

DKSH – Your partner of choice for complete solutions in precision machinery



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Business Line
Precision Machinery

Think Asia. Think DKSH.

Business Unit Technology

DKSH Technology is a leading provider of Market Expansion Services offering technical solutions in the area of Precision Machinery (MAC), Scientific Instrumentation (INS), Semiconductor, Photovoltaic and Electronics (SPE), and Hospitality (HOS).

Our Business Line Precision Machinery offers a broad range of machine tools and

equipment in gear cutting, metal cutting and forming, metrology, testing and other precision manufacturing equipment from Europe, America & Asia. We also offer 3D printer solutions for the rapid manufacture of customized products utilizing its proprietary consumables across a variety of markets.

With our long history in Asia, we provide fully integrated support and a true partnership approach to our business partners. As our customer, you have access to a broad range of products from market leaders and internationally renowned brands. Our highly qualified staff, specialists and engineers provide services throughout the entire lifespan of the products.

Our product range for various application:



Cutting



Sheet metal laser cutting



Metalworking



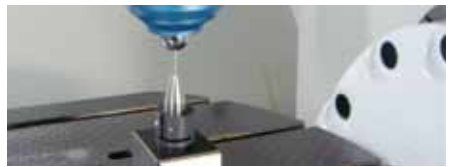
Waterjet cutting



Foundry aluminum die casting and heat treatment



Robotic



Metrology




Precision gear



Additive manufacturing

Market specific applications

With our profound market knowledge we are best positioned to serve our customers regarding their needs. We provide products and services to the following industries across Malaysia.

 Aerospace	 Automotive	 Biotechnology and Life Sciences	 Die and Mold	 Healthcare and Hospital	 Metals, Minerals and Mining
 Oil and Petrochemicals	 Pharmaceutical and Personal Care	 Education and Academics	 Food and Beverage	 Semiconductor and Electronics	 Chemical

After-sales service

DKSH is a leading provider of Market Expansion Services in Asia, proficient across various industries. With 1,240 specialized staff, including over 450 service engineers, DKSH Technology serves a customer base of around 25,000 companies and operates in 17 countries.

As a total solutions provider, we serve our customers as a one-stop-shop and provide customized technology solutions. We not only provide professional after-sales services, but also cover the entire lifecycle including installation and commissioning, final acceptance, production start-up support, training, maintenance, repair, spare parts and consumables supply as well as trade-in.

Our services

With our in-depth knowledge and experience, we provide technical and after-sales services, allowing suppliers to concentrate on their core business and guaranteeing customers quick and reliable support.

Our range of services include: installation and commissioning, quality assurance and control, preventive maintenance, spare parts supply, trainings and demonstrations, repair services and production process reviews to improve efficiency, capacity and quality.

Application and training

Application and hands-on training courses are available to optimize productivity on new or existing equipment and to develop proper maintenance processes and workflows to help realize the full potential of the instruments.

After-sales service support

We have an after-sales service support team of two Service Solution Specialists, two Service Coordinators and more than thirty Support Engineers to support our Malaysian



and Singaporean customers from our office in Kelana Jaya, Penang, Johor Bahru and Singapore.

Calibration service

As a total solution provider and system integrator, we serve our customers as a one-stop-shop and provide customized technology solutions, such as laser calibration and ballbar analysis to optimize and maintain the performance and quality of your CNC machines.

DKSH Technology showroom

Our showroom allows customers to experience the latest technologies in metal cutting and forming, gear cutting and measuring, precision machinery manufacturing, heat treatment equipment, measuring and scanning devices and coolant recycling systems. We offer hands-on training, demonstrations, test cuts, user-friendly CNC programming, and application support.

Spindle repair

We are always ready to offer you the most advanced and comprehensive range of spindle services, be it spindle analysis, inspection, repair, rebuild or retrofit. Some of our core spindle services are spindle failure analysis, spindle balancing as well as spindle

vibration solutions.

Our highly qualified engineers are equipped with the most extensive experience and knowledge in spindle services to cater for all your needs, to minimize the downtime and maintenance costs as well as to optimize the reliability and productivity of your equipment. Our commitment to excellence allows us to provide you with the highest service quality and shortest turnaround time.

