亞　太　菁　英

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Aiming At Aerospace Solutions

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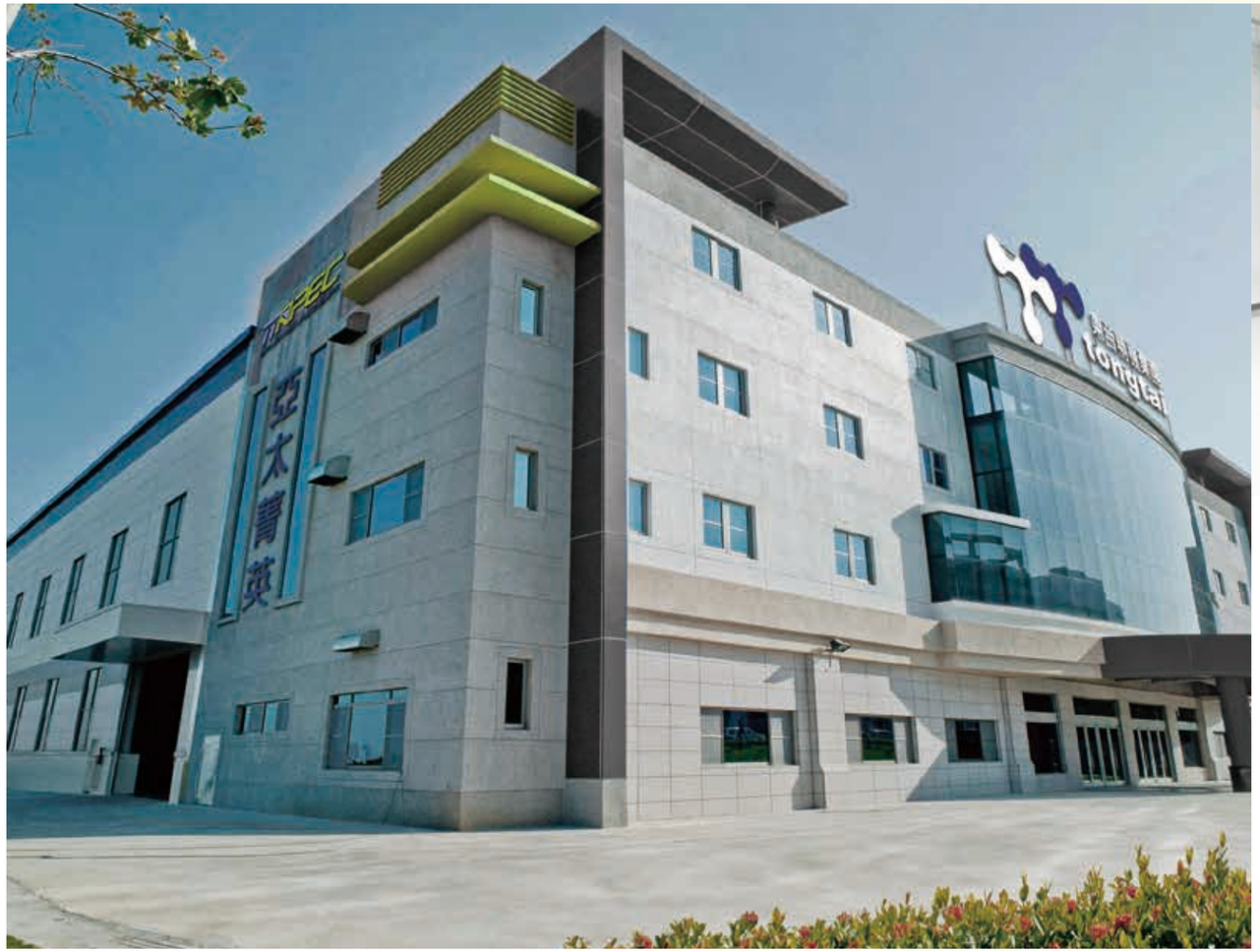
MEMBER OF TT GROUP
2025/09

MSK
AERO Series
Aluminium

AIMING AT **AEROSPACE** SOLUTIONS



ASIA PACIFIC ELITE CORP. (APEC) IS A SUBSIDIARY OF **TTGroup**, THE **BIGGEST MACHINE TOOLS GROUP** IN TAIWAN

APEC aims at “Aerospace manufacturing process” and defines ourselves as a resources integrator, solutions provider and customers’ best strategic partner of OEM, Tier1 to Tier3.

