GLOSSARY OF TECHNICAL TERMS

This glossary contains explanations of certain terms used in this document in connection with our Group and our business. The terms and their meanings may not correspond to standard industry meaning or usage of these terms.

"3C electronics"	the abbreviation for "computer, communication and consumer"
"3D-printed cellular"	3D printing of lattice structures
"AI"	the abbreviation for "artificial intelligence"
"arc-second"	a unit of measurement of plane angle, equal to 1/3600 of a degree and 1/1296000 of a full rotation
"boring"	a machining process used to enlarge, finish, or accurately size a pre-existing hole in a workpiece, typically using a single-point cutting tool that rotates and removes material along the inner diameter of the hole, often employed to improve hole precision, straightness, or surface finish
"C909"	Comac 909, originally named ARJ21 (Advanced Regional Jet for 21st Century), a regional jet airliner developed by Commercial Aircraft Corporation of China, Ltd., and was granted the commercial name "C909" in November 2024
"C919"	Comac C919, a narrow-body airliner developed by Commercial Aircraft Corporation of China, Ltd.
"C929"	Comac C929, a wide-body airliner developed by Commercial Aircraft Corporation of China, Ltd.
"computer-aided design (CAD)"	the use of computer software to create, modify, analyze, or optimize technical drawings and designs, enabling precise visualization and documentation of objects or structures in various industries
"computer-aided engineering (CAE)"	the use of computer software to simulate, analyze, and optimize engineering processes and designs, enabling the prediction of product performance, identification of potential issues, and improvement of design efficiency in various industries

GLOSSARY OF TECHNICAL TERMS

"CAGR"	the abbreviation of "compound annual growth rate", which is calculated by dividing the amount at the end of the period by the amount of the beginning of that period, raising the result to an exponent of one divided by the number of years in the period, and subtracting one from the subsequent result
"carbon fiber composite"	a composite in which at least one of the fillers is carbon fibers, either short or continuous, unidirectional or multidirectional, woven or nonwoven
"CMTBA"	the abbreviation for "China Machine Tool & Tool Builders Association"
"CNC"	the abbreviation for "computerized numerical control"
"CNC system"	the abbreviation for "computerized numerical control system", a computer-based control system that interprets digital program codes to automate and precisely control the movement of machine tool axes, spindle speed, tool changes, and other machining operations
"controller"	a device that uses pre-programmed software or numerical codes to manage and coordinate the movement, speed, and operation of machine tools, ensuring precise and efficient manufacturing processes
"control system"	a combination of hardware and software components that manages and regulates the operation of a machine tool, ensuring it follows programmed instructions accurately
"cutting tool"	a specialized instrument installed on the machine tool used in machining processes to remove material from a workpiece to achieve precise shapes, dimensions, and surface finishes, typically made of hard materials
"crossbeam"	a horizontal structural component that spans across the vertical columns or supports of the machine tool, which typically holds or guides moving parts to ensure precise horizontal movement and alignment during machining operations

GLOSSARY OF TECHNICAL TERMS

"column"	a vertical structural pillar that provides rigid support for key components to maintain structural stability and guides vertical during machining processes
"direct numerical control (DNC)"	a manufacturing system where multiple machine tools are controlled directly by a central computer, which sends real-time instructions and coordinates their operations without intermediate data storage on individual machines
"digital twin technology"	a technology that creates a virtual replica of a physical asset, process, or system, using real-time data to simulate its behavior, monitor performance, predict failures, and optimize operations throughout its lifecycle
"drilling"	a machining process using a rotating drill bit to create cylindrical holes in a workpiece by removing material through cutting or abrasion
"dual five-axis mirror milling machine"	a specialized milling machine equipped with two five-axis machining units that operate in a coordinated, mirrored manner to simultaneously machine both sides of a symmetrical workpiece, improving efficiency and precision
"encoder"	a device that converts mechanical motion into electrical signals, providing real-time feedback on position, speed, or direction to a machine tool's control system for precise motion control
"ERP"	enterprise resource planning systems that integrate internal and external management information across an entire organisation, embracing finance and accounting, manufacturing, sales and service and customer relationship management, and automate these activities with an integrated software application
"feed axes"	the linear or rotational axes that control the movement of the workpiece or tool relative to each other, determining the path and speed of material removal during machining
"feed rate"	the relative velocity at which the cutter is advanced along the workpiece