Our spindle repair services include:

- Engineering
- Custom modifications
- Parts repair and manufacture
- Balancing and vibrations analysis of complete assembly
- Spindle components balancing

Coolant recycling

Benefits of coolant and oil filtering systems:

- Reduce the cost of new coolant concentrate purchases by 30% to 75%
- Cut the cost of dirty coolant disposal by 50% to 90%
- Better control of coolant concentration levels
- Improve machine tool cleanliness, reduce misting and more

Additive manufacturing

Additive manufacturing is a process of making a three-dimensional solid object of virtually any shape from a digital model. Additive manufacturing is achieved using an additive process, where successive layers of material are laid down in different shapes.

Additive manufacturing is also considered distinct from traditional machining techniques, which mostly rely on the removal of material by methods such as cutting or drilling (subtractive processes). This means that additive manufacturing produces less waste and overcomes existing manufacturing limitations for complex shapes and designs.

Additive manufacturing technologies DLP®– Digital Light Processing

Digital Light Processing is a process in additive manufacturing, also known as 3D printing and stereolithography. In this process, perfactory systems build 3D objects by using the projectors to project voxel data into liquid resin, which then causes the resin to cure from liquid to solid.

3SP– Scan, Spin and Selectively Photocure

Scan, Spin and Selectively Photocure is a multi-cavity laser diode with an orthogonal mirror spinning at 20,000 rpm, the light is reflected through the spinning drum and goes through a series of optical elements thereby focusing the light onto the surface of the photo polymer across the Y direction. The Imaging Light source (ILS) which contains the multi cavity laser diode, its driver, and all optics, is traveling in X direction at one to two inches per second (material dependent) as the light is scanning in the Y direction and is selectively photo curing the polymer based on the path data set.



Benefits of additive manufacturing:

- The highest build-up and scanning speed of its class
- Finest positioning accuracy, less than 5.0 µm
- Lowest operating cost with highest quality build-up
- Self-calibrating system for accurate and fast operation
- User replaceable light Imaging source
- Highest speed and resolution of its class

3D-Bioplotter®

The 3D-Bioplotter is suited for bioprinting and bioengineering applications due to its specialized ability to extrude multiple materials in three dimensions using pressure. Materials may range from viscous paste to free-flowing liquid, and are inserted using syringes moving in three dimensions. Air or mechanical pressure is applied to the syringe, which then deposits a strand of material according to the length of the movement and the period of time the pressure is applied. Parallel strands are plotted in one layer. For the following layer, the direction of the strands is turned over the center of the object, creating a fine mesh with good mechanical properties and



mathematically-defined porosity.

Technical advantages:

- Mass customization of high-accuracy products
- Up to 10mm per hour high speed printing for a full envelope
- Time savings by outsourcing of data processing to a dedicated server

We are here to serve you

Our additive manufacturing solutions feature perfect exceptional throughput, excellent resolution and versatile functionality can be taken out if tooo longs. Outlined below are some of the different industries that have disrupted supply chains with a 3D printer.

- Aerospace
- Architecture
- Automotive
- Biofabrication and Medical
- Consumer Goods and Packaging
- Dental
- Education and Academic
- Electronics
- Hearing Aid
- Jewelry
- Orthodontics

Metal cutting and forming

Grinding

Grinders belong to a group of machines that perform final technical operations by grinding metals or other materials. Grinders are designed as non-portable (stationary) machines that use a grinding disc to remove material as it rotates. A grinding disc is made mainly of silicon carbide or artificial carborundum.

Types of CNC Turning Machines

Cylindrical grinding

- Leading brand in cylindrical grinding technology
- Thermally-stable, vibration-damping GRANITAN® machine bed
- Live grinding roundness accuracy of 0.0004 mm
- Achievable roundness or straightness of less than 1 µm
- Renowned pictogramming system for user-friendly operation

Crankshaft grinding

- Thermally-stable, vibration-damping GRANITAN® machine bed
- Twin-cross slides for the highest productivity
- User-friendly WOP-G programming system for simple operation

Centerless grinding

- Technology and market leader in centerless external cylindrical grinding of rotationally symmetrical parts
- Thermally-stable, vibration-damping GRANITAN® machine bed
- Axis resolution of 0.01 µm during grinding processes.
- High reproducibility of grinding results in tolerance ranges of ±0.5 µm
- User-friendly operating with renowned Pictogramming system



