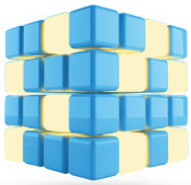
XVP PHOTONICS

PHOTONICS

PASSIVE AND ACTIVE COMPONENT DESIGN

- Waveguide structures, fiber, planar
- Passive all-fiber and micro-optic components
- Mechanically and thermally tuned devices
- Bulk optics, UV to midIR
- Optical material characterization

LASERS AND OPTICAL SYSTEMS

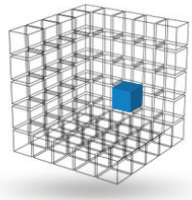


- Fiber lasers and amplifiers
- Fiber based systems/assemblies
- Opto-electronic instrumentation

TEST AND MEASUREMENT

- Test and measurement automation
- Test system design, sourcing and integration, including Optics, jigging, electronic equipment and software development
- R&R studies and calibration

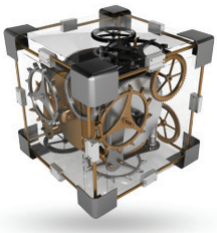
RAY TRACING, GAUSSIAN OPTICS AND WAVEGUIDE MODELING



- Zemax and tailored software solutions

MECHANICS

MECHANICAL DESIGN



- Solid modeling
- Detailed drawing and sourcing
- BOM generation
- Configuration management with CAD vault

FINITE ELEMENT ANALYSIS

- Strain/stress
- Thermal modeling
- Computational flow dynamics

MACHINING AND RAPID PROTOTYPING

- High precision machining and rapid prototyping in aluminum, stainless, brass, OFHC copper, plastics, glass ceramics, kovar, invar, etc.
- Two vertical CNC milling centers with high speed spindle capability (50krpm)
- Twin spindle 6-axis turning center with active tooling
- 3D printing of plastic composites (Nylon, Onyx, fiberglass, Kevlar, carbon fiber)
- Microscope inspection and measurement capabilities
- Plating, anodizing, painting

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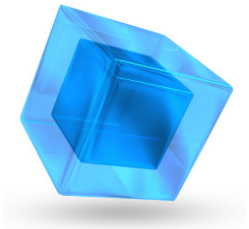
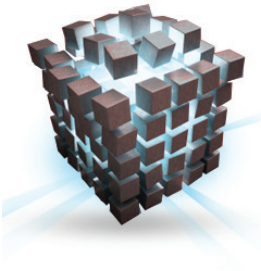
PACKAGING & RELIABILITY

PACKAGING AND ENCAPSULATION



- Fiber components (tunable and passive) package design
- Semiconductor laser package design
- Micro-optics and pigtail designs, integration with lasers and detectors
- Lensed fiber designs, fabrication stations and metrology
- High reliability, hermetic fiber cable designs and processes
- Thermal stress management
- Fiber bundles and beam shaping optics, encaps & windows
- Packaging module design, fiber management & assembly processes
- Materials and processes: adhesives, solders, glasses, ceramics, plastics, alloys, composites, plating & vacuum coatings, reflows, curing, plasma
- Hermetic sealing, polymer seals and molecular sieve moisture/hydrogen management

LASER POWER HANDLING



- High power/LIDT components, packages & optical connector designs
- Package atmosphere management
- Advanced thermal management solutions
- Stepped stress plans, embrittlement studies, failure analysis

ASSEMBLY STATIONS

- Accurate fiber and mirco-optic grippers
- Vision & parametrically driven motorized actuation
- UV cure & inductive/laser reflow
- Contact sensors & reliable fiber management

FAILURE MODE ANALYSIS

- SEM, AFM, cross sectional analysis
- Hermeticity issues, fine leak testing, internal vapor analysis
- Fiber fractography analysis
- Documentation and reporting
- Customer interface, liability estimates, corrective action plans

SCREENING

- Proof test levels vs. load profile
- Stress corrosion factor measurements
- Hermeticity qualification and controls
- High power level screening methods
- Burn-in designs
- Sampling methodology

RELIABILITY PREDICTIONS

- Low FIT (0.1FIT) designs, analysis and test plans for critical deployments
- Failure data analysis and plotting – Log-Normal, Weibull, etc.
- Strength–stress interference
- Fiber integrity and reliability predictions based on the power law model
- Reliability test plans and qualification
- MTBF predictions
- Product maintenance through reliability estimates and failure mode analysis

SOFTWARE & SYSTEM INTEGRATION

LABVIEW™

- Labview object oriented programming
- Instrument interface and controls
- User friendly GUIs
- Large library of VIs for common instruments and actuators

SYSTEM INTEGRATION

- System integration capability for prototyping
- System mechanical assembly
- Splicing and fiber management
- Optical subsystem alignment/ bore sighting
- Integration with electronics, sensors and actuators
- Software integration
- Performance calibration

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