"fixture"	a work-holding device used in manufacturing to securely position and clamp a workpiece during machining, assembly, or inspection, ensuring accuracy and repeatability
"five-axis RTCP accuracy"	refers to the precision of a five-axis CNC machine tool in maintaining the rotation tool center point functionality, which ensures the tool tip remains at a fixed point relative to the workpiece during simultaneous multi-axis movements, compensating for rotational axis errors to maintain machining accuracy
"friction stir welding five-axis machine tool"	a specialized five-axis CNC machine tool designed for friction stir welding, a solid-state welding process that uses a rotating tool to generate heat through friction, plasticizing materials at the joint interface for welding without melting, enabling complex trajectory control for welding curved or three-dimensional components
"FVTPL"	the abbreviation for "fair value through profit and loss"
"GACC"	the abbreviation for "General Administration of Customs China"
"grating ruler"	an optical measuring device consisting of a scale with fine parallel lines and a readhead that detects changes in light interference to provide precise linear position feedback for machine tools
"ISO"	the International Organisation for Standardisation, an independent non-governmental organisation based in Geneva, Switzerland, which develops international standards relating to specifications for products, services and systems to ensure quality, safety and efficiency
"kg"	the abbreviation for "kilogramme(s)"
"linear axis feed rate"	the speed at which a linear axis of a machine tool moves the workpiece or tool along its designated path during machining
"localization rate"	the proportion of market share held by domestic suppliers within the industry

"low-altitude economy"	economic activity in the airspace below 1,000 meters
"manufacturing automation protocol (MAP)"	a standardized communication protocol developed for intelligent manufacturing systems, enabling interoperability and data exchange between different devices to coordinate production processes
"machine tool bed"	the foundational structural component of a machine tool, providing a rigid and stable base for mounting other components and supporting the workpiece during machining to minimize vibration and ensure accuracy
"milling"	a machining process in which a rotating multi-tooth cutter removes material from a workpiece to create flat surfaces, slots, contours, or complex shapes
"MIIT"	the abbreviation for "Ministry of Industry and Information Technology"
"MIR"	the abbreviation for "Marketing Intelligence Resource"
"modulus of elasticity"	a quantity that describes an object's or substance's resistance to being deformed when a stress is applied to it
"Nm"	newton meter, a unit of measurement of torque, equal to the torque resulting from a force of one newton applied perpendicularly to the end of a moment arm that is one meter long
"processing stroke range"	the maximum and minimum travel limits of a machine tool's moving components during machining, defining the spatial scope within which material can be processed
"polyacrylonitrile (PAN)"	a synthetic, semicrystalline organic polymer resin
"Recommend Standard 232 (RS-232)"	a serial communication standard specifying electrical characteristics, voltage levels, and data formats for transmitting data between devices, typically used for short-distance communication in industrial control systems
"Recommend Standard 485 (RS-485)"	a serial communication standard designed for multi-device, long-distance data transmission in balanced mode, supporting higher noise immunity and longer cable lengths than RS-232

"reference error"	the discrepancy between a measured value and a reference value in a machine tool or measurement system, often caused by mechanical wear, thermal expansion, or calibration issues
"riveting"	a mechanical joining process in which a rivet is inserted through holes in multiple workpieces and deformed to clamp the pieces together, creating a permanent joint
"rotary axis"	a rotational motion axis in a machine tool that enables the workpiece or tool to rotate around a linear axis, allowing for multi-axis machining of complex curved surfaces
"rotary axis positioning accuracy"	the degree of precision with which a rotary axis can achieve and maintain a specified rotational position, typically measured as the deviation from the nominal position due to mechanical tolerances or control system errors
"RTCP"	the abbreviation for "rotation tool center point"
"R&D"	the abbreviation for "research and development"
"saddle"	a movable component in machine tools that supports the cross-slide or table and slides along the bed, enabling horizontal movement perpendicular to the main cutting direction
"thermal expansion coefficient"	a coefficient of thermal expansion describes how the size of an object changes with a change in temperature
"turning"	a machining process where a workpiece rotates on a lathe, and a stationary cutting tool removes material to create cylindrical or rotational shapes, typically used for symmetrical parts
"tool spindle"	the rotating component of a machine tool that holds and drives the cutting tool, providing rotational speed and torque for material removal
"tool interference"	a situation where the cutting tool, tool holder, or machine component comes into unintended contact with the workpiece, fixture, or other parts of the machine during machining, potentially causing damage, errors, or safety hazards

"UAV"	the abbreviation for "unmanned vehicle system", an aircraft that operates without a human pilot on board, controlled remotely or autonomously
"μm"	micrometer, a unit of measurement of length, equal to one-millionth of a meter