APEC has the world's most complete medium and large aerospace structure and engine parts processing solutions.

Besides, we also have 20 years of professional practical experience in die & mold and precision machining.

Our clients are all over the world, like Canada, the USA, Germany, Japan, Mainland China and Taiwan, etc.Furthermore, we offer comprehensive customer services including factory planning, intelligent manufacturing, technical training, process upgrades and Turnkey solutions.

CORE VALUES

AIMING AT AEROSPACE SOLUTIONS

TIMS

Production management
Intelligent monitoring
RFID tool management
Workpiece management
Order management

TLM

Machine status
Utilization analysis
Alarm history
Operation history
Program upload/download

AGA key components

- Spindle
- Milling Head
- Trunnion Table

Aerospace Gebert APEC

Aerospace Gebert APEC is a premium brand for aerospace manufacturing components. Developed by APEC and Dr. Gebert's team from Germany, AGA offers high-power, high-speed spindles, milling heads, and trunnion tables, all engineered for APEC machines. This ensures after-sales service with maximum efficiency and precision.

CUSTOMER **SUPPORT**

MSK AERO Series

5-Axis High Speed Gantry Machining Center

- **Box-in-Box structure**

  Symmetrical geometry design with Box-in-Box structure features full force flow and thermal symmetry and DCG(Driving at the center of gravity) Benefits of DCG: Excellent dynamics, improved surface finish, reduced manual polishing time.

- **Unequal thickness of Ram**

  Ram equipped with honeycomb structure performs the best balancing design and better geometry.

- **Suitable workpieces**

Wing structure

Wing rib(L)

Stringer

Fuselage structure

Bulkhead

Landing gear panel

AERO Series

Machine configuration for aerospace machining

Cross beam flushing system
High pressure pump with groups of powerful nozzles can quickly remove the chips.

Complex chip removal system
Dual chip removal system with a large-capacity water tank could make coolant and chip removal stable and efficient.

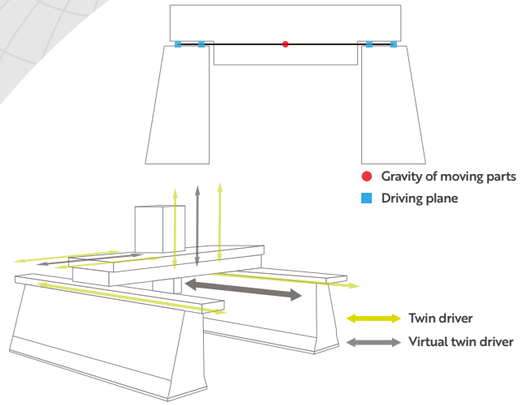
Automatic top-roof cover
Movable beam design of top-roof cover could prevent spreading of chips and coolant liquid.

5-axis simultaneous machining
5-axis machining accuracy difference is below 0.01mm.

Special spindle for aluminum alloy processing
Ultra-high speed and power spindle with the best material removal rate.

X/Y/Z axis driven by linear motor
All three axes are driven by dual linear motors.
Max. feedrate : 60 m/min
Max. acceleration : 5 m/sec²

Automatic attachment head exchange system
Different angle heads could be mounted to match various applications and it is best for machining in narrow spaces.



Symmetrical design with Box-in-Box structure

- **The lowest gravity center in the world**

  Zero distance between gravity of the moving parts and the driving plane makes the gravity center closer to the driving plane.The machining stability could then be improved and the best machine rigidity could be ensured.

