



EssilorLuxottica



Scalability, Efficiency and Molded Polymer

The Waveguide that Unlocks Ophthalmic Integration

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WHO WE ARE

Optinvent: Pioneering Molded Polymer Precision Optics

Based in Rennes, France

15+ Years

in AR Display Optics

30+ Patents

& proprietary fabrication
IP



World's first molded
polymer 2D waveguide

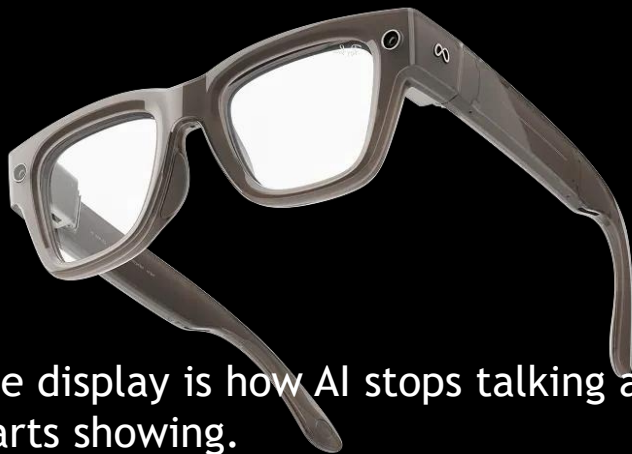
Focus: What changes when the waveguide itself is polymer and injection molded ?

WEARABLE AI NEEDS A VISUAL INTERFACE – THE DISPLAY

AI creates the reason to wear smart glasses all day

AI Display Glasses
435 K – 26 M

60x growth from 2026 to 2032
(Source: TSR)



- The display is how AI stops talking and starts showing.

**Audio is a good starting point – but every successful platform has a display
(smartphone, smart watch, PC)**

FOR THE DISPLAY, THE WAVEGUIDE IS KEY

The equation has changed from immersive AR to wearable AI – KPIs remain the same



Cost:

High-volume, consumer scale optics



Power consumption: Compute + display for all day wear



Rx integration:

Leverage ophthalmic ecosystem

The waveguide is a key contributor to all three

Wearable AI is here → display is the interface → the waveguide holds the key

OPHTHALMIC INDUSTRY: SCALE, SUPPLY CHAIN, INERTIA & TRUST

2.7B

People need vision correction

Myopia, hyperopia, astigmatism, presbyopia

40+ yrs

Plastic lens dominance

CR-39 and polycarbonate replaced glass lenses decades ago

01

DIGITAL RX

Prescription data

Billions of unique Rx orders per year

02

LAB

Surface + coat Rx lens

Distribution engine:
15,000+ local labs.

03

OPTICIAN

Center + edge + fit

Trusted customer touch point

04

WEARER

Advice, choice, & speed

Sees AI glasses as eyewear first

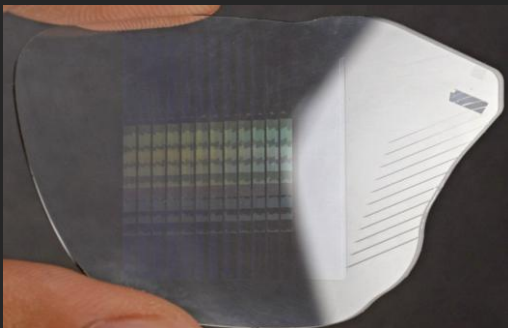
Rx labs, opticians, prescriptions — decades in the making.
The waveguide must plug into this eco-system.

WAVEGUIDES: 3 TECHNOLOGIES – 2 DIFFERENT MATERIALS

01

Glass Reflective (Geometric)

