



Advanced Active Alignment for AR/VR/MR

EPIC Online Technology Meeting:

Next Steps for Smart Glass in AR and Related Applications

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What is Active Alignment?

Active alignment is a closed loop, precision assembly technique that uses a device's functional output as feedback in order to determine the optimal relative positioning of components during assembly.



Manufacturing Challenges

Multiple Alignment Steps



Many Quality Metrics to Be Optimized



Binocular Alignment



Expensive BOMs/Cost Sensitive Market



Final Test and Calibration



Improved Yield

Active Alignment offers tight end to end process control to obtain high yield even across multiple alignment steps

AA Algorithms

Advanced active alignment algorithms can use multiple KPIs as feedback for assembly in order to find best compromise for optimal performance

Multi-Channel Alignment

Active alignment allows for relative alignment of multiple channels in order to take full advantage of available FOV and display active area

UPH/Quality/Yield

Devices must be high quality and manufacturable with high yield/throughput in order to strike balance between cost and value for customers

Complex Testers

Precise test and calibration required for image projection and integrated sensors. AA algorithms can be applied for in-line and EOL test systems.

Advantages Provided By Active Alignment



USE CASES FOR AR/VR/MR IMAGE PROJECTION

- Projection optics alignment
- Display alignment (i.e. LCoS, OLED, micro-displays)
- Illumination alignment (i.e. LED, VCSEL)
- Waveguide to waveguide alignment
- Projection optics to waveguide alignment

USE CASES FOR AR/VR/MR SENSORS

- Wide and narrow FOV camera module alignment
- Module to module camera alignment (stereo)
- Laser collimation for structured light projectors
- ToF AA
- Structured light projector to NIR camera alignment

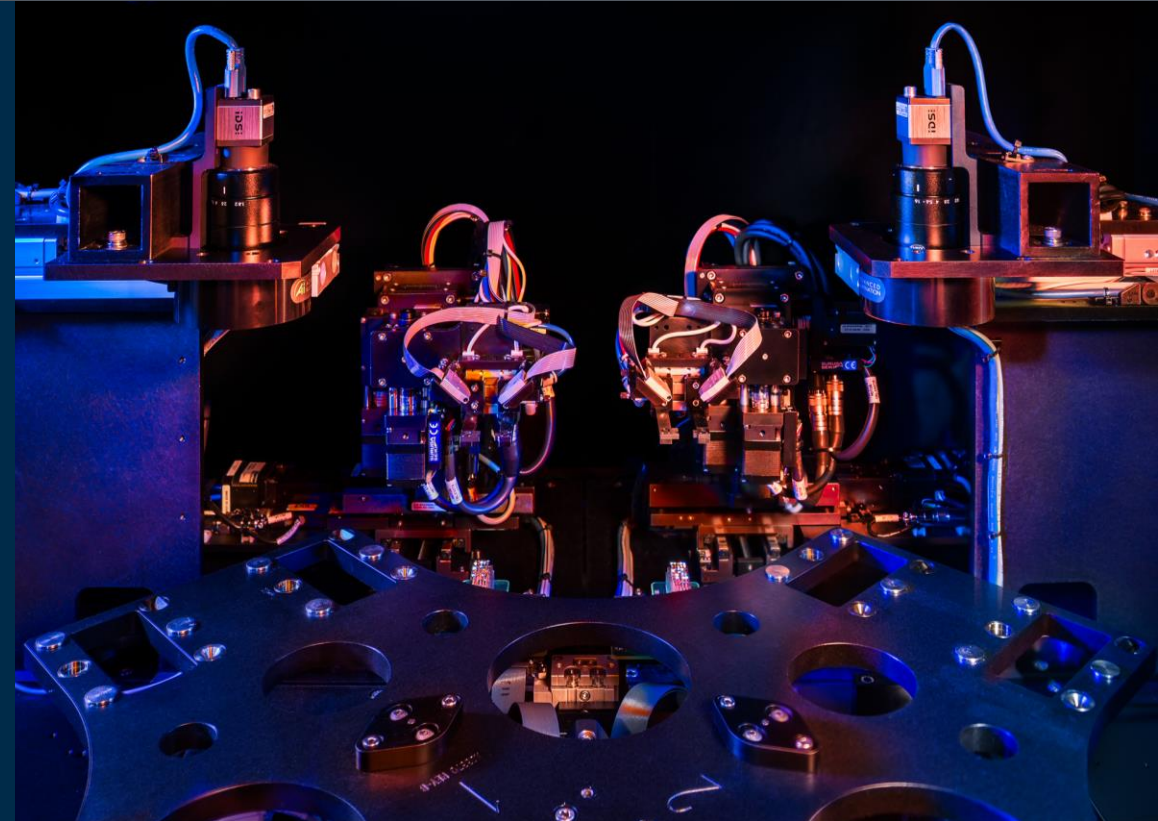
- Single or dual head 6 DOF AA
 - 0.2um linear resolution (15nm optional)
 - 0.01deg angular resolution (10μrad optional)
- Customized AA feedback systems and AA algorithms
- Automated adhesive dispense and UV cure
- Flexible product platform that can be customized to customer/application requirements
- Systems delivered with turnkey process for high volume manufacturing
- Kasalis Pixid AA platforms and algorithms can be leveraged for customization of in-line or EOL testers



World leading automated active alignment and test systems for **HIGH ACCURACY, HIGH THROUGHPUT** assembly and test.

COMPETENCIES:

- In-house, experienced engineering team to support customization of product platforms for assembly and test
- Customizable software and algorithm development for AA/test
- Turnkey process development to support prototyping or volume production
- Global footprint for sales and service
- Factory support for sustaining and continuous process improvement
- Proven track record of use in mass production



THANK YOU



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