



Vibration Isolation



ABOUT K&S

Experienced

Team of Engineers, Physicists, and Industry Consultants

Customizable Solutions

Tailored to Customer and Industry Needs

Patented Top-Performing Systems

Innovative, User-Friendly

Design-Focused R&D

In-House Manufacturing





Products Lines

Standalone Off-The-Shelf Products

Our patented systems are designed to minimize need for customer involvement



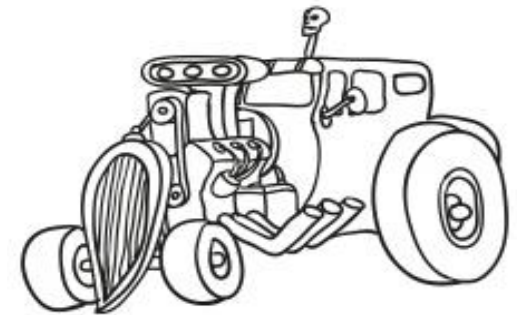
Integrated OEM Solutions

Our technology can be integrated into the tools of other manufacturers



Customized Solutions

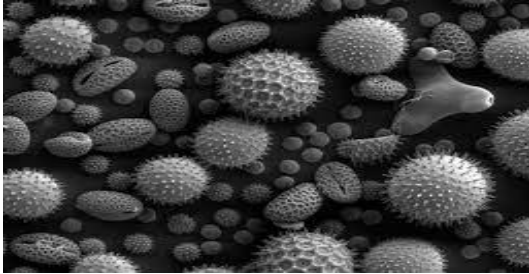
If our off-the-shelf products are not compatible with your needs, we are happy to tailor our technology to create a customized solution



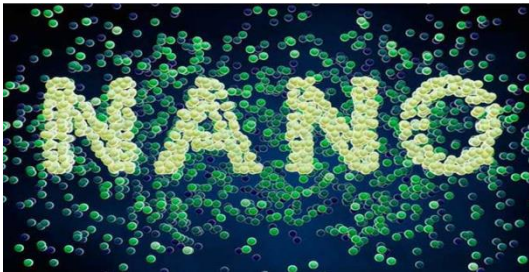


Industries uses K&S devices

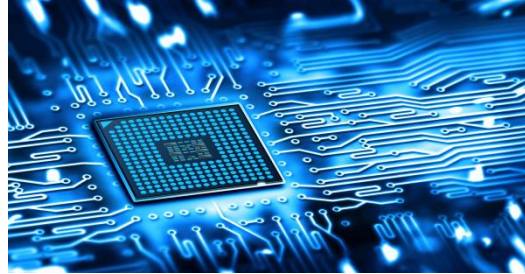
Microscopes AFM, SEM, TEM, etc



Nano Instruments



Semiconductors



IVF and Life Science



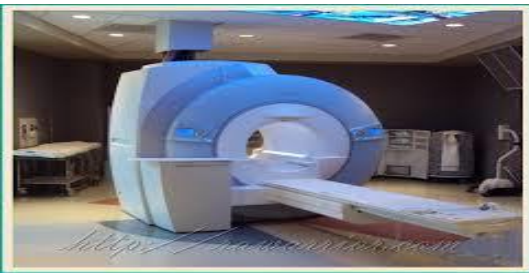
Automotive



Precision Machines



Precision Medical Devices



Precision Measurements Tools



Precision Balances





Key Benefits in using K&S Products

- **Performance**
 - 6 degree of freedom
 - active gain starting from 0.5Hz
 - decoupled architecture (patent pending)
 - Variable Damping
- **Small Size, elegant design, low weight.**
- **Easy installation for heavy tools – no need for lifting tools and heavy construction.**
- **Low Cost**
- **Capabilities**
 - Higher Actuators stroke
 - Adjustable by software active bandwidth
 - Remote control
- **Built in real time diagnostic tools**
 - spectrum analyzer
 - oscilloscope
- **Highly Tunable Vibration Isolation Control – the systems can be configured to challengeable environmental conditions**
- **Customizable due to flexible internal architecture**



Semiconductor Fabs and Machines - Current Situation

Machines

- Semiconductor Chip Manufacturing is very complicated process, involving tens of various machines on the production floor.
- Most of these processes, require dedicated precision machines.
- These high resolution machines, mostly containing aggressive moving-stage motion.
- **Semiconductor manufacturing machines suffer from the vibrations coming from the floor/environment, together with vibrations generated by its own moving parts**
- **Vibrations from different sources are decreasing machines throughput and causing excessive wear of the machines**

