

Two Dimensional Volume Conserving Extratorless Non-Linear Wedges (NLW) Non linear wedge Light Guide Panels For BLU and FID

Another World's First From Visus!

Key Advantages:

- No need for distributed micro-extractors.
- Greatly Reduced NRE & Production costs.
- Higher Yield & Repeatability.
- Up to 1.75 times higher luminance at a given thickness.
- and is 50-75% lighter compared to one sided planar LGP.
- Up to 70% lower Weight & Volume.

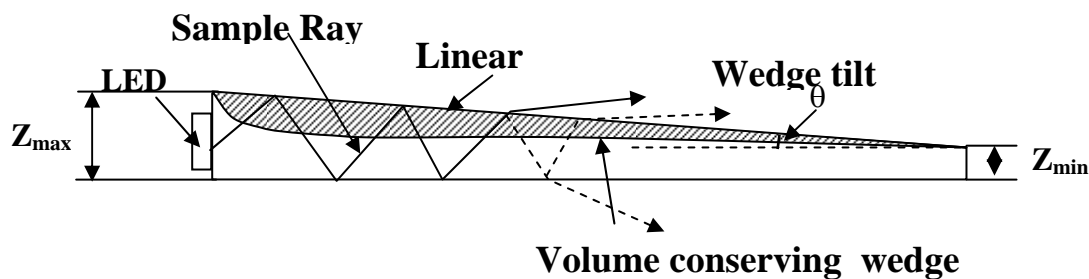


Fig. 1. Non-Linear 1D Wedge (NLW) LGP produces uniform luminance without any light Extractors. It is also 25 – 50% lighter compared to planar and linear-wedge LGPs.

Uniform light extraction can be effected by accurate control of LGP's tilt, i.e. curvature. Obviously this method has key practical benefits compared to conventional distributed micro-extractors. However a complexity of calculating such a surface has been a major hurdle preventing its practical use. Indeed special flux transfer computational methods and lens synthesis software had to be developed to solve the problem.

Two-dimensional non-linear wedge LGP has a generally smooth concave shape and is thinnest at one point (resembling an aspherical concave or plano-concave lens). Since generally X and Y dimensions are not equal and lamps generally are coupled only to some of the edges the wedge has no axial symmetry. It represents a special and unique optical element (system) which can be termed Aspherical

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Asymmetrical Edge Lens (AAEL). If the lamps are disposed symmetrically about the edges of the polygonal plate, the thinnest point will be at the center; most of the forward propagating flux from each individual lamp toward the center is then incident on a concave surface with negative slope and is gradually extracted out. This surface has a key volume conserving property: a concave shape minimizes to a theoretical limit the volume and thus the weight, of the plate (consistent with the edge width necessary to efficiently couple light from adjacent lamps).

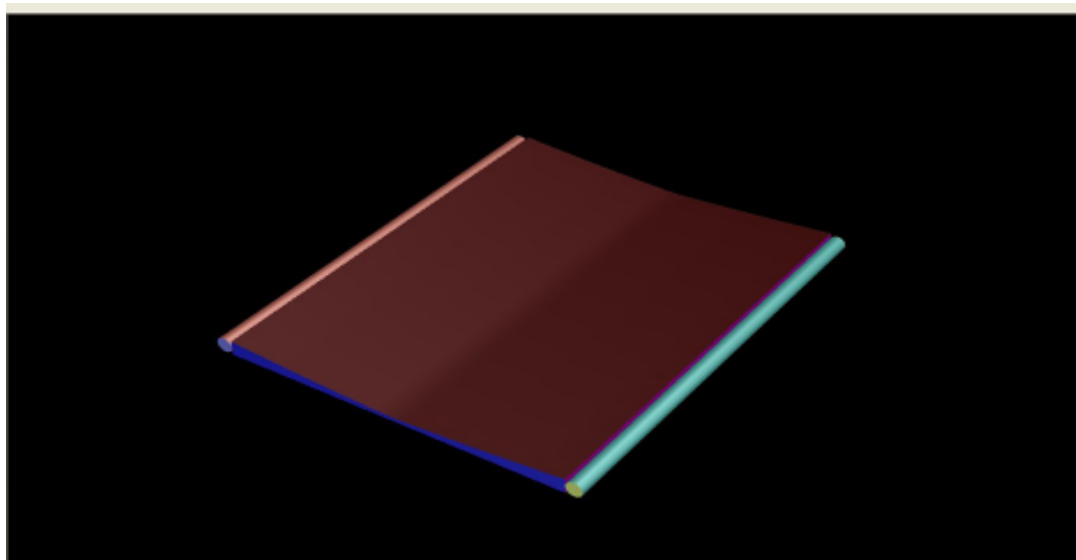
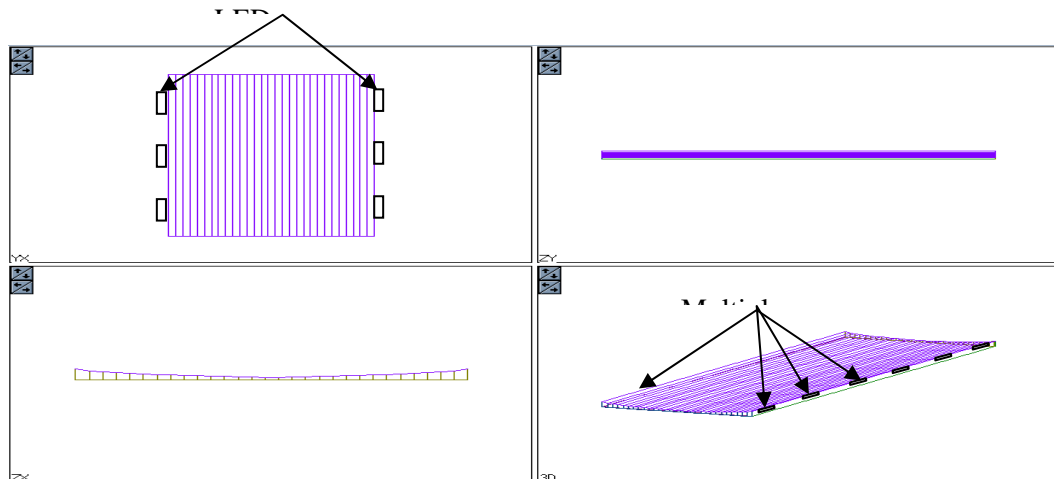


