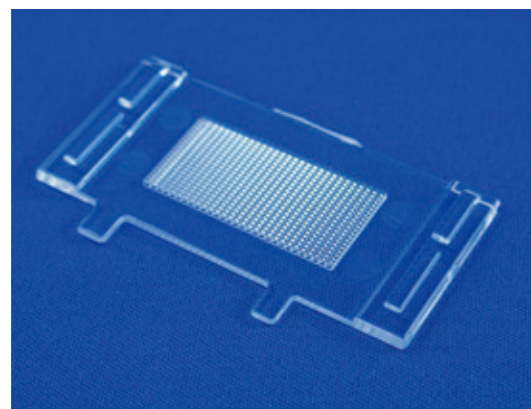


Differentiation technology

HUD レンズ成形技術 | HUD LENS MOLDING TECHNOLOGY

■ HUDレンズ成形 | HUD Lens injection molding

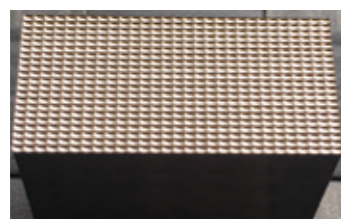
■ LENS外観 | Lens appearance



- 技術内容 | Technology content
超微細加工による金型加工精度の向上
Improvement of processing accuracy by the ultra-fine processing
- 生産拠点：日本 | Subjects for development
Production : Japan
- 試作工数：3ヶ月
Lead time of PROTO : 3 months.

■ 金型加工例 | Description Molding technique

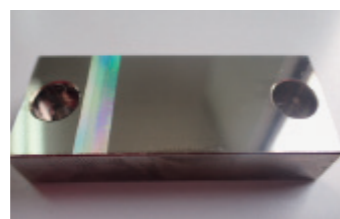
①非球面加工 Aspheric surface



形状 : R0.8 μ m
表面粗さ : 5.0nm

Shape : R0.8 μ m
Surface roughness : 5.0nm

②微細溝加工 Micro groove



形状 : 1 μ m ピッチ
表面粗さ : 5.0nm

Shape : 1 μ m pitch
Surface roughness : 5.0nm

③自由曲面加工 Freeform surface



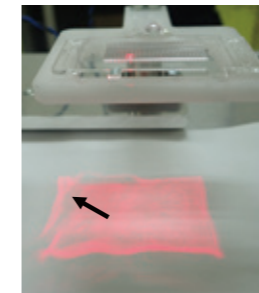
形状 : 自由曲面
表面粗さ : 5.0nm

Shape : Freeform surface
Surface roughness : 5.0nm

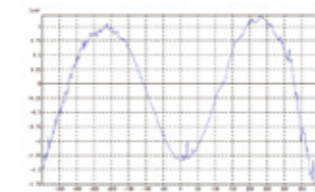
■ 開発課題 | Development task

従来 | Conventional

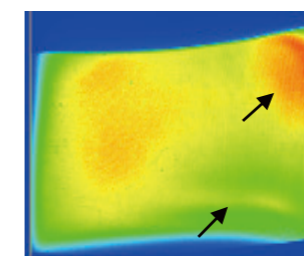
寸法精度不足による照明ムラ (歪み)
Unevenness of lighting due to insufficient dimensional precision



レーザーポインター検査
Laser pointer inspection



PV値 : 5.0 μ m
Peak Valley value : 5.0 μ m



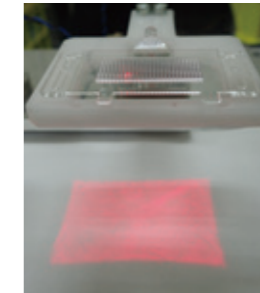
輝度分布
Luminance distribution

必要PV値: 1.0 μ m以下に対して、5.0 μ m以下の精度が出ず従来は綺麗に映らなかった。

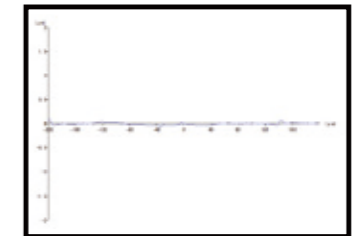
Required PV value: 1.0 μ m or less, precision of 5.0 μ m or less was not obtained, and conventionally it did not appear beautifully.

新技術 | New technology

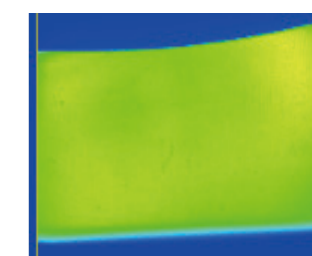
金型精度向上による照明ムラの改善
Improved mold accuracy improved illumination unevenness



歪み発生なし
No distortion occurred



PV値 : 0.6 μ m
Peak Valley value : 0.6 μ m



照明ムラなし
No illumination unevenness

必要精度を満たし、照明ムラのないレンズを成形した。

A lens with satisfactory accuracy and without irregular illumination was molded.