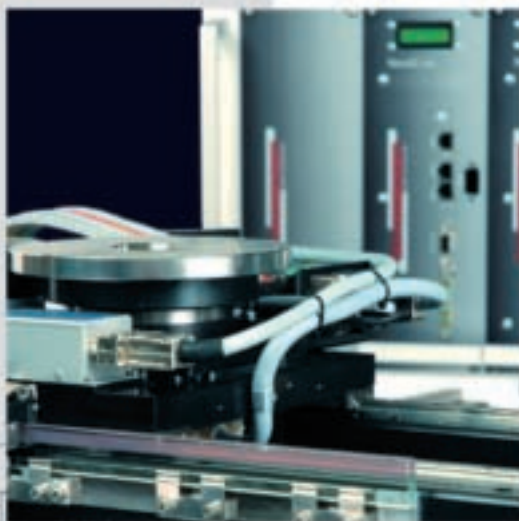


SCHNEEBERGER
LINEAR TECHNOLOGY



180

SCHNEEBERGER
Systems

E

Intelligent solutions for your positioning problems

With SCHNEEBERGER at your side, you have a partner that can provide sophisticated solutions and extensive application skills for all your motion and positioning needs.

Our reputation is based on the following core competences:

- » **Engineering expertise:** Project planning and development of positioning systems to meet the highest demands
- » **Production skills:** Production of mechanical sub-assemblies and the installation of complex and ultra-precise machinery
- » **Application skills:** A wealth of knowledge acquired from many successful projects in different industries. Together with our customers, we evaluate the best possible products from our standard range or define solutions specific to each project.



Roggwil, Switzerland
Company headquarters and production location

The SCHNEEBERGER Group

For many years, the name of SCHNEEBERGER has been synonymous with modern linear guide technology used with a variety of industrial equipment and machinery.

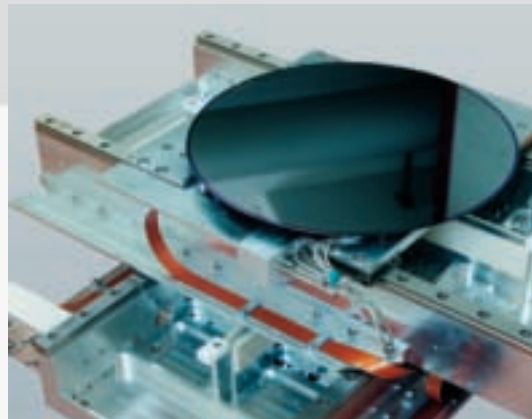
With over 50 years' experience in the design and manufacture of linear technology products, the SCHNEEBERGER Group has consistently introduced many innovative products and system solutions to the market.

Our global presence with strong sales and support organisations guarantees closeness to the customer in all major industrial economies. Comprehensive logistics capabilities and local support are your guarantee of a close partnership that starts at the project planning phase.

Our strengths

Challenging applications spur us on. Our engineers have a wealth of knowledge from a variety of branches of industry. Among other things, we develop demanding positioning systems for the following fields:

- » Wafer inspection: semiconductor industry (SEI)
- » Flat panel display inspection: LCD production
- » Bonding: electronics
- » Life science: pharmaceutical development, human and veterinary medicine, research
- » Advanced positioning: medical technology, rapid prototyping, image setting, pick and place, laser, etc.
- » Manufacturing systems: mechanical engineering

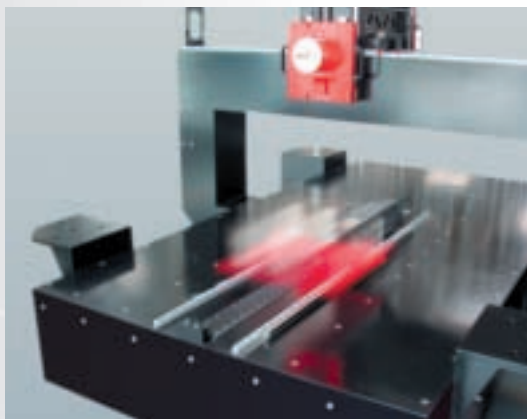


Positioning system for high-vacuum application

Highly integrated overall solutions

Using standard SCHNEEBERGER components and systems, we can put together customised overall solutions within the shortest possible time. Our customers benefit from tried and tested technical advantages at minimum development costs.

Our expertise encompasses the development and production of entire sub-assemblies, from the positioning system, via the controller unit through to the mineral casting machine structure. These one-stop, wide-ranging technological skills open up greater design flexibility and permit innovative system solutions.



Complete system for flat panel display inspection (FPD)



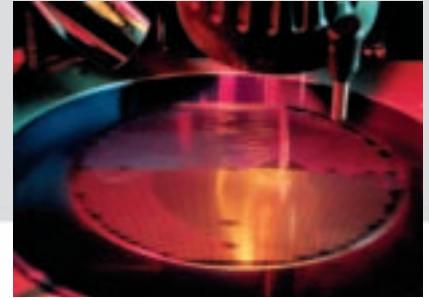
Areas of application for SCHNEEBERGER positioning systems

Wafer inspection

Wafer inspection is a highly developed control process in the manufacture of integrated circuits. The positioning systems used for this purpose must meet a large number of demanding criteria.