Micro-mirror array glass stack

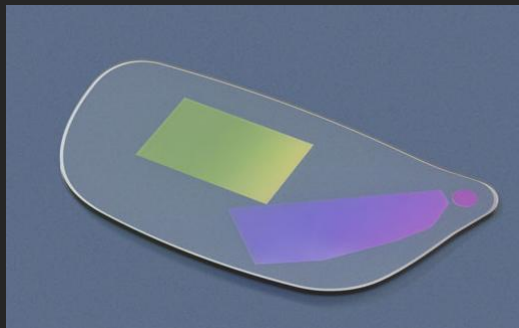


- ✓ Good optical performance
- ✗ Complex multi-step assembly

02

Diffraction or Holographic

Nano lithography or hologram on substrate



- ✓ Thinner, higher transparency
- ✗ Efficiency & color trade-offs

03

Molded Polymer Reflective

Injection molded reflective array

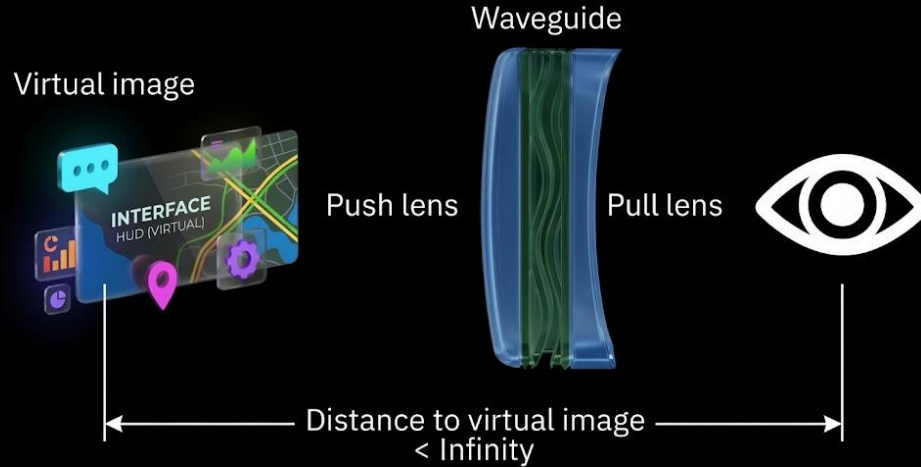


- ✓ Scalable, low capex, safe
- ✗ Still maturing

The material matters for ophthalmic integration.

GLASS WAVEGUIDES

Bonding glass WG to polymer Push-Pull Rx lens is complex → weight & thickness penalties.



Conventional WGs w/ infinity focus require “Push-Pull”.

The End Result :

- Requires factory Rx + push/pull integration w/ specific adhesive & 6-week lead time
- Change in prescription later cannot be accommodated (impossible to disassemble)
- **Labs and local opticians bypassed - Not compatible with Rx eco-system**

ORA-LENS MOLDED POLYMER WAVEGUIDE — A NEW PATH

No glass, No substrate, No NIL or Etching, No Push-Pull Lens.

One-shot molded polymer optics: Scalable, efficient, full color & native virtual focus.

1 Monolithic Virtual Focus (No Push-Pull)

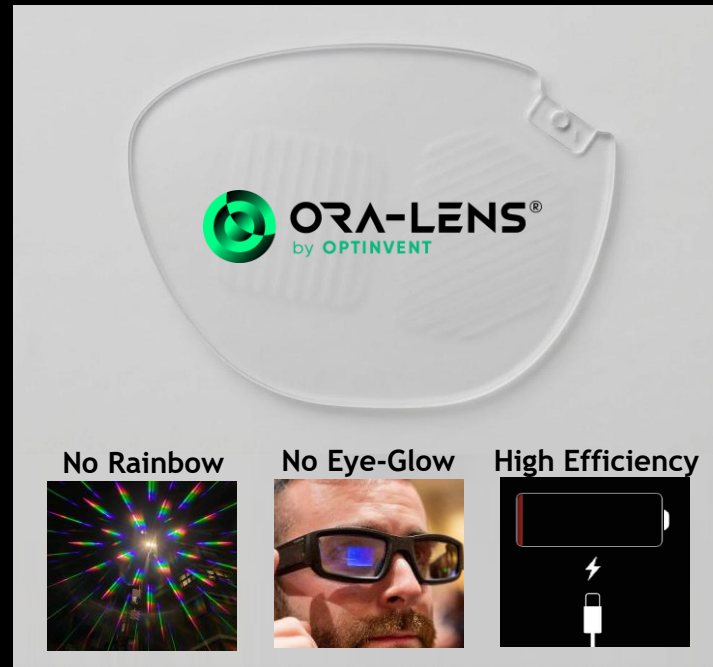
Virtual focus (@2m or less) is done directly in the waveguide. Only Rx lens is needed.