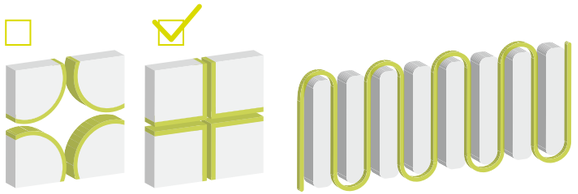
- **Symmetrical force flow provide precision machining**

  X,Y,Z axis are designed with force symmetric structure .Dual driving units and equivalent uniform force at the center of gravity can ensure optimal surface quality.

APEC linear motor not only save energy but also increase motor thrust

APEC linear motor can save 32% of energy thanks to special magnet and cooling design.

- **Linear motor thrust increased by 10%.**
  New linear motor magnet design increases magnetic flux and makes linear motor thrust increased by 10%.
- **Best cooling**
  Special coil winding makes motor temperature constant.

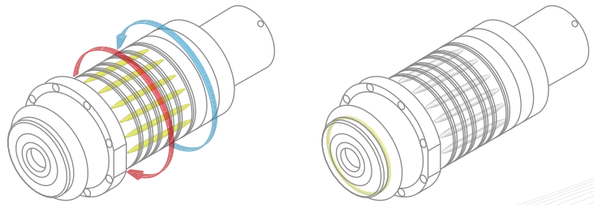


Large gap in ordinary magnet | Small gap in special magnet (Great interactive response) | Special type for coil winding

AGA ultra-high speed & power spindle

With the optimized 124kw,30000rpm spindle, the material removal rate(MRR) could reach 9,920 cm³/min.

- **Heat pipes for efficient heat transfer**
  AGA Heat pipes have 1000x better heat conductivity than comparable sticks made of copper which also cause a homogenous temperature inside components.
- **Dustproof and waterproof design: Use of brush seals for aircraft engines**
  - Maximal gap (≤0.003 mm) for best protection against fluid (≤ 10bar) and aggressive particles. (carbon fibers or ceramic materials)
  - Protection could be provided even if purge air fails or air is very humid.
  - Electrostatic discharge protection of the shaft could be provided if drive currents are not perfectly symmetric.
  - Damping of vibrations.



Cooling circuit and Heat pipes | Labyrinth seal and Brush seal

Fork Type Milling Head - Standard
(High power spindle)

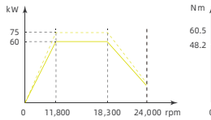
Fork Type Milling Head
(Ultra-high power spindle)

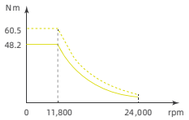
	Fork Type Milling Head - Standard (High power spindle)	Fork Type Milling Head (Ultra-high power spindle)
Spindle Taper	HSK63A/HSK100A	HSK63A/HSK100A
Swivel/Rotation Torque	B=1,192/1,980Nm C=1,050/1,740Nm	B=1,192/1,980Nm C=1,050/1,740Nm
Swivel/Rotation Speed	B=C=30(cont)rpm B=C=60(max)rpm	B=C=30(cont)rpm B=C=60(max)rpm
Swivel/Rotation Angle	HSK63A:B=±120° C=±360° HSK100A:B=±115° C=±360°	HSK63A:B=±115° C=±360° HSK100A:B=±110° C=±360°
Clamping Torque	B=4,000Nm C=4,000Nm	B=4,000Nm C=4,000Nm

High power spindle

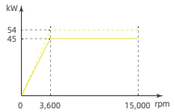
24,000rpm		15,000rpm	
Spindle taper	HSK-63A	Spindle taper	HSK-100A
Lubrication	Oil air	Lubrication	Oil air
Power(kW)	S1 60 S6 75	Power(kW)	S1 45 S6 54
Torque(Nm)	S1 48.2 S6 60.5	Torque(Nm)	S1 119 S6 143

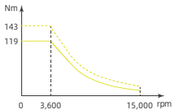
24,000rpm, HSK63A





15,000rpm, HSK100A

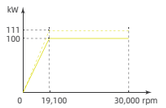


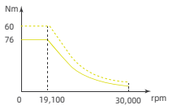


Ultra-high power spindle

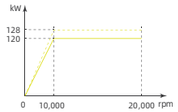
30,000rpm		20,000rpm	
Spindle taper	HSK-63A	Spindle taper	HSK-100A
Lubrication	Oil air	Lubrication	Oil air
Power(kW)	S1 100 S6 111	Power(kW)	S1 120 S6 128
Torque(Nm)	S1 60 S6 76	Torque(Nm)	S1 115 S6 139