Fig. 2. Two sided Non-Linear 1D Wedge with two CCFLs coupled to opposite edges.

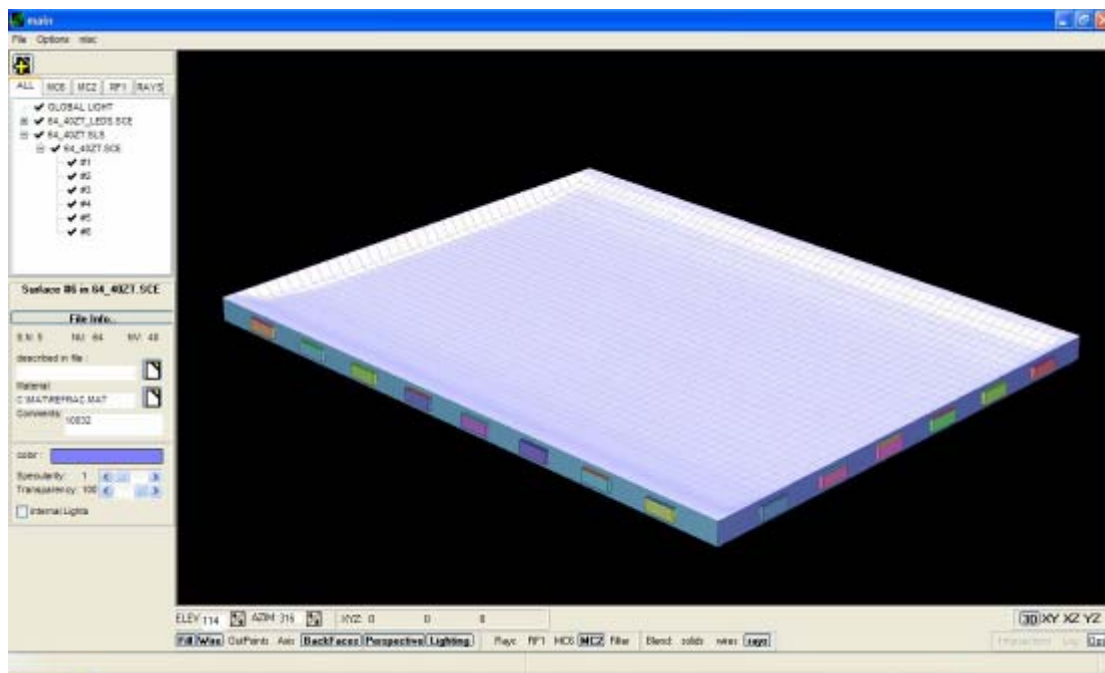
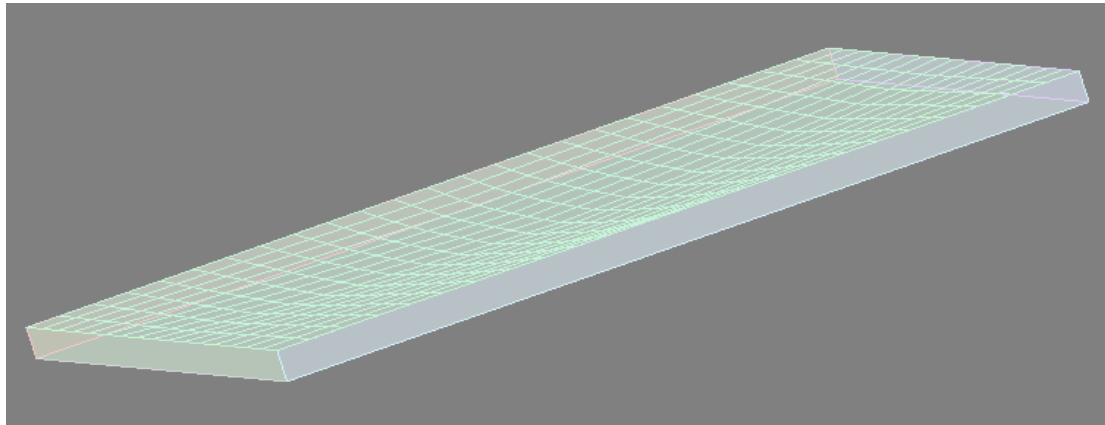