Drilling machining

- 3-axis and 5-axis vertical machining centers and milling machines for conventional, high speed, and high-velocity machining
- Unique design features that result in superior machine rigidity (highest machine accuracy and longevity)
- Combines roughing and finishing operations and integrates complex machining tasks on one machine (e.g. mill/turn applications)
- For work cubes up to 55 inches (1400 mm) in swing or parts up to 100 inches (2500 mm) in length, our CNC machining centers outperform in terms of productivity, precision, and dependability
- Unique mechanical connection of the drilling machine head to the column guarantees perpendicular alignment with the drilling table for the best drilling precision

Cutting

Vertical Machining Centers

- Spindle operation with accuracy, long life, dependability, and high productivity
- Spindle drive motor rpm program execution speed for finishing ramp-up and ramp-down time for angle changes

Horizontal Machining Centers

- Horizontal orientation encourages chips to fall away, so they do not have to be cleared from the table
- A two-pallet workchanger incorporated into a space-efficient machine saves time as work can be loaded on one pallet of a horizontal machining center while machining occurs on the other pallet

Metrology, work holding and peripherals

CNC Lathes & Turning Centers

- Provides a variety of rotating speeds with manual and automatic movement of the cutting tool to the workpiece
- Handles workpieces up to 25 inches in diameter and up to 200 inches in length

Rotary Tables and Indexers

- Reliable, well-designed and well-built
- Easy installation

CNC Multi-spindle Machines

- An air-cooled spindle drum is the heart of this versatile machine with six or eight fully independent 10,000 rpm spindles
- Two CNC tool carriers per spindle, configurable in X, Y, and Z
- Synchronous spindles for back working permits unlimited machining possibilities
- Significant time-savings with simultaneous multi-spindle machining
- Unit cost benefits for low-mix high-

volume parts

Mill-Turn Centers

- Two powerful rpm milling spindles moving freely in the Y and B axes and two movable 5000 rpm work spindles perform roughing and high-accuracy fine-turning in two independent subsystems at once, including independent 5-axis work in both subsystems simultaneously
- Thermal and dynamic stability is designed into the revolutionary centers for maximum machining quality and ensures longer tool life for a range of operations on complex parts for aerospace, tooling and more

CNC Lathes & Turning Machines

- Small footprint, cost-savings on floor space
- Short cycle time for higher productivity



Four pallet CNC horizontal machining centre

Typical applications

- Precision parts manufacturing for the aerospace industry
- Shafts and other precision parts manufacturing for automotive industries
- Metal fabrication industries
- Hard disk drive parts manufacturing
- Precision dies and tools manufacturing



Metrology

Metrology is the measurement science to manufacturing and other industrial processes. It ensures the suitability of measurement instruments, their calibration and quality control of measurements. Although the emphasis in this area of metrology is on the measurements themselves, traceability of the calibration of the measurement devices is necessary to ensure confidence in the measurements.

Technology type

Non-contact type of 3D complex measuring

- Contact 3D complex measuring
- Surface quality measuring
- Stress measuring
- Deep hole measuring
- X-ray inspection

Work-holding

Work-holding devices have the following special functions for machining on drilling machines, positioning fixing of the workpiece position in relation to the tool and the clamping neutralization of cutting forces during the machining operation.



The clamping elements to be used must both neutralize the cutting forces (feed and speed) and hold down the workpiece during the machining operation.

For example, when operating with twist drills, the secure clamping of the workpiece ensures that the torquing motion does not simultaneously drag the workpiece and possibly damage the equipment.

It is important to ensure that a secure holding/clamping mechanism of the workpiece exists to ensure the compliance with labor safety regulations.

The choice of the respective clamping equipment depends on the

- Shape, size and number of workpieces to be machined
- Number of bores in a workpiece and their size
- Cutting forces acting on the workpiece
- Type of drilling machine to be used
- Position, direction and necessary quality of the bore
- Angular position of the bores

Typical applications

- Online quality and in-process gauging control
- Quality control and assurance
- Total Quality Management (TQM)
- Poka-yoke mechanism
- Full inspection and measuring reporting
- Process Capability Index (Cpk)
- Statistical Process Control (SPC)
- High repeatability for work piece holding
- Repeatable clamp location
- Ergonomic efficiency and eliminates human error

Machining automation



Time spent on unloading and loading equals to lost production time. Automation minimizes this by quickly and accurately swapping out one part for the next. Be it tending, grinding, lathing, milling, pressing or molding machine — automation boosts utilization and lowers costs.

