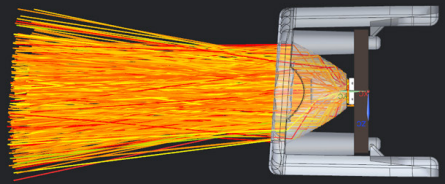
Location and fixing strategies added and perimeter profiled

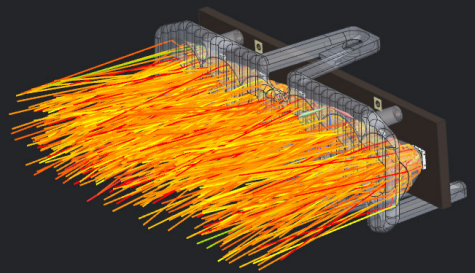
Front face cored out reducing material thickness

Design completed with a high degree of confidence









PHOTOMETRIC VERIFCATION

Photometric performance checked digitally within simulations, then verified empirically

Optical simulations digitally verified part performance within final assembly to ECE R65 special warning lamp regulation

Physical prototyping avoided, saving time and money

1st off parts were assembled and verified on far field photogoniometer to R65

No tooling adjustments were necessary

Right-first-time design, due up-front investment in simulation

DESIGN FOR MANUFACTURE

Design for Manufacturing was considered from the very beginning of the development

Critical features and tolerances specific to injection moulded parts were included in the design

Material selection, associated tooling and processing constraints were all agreed early in the design process

Commercial and performance compromises were understood at the earliest opportunity

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