Fig. 3. Four sided Non-Linear 2D Wedge. LEDs are mounted along all four edges. It has 3.5 times higher luminance and is 50-75% lighter compared to one sided planar LGP. For the same luminance thermal management is much better, since a given number of LEDs is mounted more uniformly along all edges.

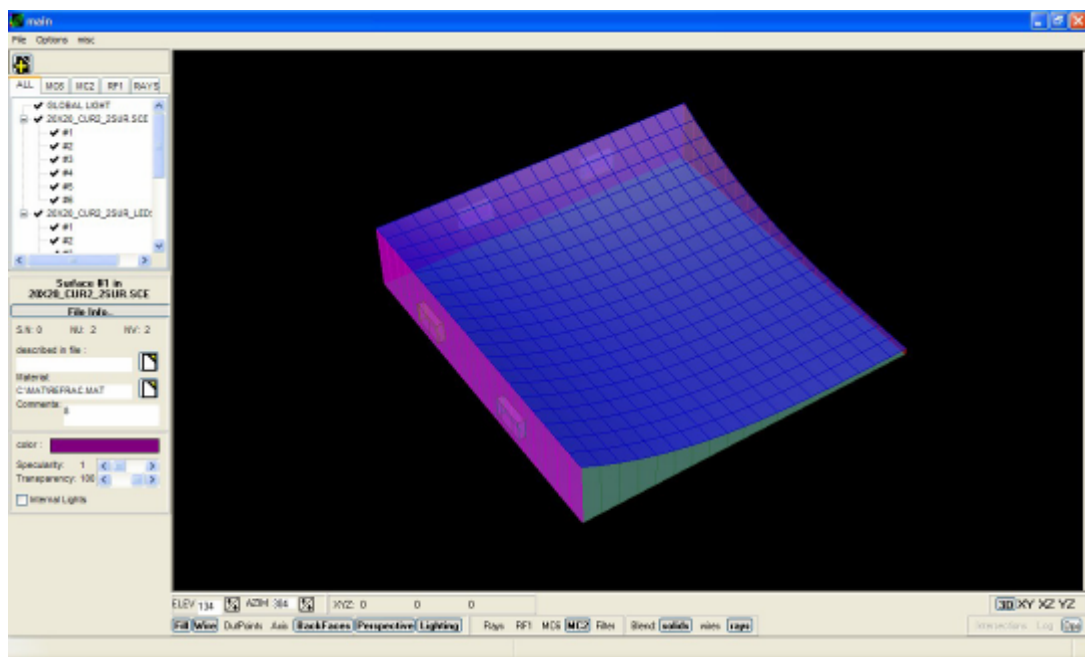
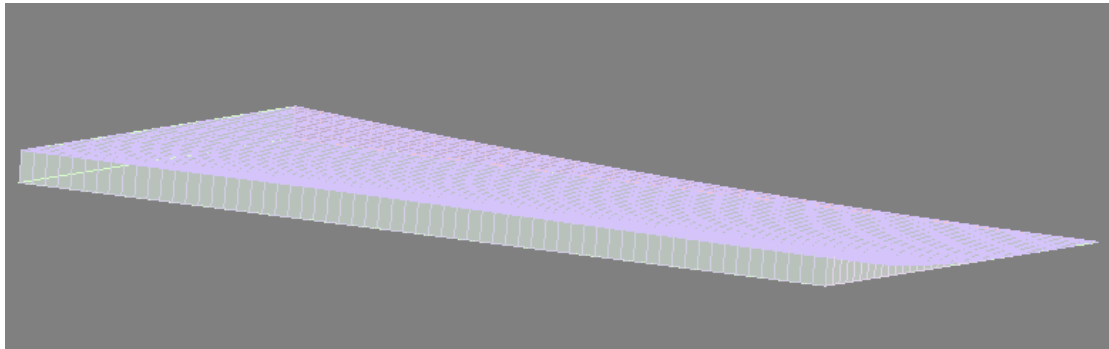


Fig. 4. Two sided Non-Linear 2D Wedge. LEDs are mounted along two edges. It has 1.75 times higher luminance and is 50-75% lighter compared to one sided planar LGP