Fabs

- Fabs are designed so, that the vibration levels should meet the specs of sensitive tools
- Most of the Fab's floors fail to meet the design spec.
- Even for floors that meet spec, as the Fab is populated with tools, floor vibration levels increase over time (Colin Gordon Associates, 2004)
- The vibration levels were measured mostly before fab population
- Degradation of approximately 10-15dB in vibrations level during the first 2 years as the site populates with tools and maintenance equipment
- The semiconductor chip Next node challenges (10,7,5nm). This will increase demands on metrology and inspection tools
- Fabs already challenged to meet current generation floor vibration criteria, so the Next Node achievement become more challengeable.
- **Tools must use vibration isolation platform**



K&S Approach

Machines

- Fully decoupled patented architecture isolating vibrations coming from the floor/environment and vibrations generated by machine/tool, like moving stages, fans, internal motors.
- Typical high acceleration stages in semiconductor machines has a settling time between 200-300msec. K&S integrated technology inside the machine can reduce such settling time up to 30-50msec (decrease it approximately 10 times).
 - **Increasing Machine Throughput**
 - **Increasing Machine accuracy**
 - **Decreasing Machines wear**

Fabs

- Chip Manufacturers design new Fabs to meet vibration specs can save significantly by utilizing K&S devices for sensitive tools
 - **Using K&S Solutions allow Fabs to be built for significantly less cost**
 - **Allows confidence that tools will have their floor vibration specs met as the fab becomes noisier and requirements increase**



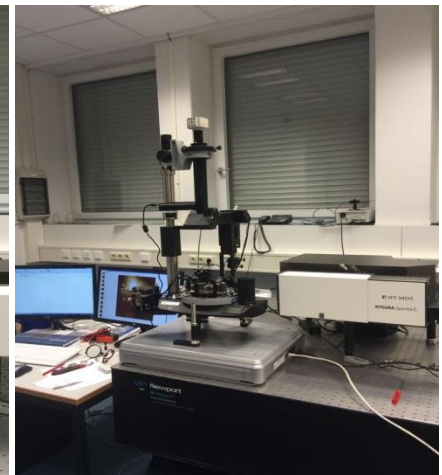
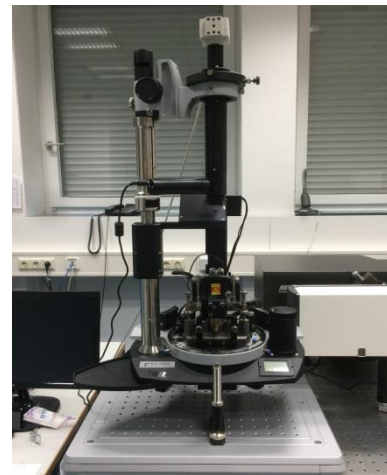
ARIS PLATFORM - Active Vibration Isolation Solutions

ARIS TT

ARIS MODULAR

Integration of Patented **ARIS PLATFORM** Architecture

- Patented Architecture
- Active Vibration Isolation in all Six Degree of Freedom
- No use of any Piezoelectric elements - better performance in low frequencies and longer life time
- Fully decoupled architecture isolating vibrations coming from the floor and vibration generating by machine/tool, like moving stages, fans, internal motors.
- Remote configuration of vibration parameters, allowing to adapt vibration isolation level to environmental changes



The most advanced active vibration isolation systems



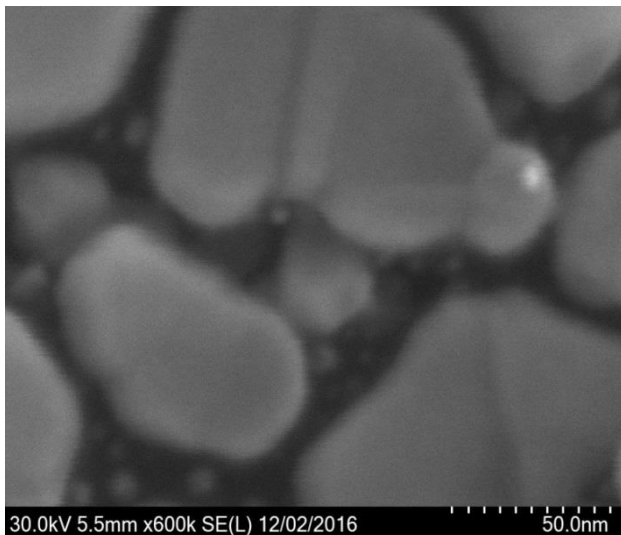
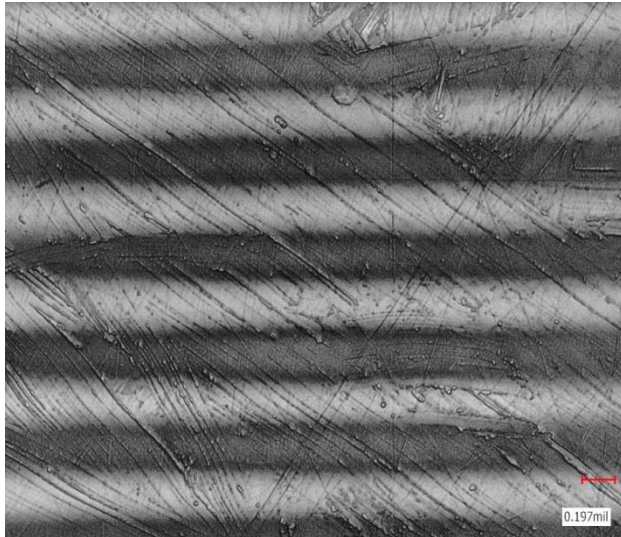
- Active vibration control
0.5 – 100 Hz
- 6 degree of freedom active control
- Custom dimensions and special attachments available upon request
- Counteracts unwanted vibrations for sensitive equipment
- Significantly reduces vibrations and disturbances
- Seamlessly integrates into the workstation environment
- Require no follow up tuning
- Remote Control