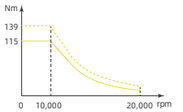
30,000rpm, HSK63A





20,000rpm, HSK100A





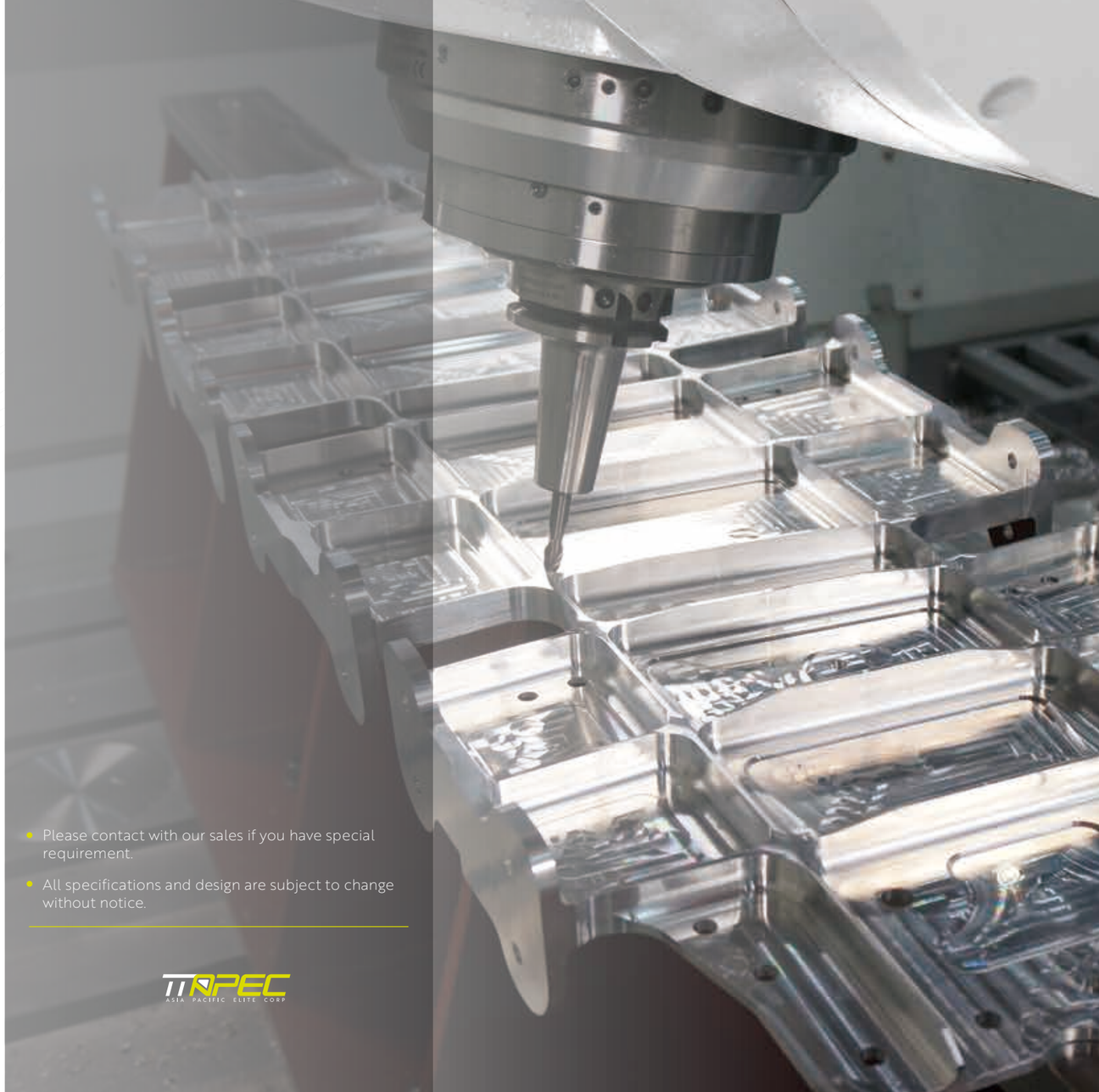
Specification	Unit	SK M 27-5L	SK M 32-5L	SK M 40-5L
Travel		SK M 2740/50/60/80	SK M 3240/50/60/80	SK M 4040/50/60/80
X-axis	mm	4,000/5,000/6,000/8,000		
Y-axis	mm	2,700	3,200	4,000
Z-axis	mm	1,000		
Distance from spindle end to table	mm	According to the selected model, the configuration will be different, Please contact our sales for more details.		
Table				
T-slot size	mm	28		
Length	mm	4,000/5,000/6,000/8,000		
Width	mm	2,200	2,700	3,500
Max. table load	kg/m²	8,000		
Feedrate				
Rapid traverse	m/min	XYZ=60		
X.Y.Z axis acceleration	m/sec²	5-8		
Accuracy				
Positioning (VDI3441)	mm	X=0.015~0.030(Depending on the travel), Y=0.012, Z=0.008	X=0.015~0.030(Depending on the travel), Y=0.012, Z=0.008	X=0.015~0.030(Depending on the travel), Y=0.015, Z=0.008
Repeatability (VDI3441)	mm	X=0.010~0.015(Depending on the travel), Y=0.008, Z=0.005	X=0.010~0.015(Depending on the travel), Y=0.008, Z=0.005	X=0.010~0.015(Depending on the travel), Y=0.010, Z=0.005
Spindle(Standard)				
Spindle taper		HSK63A		
Spindle speed	rpm	24,000		
Spindle power(S1/S6)	kW	60/75		
Spindle torque(S1/S6)	Nm	48/60		
Automatic tool changer				
Tool shank	pcs	30T		
Max. tool length	mm	300		
Max. tool diameter with adjacent tool	mm	Ø100		
Max. tool diameter without adjacent tool	mm	Ø130		
Max. tool weight	kg	7		
Others				
Machine weight	tons.	67	84	99