Demands on positioning systems in the field of wafer inspection:

- » High static stability in the nanometer range
- » Short offset time (vibrations, resonances)
- » Precise positioning repeatability
- » Vacuum capability (10^{-7} mbar)
- » Minimum magnet influences
- » High scan and step accuracy
- » Precise scan and step repeatability
- » Clean-room capability



Flat panel display inspection

TFT panels are highly susceptible to faults and error in production. Even before panels are integrated into a complex logistics process, they can be sorted in terms of quality thanks to our systems. The technical challenges of flat panel display inspection lie in the scanning of transparent material and multilayered structures.

Demands on positioning systems in the field of flat panel display inspection:

- » Short offset time (vibrations, resonances)
- » Precise positioning repeatability
- » High scan and step accuracy
- » Precise scan and step repeatability
- » Clean-room capability



Bonding

Bonding is the name given to the technology employed to connect the chips to the external contacts. Wire bonding, die bonding or flip-chip are different technologies for which our systems are used.

Demands on positioning systems in the field of bonding:

- » High speed for motion and settling
- » Precise positioning repeatability at different working cycles
- » High positioning accuracy at different working cycles
- » Optimum rigidity and ideal attenuation factors
- » Balanced friction values
- » Minimum warming (mass, friction)
- » Minimum thermal expansion (choice of material)
- » Minimum thermal tensions



Areas of application for SCHNEEBERGER positioning systems

Clean-room and vacuum applications

Inspection systems that work with electron microscopes are operated in a vacuum. This requires special processes when manufacturing positioning systems to guarantee the function of the entire system.

These include:

- » Design-engineering measures such as the venting of holes and large contact areas
- » Selection of materials in terms of preventing gas emissions
- » Special surface treatments
- » Special lubrication technology
- » Special cleaning and assembly processes clean rooms provided for this purpose

Advanced positioning in automation

Automation solutions often require special positioning systems, some of which are very demanding. Either because the spatial constraints of the automatic machine are very limited or environmental conditions make special demands on the system.

SCHNEEBERGER solutions of this type have the following features:

- » Simple, reliable and robust construction
- » Number of components reduced to a minimum
- » Tried and tested SCHNEEBERGER components with decades of experience in the field
- » Uniquely low overall heights with maximum displacement force

What you can expect from us



Advisory services. A competent partner from the very start.

Our goal is to work with a customer from an early phase in order to guarantee the maximum degree of system integration. This enables you to benefit from our experience and our technological advance in the development of complex positioning systems. Our on-the-spot agent is available for initial contact.

Development. Intelligent approaches to solve your problem.

Our engineering team develops systems that meet challenging specifications. Using powerful 3D CAD software, all parts of the installation are designed realistically and can be simulated. In this way, we can identify complex problems at the design stage and produce optimized solutions.

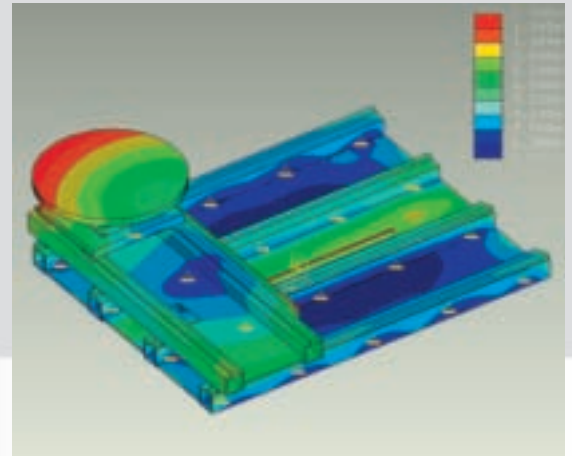


Analysis. Using advanced aids to optimize performance.

Static analysis: The static analysis of components and subassemblies is an important constituent if the maximum degree of efficiency is to be achieved in complete systems. The typical conflict condition «precision vs. speed» requires the development of light but rigid structures. FEM calculations and 3D simulation show us before the first prototypes whether the required properties can be achieved.

Modal analysis: The modal analysis gives us information about the dynamic behaviour of the components. Most important criteria: Vibrations and resonances, attenuation behaviour, rigidity, friction values.

Thermal analysis: By simulating the thermal conditions, we gain information on thermal expansion, thermal tensions, warming as well as deformation and bending.



Manufacturing and series production. Precision and process reliability.

The ultra-precise manufacture of structural components and the assembly of subassemblies is a core competence that goes back many years at SCHNEEBERGER. In this field, we have an unparalleled degree of technological expertise. Clean room or vacuum applications are assembled in our special assembly shops that meet clean room classification 1,000.

To enable us to meet the desired deadline, the process is reduced to the shortest possible, optimized throughput time. Modern working technologies such as just-in-time, Kanban as well the rolling forecast tools (SAP) developed by us enable us to react flexibly and quickly to customers' requirements.

Logistics. An essential part of our product.

Logistics, – particularly in the extremely cyclical semiconductor industry – requires the maximum degree of flexibility. For this reason, we maintain intensive logistical contacts with our customers. Via our active supply-chain, we are in a position to submit proposals that satisfy the manifold demands on reliability and flexibility. We understand our business in the demanding world of logistics – test us, we will be happy to prove it to you.

Support. Whenever you need us.

We offer our customers competent, expert support whenever they need it. Either on the spot using our international network or through modern means of communication – we take care of you. Our customers appreciate our open and honest style of communication. We are proud to be able to foster truly long-term partnerships anew every day. For our commitment, we also received the **Partnership Award** from KLA-Tencor.

20.2140/-02/1106/e/0.75/SRO/EG/Printed in Switzerland. Subject to technical changes