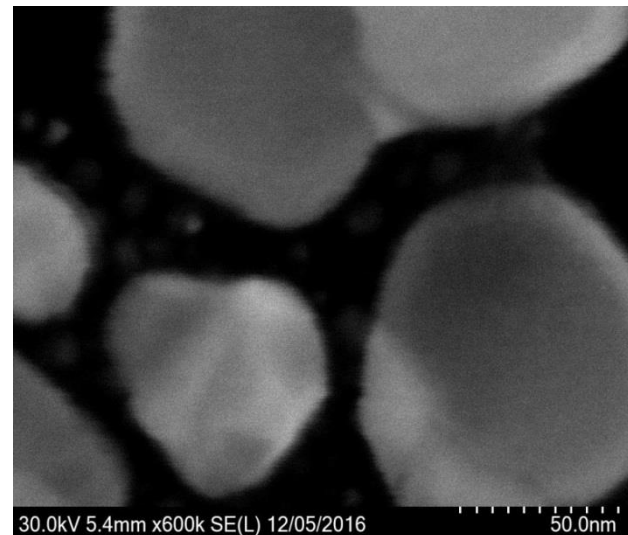
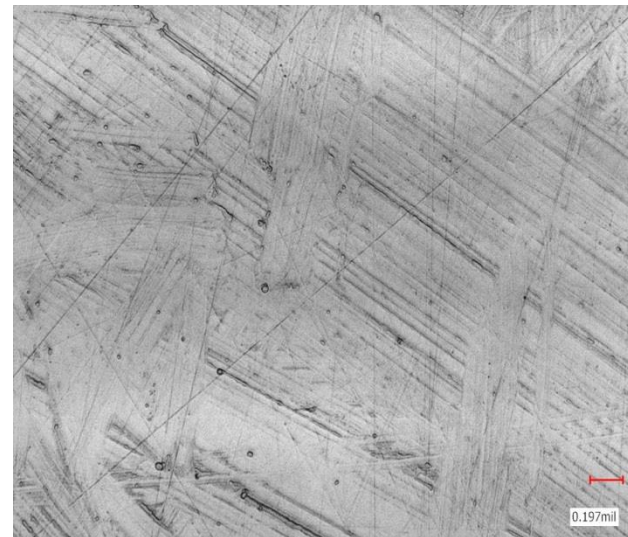
Microscope Image Comparison

Using **ARIS PLATFORM** anti vibration systems

Without Active Vibration Isolation



With Active Vibration Isolation





ARISMDXXX Products Line - Examples



ARISMDXXX Products Line	Device Capabilities	Isolators Per System	Load Per Single Isolator (kg)	Total Available Load (Kg)
ARISMD300	Active Vibration Isolation System	4	100-300	1200
ARISMD500-4	Active Vibration Isolation System	4	200-500	2000
ARISMD500-8	Active Vibration Isolation System	8	200-500	4000



ARIS MDXXX Modular Active Vibration Isolation System

Based on multiple independent isolators, capable carrying different weight

- Unlimited number of isolators
- Active in Six Degree of Freedom
- Load: 100 – 500 Kg each
- Low profile: 270x230x75 mm
- Ability to support massive machines, tools, systems
- Application-specific designs/products/ capabilities to meet your needs





Main points in comparison with other active vibration isolation solutions for semiconductors manufacturing machines

- Differentiation in approach
 - K&S providing fully decoupled system
 - Stage motion compensation together with vibration isolation, coming from environment in single system
 - This approach allows to apply full source for stage motion compensation and active vibration isolation
- No air- based elements in use
- No piezo electric elements in use
- Price typically 20-50% less, comparing to competitors solutions.



Thank You

www.kns-systems.com