Introduction to Optical System Design and Manufacturing

Design process

Pre-conceptual design
- Determination of outline structure and main specifications

Conceptual design
- Determination of detailed specifications based on design studies

Basic design
- Optical path diagram, assembly drawing, determination of final specifications

Detailed design
- Verify feasibility of product specifications in calculation documents, etc.

Fabrication design
- Documentation of manufacturable level
- Process design for manufacturing

Manufacturing process

Material procurement
- In-house procurement
- Provided materials

Parts processing
- High-precision polishing
- High strength coating
- High-precision machining

Assembly and adjustment
- Precision assembly adjustment by skilled technicians

Evaluation of Performances
- Precise evaluation by in-house manufactured evaluation equipment

Delivery
- Quality assurance system based on the ISO9001

We can participate and propose in all stages of the process from planning to realization of products.

For example:

- feasibility study of pre-conceptual design
- optical design from conceptual design stage to fabrication design stage
- detailed design and fabrication design based on the provided basic design
- making high-precision lenses and machine parts based on the provided drawings

We offer optimal solutions for optical products fabrication, based on our decades of experience in designing and manufacturing UV and DUV optical systems.

Inquiry:
TEL: +81-45-931-6592
URL: https://www.ksoc.co.jp/en/shiryo/
Responsible for sales: Kobayashi and Kimura
[High Precision DUV Objective Lens]

<Example of specifications>
- Wavelength 266nm
- Field of view φ0.4mm
- NA 0.9
- Transmitted wavefront aberration $\leq 0.03\lambda_{rms}$

<Applicable range>
- Wavelength: 157 nm to near infrared
- NA:~0.95
- Aberration performance:
  - transmission wavefront aberration $0.02\lambda_{rms}$
- Machining accuracy:
  - Lens surface accuracy PV $\lambda/30$
    (available for various materials)
  - Mechanical parts machining accuracy $\leq 1\mu m$
- Assembly accuracy shift $\leq 1\mu m$
  - tilt $\leq 1$ arcsecond

[Large Projection Exposure Lens]

<Example of specifications>
- Wavelength i-line
- Exposure area φ200mm
- Projected magnification 1x NA0. 15
- Transmitted wavefront aberration $\leq 0.05\lambda_{rms}$
- Distortion $\leq 0.5\mu m$

<Applicable range>
- Wavelength: g, h, i line
- Resolution: 1.5umL/S
- Exposure area: ~φ360mm
- Magnification 0. 1x (reduced projection) to 2.0x (enlarged projection)
- Max. overall length 1. 5m
- Lens max. φ410mm, Lens barrel φ650mm
- Supports aberration correction mechanism by lens drive

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