Today, most manufacturing operations are automated, however Manual loading or unloading by machine operator is still visible on many business. Over an eight hour shift, fatigue sets in and output suffers, while automation does the job. With exceptional precision every cycle. If you are not using automation to load and unload production machines, you are losing capacity and missing an opportunity to cut costs your employees are also exposed to work requiring repetitive lifting motions, with the potential to cause injury.

Automation can provide support and transport capabilities that are more complex than basic material handling processes. Automation is used to secure the product from a supply position, transport it to a machine, interact with the machine and then remove the finished part from the machine. Managing this process with automation minimizes incorrect product placement due to human error and increases the speed and efficiency of your production.

Benefits

- Repeatable accuracy and improved quality of production (increases more than 25%)
- Minimizes human error and improves ergonomic conditions
- Short ROI and lower overhead cost compared to manual machine tending

- Automation could be installed between two machines or overhead to save valuable floor space
- Increased machine and system utilization capable of 24/7 machine tending

Typical applications:

- Loading and unloading products for grinding
- Loading products into CNC milling and turning machines
- Tending injection mold product loading and unloading
- Stamping, punching, trimming, EDM, and forging press loading and unloading
- Compression mold component materials loading

Gears and gear manufacturing

Gear manufacturing involves gear cutting through the relative motion of a rotating cutting tool and the rotational motion of the workpiece. The two primary generating processes are hobbing and shaping.

Typical applications

- Speed gear box, feed gear box and other kinematic units of machine tools
- Speed drives in textile, jute and similar machinery
- Gear boxes of automobiles
- Speed and or feed drives of several metal forming machines
- Machineries for mining, tea processing, etc.
- Precision equipments (clocks and watches)
- Industrial robots and toys

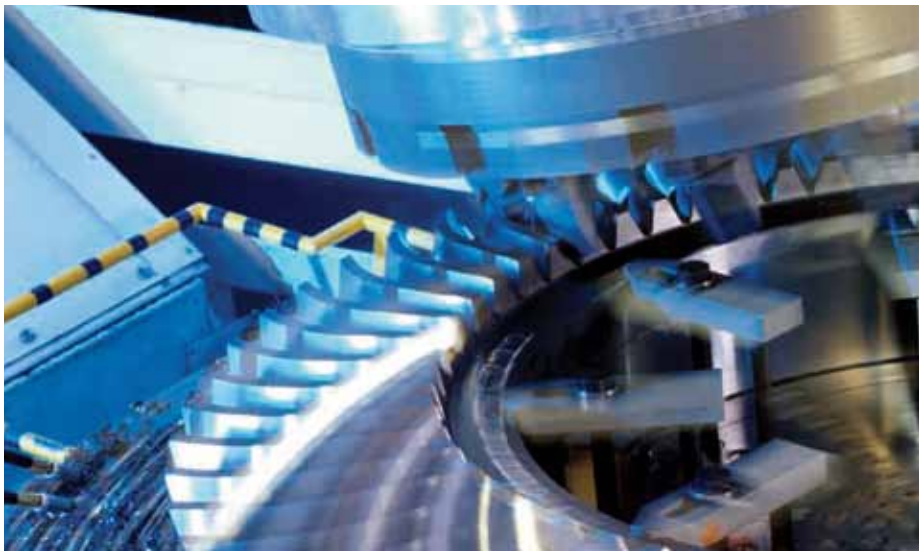
Typical gears

- Bevel gears
- Custom gears
- Gear boxes
- Gear milling
- Gear tools
- Ground gear
- Helical gears
- Internal gears
- Precision gear
- Rack and pinion gears
- Shaping cutters
- Small and miniature gears



Gear hobbing

Hobbing is a machining process for gear cutting, cutting splines, and cutting sprockets on a hobbing machine, which is a special type of milling machine.