2 Matched Polymer CTE

No thermal fatigue & complex lamination process. Can easily be cut and edged to shape.

3 High Efficiency RGB Reflectors

Up to 5000 Nits/Lm efficiency — higher than diffractive, high color uniformity & nearly zero forward eye-glow.



The differentiator is not only “polymer” — it’s the monolithic optical architecture.

ORA-LENS ARCHITECTURE

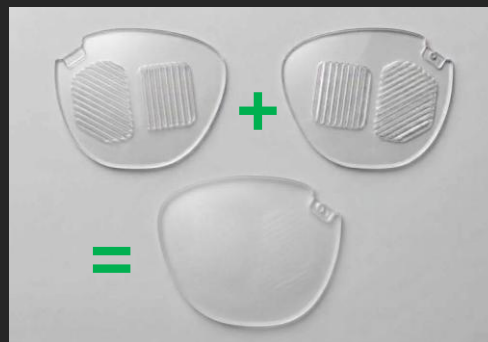
We replaced many precision-fabricated glass elements with two molded optical parts

GLASS REFLECTIVE



25 individual pieces

cut → coat → bond → grind → polish then
assemble with tight tolerances



2 molded parts

injection molding → coating → assembly
with a process designed for volume

This shifts the precision challenge from assembly to tooling and molding.
A process that's inherently more scalable.

HOW WE BUILT IT – AND HOW IT SCALES

Over a decade of experience – High barrier to entry

High-precision toolmaking method

Optinvent IP

Proprietary molding technique using standard equipment w/ advanced optical polymers

Optinvent IP

Specific thin-film coating & assembly process

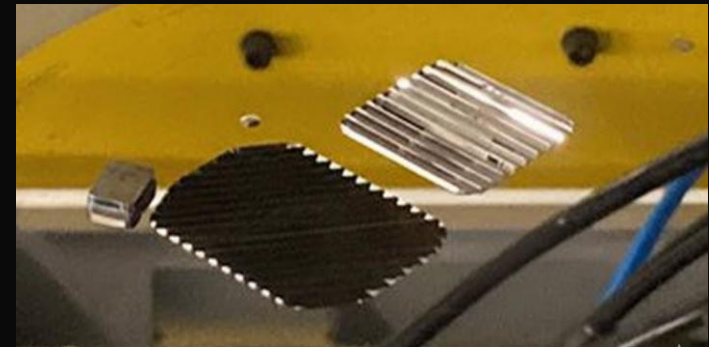
Optinvent IP

Capital roadmap to mass-market scale :

- Improving precision of tooling
- Process maturity & metrology
- Pilot line automation to build a scalable template



Optinvent's 100T Press



Optinvent's Proprietary Tool

ORA-LENS — WHAT'S BEEN ACHIEVED SO FAR

Parameter	Value
Material	Low birefringence shatterproof polymer (FDA compliant)
Weight	< 4g
Virtual image distance	2m (w/o Push-Pull Lens)
FOV	Up to 50°
Efficiency	Up to 5000 Nits/Lm



Remaining improvements are tooling and process driven — the physics works.

WHERE WE CAN GO FROM HERE – TOGETHER

Proposed roadmap for integration into existing ophthalmic workflow (needs R&D)

1 A new type of blank: Combined WG + Rx lens

Rx lens & ORA-Lens aligned and combined as a new type of blank for custom Rx implementation.



2 Labs customize Rx and apply standard coatings

Standard anti-scratch, anti-reflective, and hydrophobic optical coatings to new blanks.



3 Local opticians edge & fit

Local point of sale trimming and frame-fit new blank using standard edging equipment.

New possibilities with ORA-Lens monolithic polymer architecture (no CTE issue, no push-pull)

To the people in the room: What's needed to validate and build this together?

Not a new supply chain.
Just a new waveguide.



**Scalability, Efficiency and Rx Compatibility
...Simultaneously.**

Thank You!

EPIC
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2026, Milano

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