● Standard accessories ○ Optional accessories

Item	Specification	
Controller	HEIDENHAIN TNC640 MPG HR520	●
	HEIDENHAIN TNC640 MPG HR550	○
	SIEMENS SINUMERIK 840D HT2	○
Spindle	AGA HSK63A 24,000rpm 60/75 kw	●
	AGA HSK100A 15,000rpm 45/54 kw#1	○
	AGA HSK100A 20,000rpm 120/128 kw#1	○
	AGA HSK63A 30,000rpm 100/124 kw	○
Drive System	XYZ axis with linear motor drive	●
Automatic tool changer	30T	●
	40T	○
	60T	○
Cutting coolant	Coolant around spindle	●
	Coolant through spindle 20bar	●
	Coolant through spindle 70bar	○
System coolant	Chiller for spindle	●
	Air conditioner for electrical cabinet	●
Chip removal system	Complex chip conveyer	●
	Enlarged coolant tank	●
Workpiece measurement system	BLUM workpiece measurement system(TC60-RC66)	○
	Renishaw workpiece measurement system(RMP600)	○
Tool measurement system	BLUM tool measurement system(NT-A4)	○
	Renishaw tool measurement system(NC4-F230)	○

Item	Specification	
Smart factory	TIMSsystem	○
	TLMsystem	○
Others	Security door interlocks	●
	Air dryer	●
	Isolation transformer	●
	Spindle oil/air lubrication system	●
	Oil mist collecting system	●
	5 axis with Heidenhain optical scale	●
	Waterproof working lamps	●
	Brake system for linear motors	●
	Automatic open/close top roof sliding cover	○
	Automatic Kinematics measuring and calibration system	○
	Stabilizer	○

#1 If HSK 100A spindle is chosen, ATC standard would be 20T.Opt.would be 40T/60T



- Please contact with our sales if you have special requirement.
- All specifications and design are subject to change without notice.