We offer a comprehensive range of gear tools



Gear milling

The basic machining process which uses the relative motion between a rotating multi-edge cutter and a workpiece to cut individual gear teeth.



Gear shaping

Produces gears by rotating the workpiece in contact with a reciprocating cutting tool. The cutter may be pinion shaped cutter, a multi-tooth rack-shaped cutter or a single-point cutting tool.



Gear form-cutting

Gear form-cutting uses formed cutting tools that have the actual shape or profile desired in the finished gear. The two primary form-cutting methods are broaching and milling.



Broaching

The fastest method of machining gear that is performed using a multi-tooth cutting tool called a broach.

Sheet metal laser cutting and waterjet cutting

Laser cutting

Laser cutting is a thermal cutting process for processing sheet metal. The laser beam is generated via electrical pumping of atoms that starts the spontaneous emission process of light (photons). These photons are then channeled through a specialized optical cavity that results in a stimulated emission of radiation. This stimulated light or radiation is then conducted by a transport fiber or guiding mirrors to the machine cutting head where a lens focuses it at very high power on a very small diameter. This focused laser beam meets the sheet metal and melts it. The most common types of laser sources are the fiber laser and CO2 laser.



Laser cutting is extremely versatile. In addition to flat materials, tubes and profiles can also be processed by laser cutting systems. It is primarily used for the cutting of steel, stainless steel, and aluminum ranging in thicknesses from 0.8 to 30 mm.

Fiber laser cutting

The fiber laser beam is created by an active fiber and transmitted over a transport fiber to the machine cutting head. Fiber lasers are significantly smaller than CO2 lasers and generate twice as much power from the same amount of current. A fiber cutting system is primarily suited for processing thin to medium-thick sheet metal. It also cuts non-ferrous metals such as copper and brass.

CO2 laser cutting

A CO2 laser uses a gas mixture to create the laser beam. The CO2 technology is suited for all-rounders who process various materials and thick sheet metal.

WaterJet cutting

Waterjet cutting is an environmentally friendly technology as it produces non-toxic cutting gases, it extremely versatile and can be used for extremely detailed geometry. The thickness of the water beam produced is 0.5 – 1.3 mm. Waterjet cutting can be used for stack cutting and cutting applications for complex contours. It allows quick setup of the workpiece and requires little or no cutting burrs which results in less secondary work. This method allows for flexible and economical production of individual parts and series.

Cutting without sand, pure water cutting

The original water cutting process uses a very thin beam from 0.08 - 0.40 mm. It features very low loss of material, high throughput for light and soft material, and can cater for extremely detailed geometry.

Cutting with abrasive substance

With abrasive substance added to the water, the water beam becomes much stronger, making it easier for cutting of



harder material.

Typical applications

- Switch gears
- Steel furniture
- Control panels
- Automotive
- Electrical enclosures
- Kitchen cabinets
- Stainless steel parts
- Galvanised metal sheet
- Proferated sheet
- Machine casing and enclosures
- Interior design decorations
- Architectural deisgn and structures

Foundry aluminum die casting and heat treatment



A foundry is a factory that produces metal castings. Metals are cast into shapes by melting them into liquid, pouring the metal in a mold and removing the mold material or casting after the metal has solidified as it cools.

The most common metals processed are aluminium and cast iron. However, other metals, such as bronze, brass, steel, magnesium, and zinc are also used to produce castings in foundries. In this process, parts of desired shapes and sizes can be formed.

Technology type

- Aluminum melting furnaces
- Aluminum dosing furnaces
- Holding furnace
- Chip melting furnace
- Crucible furnace
- Degassing
- Magnesium melting
- Vacuum furnaces for heat treatment

Benefits

- Best-in-class aluminum die cast furnace for recovery of up to 99% from the charging input
- Lowest in energy consumption for its capacity
- Environmentally friendly
- High safety features
- Low maintenance and best price performance ratio
- Controlled and accurate dosing reduces need for secondary processes

Typical applications

- Pressure die casting
- Gravity casting
- Induction casting
- Sand casting
- Vacuum heat treatment
- Atmosphere heat treatment
- Controlled atmosphere brazing of aluminum heat exchangers
- Melting and holding
- Thermal processing of aluminumv alloys
- Vacuum metallurgy

