

Strong EM KOREA

# EMK

EMK IS CREATING THE FUTURE OF TECHNOLOGY

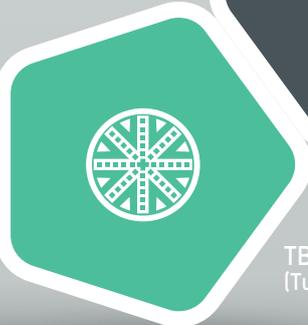
Machine tools



Defense / Aerospace



Energy / Environment



TBM  
(Tunnel Boring Machine)

Power  
Generation

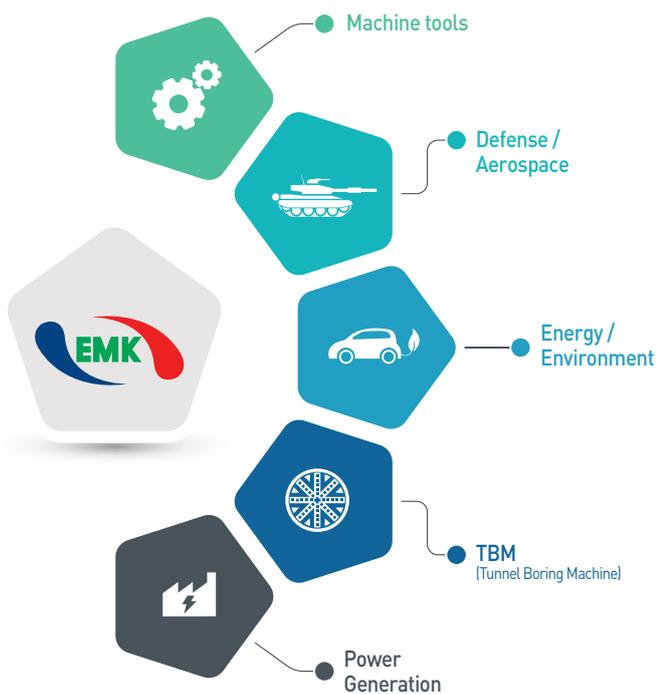


**EM KOREA CO., LTD.**  
ENERGY & MACHINERY KOREA CO., LTD.

# Business Portfolio

## Driving force of EM Korea comes from 'The Power of Positive Thinking and People'

EM Korea Co., Ltd. established in 1987 is well known as the best company with most progressive manufacturing techniques, especially precision machining. It was listed on KOSDAQ in 2007 to prepare for taking off to new business and acquired certificates and patents from Korea and the world. The company now enjoys a good reputation for the proven technology and has successfully accomplished in 5 business fields including, Machine Tools, Defense/Aerospace, Power Generation, Environment/Energy and TBM industry. In addition, EM Korea Co., Ltd. has realized the continuous quality improvement and technological development to meet the customers' demands and done its corporate social responsibilities. For the human happiness and better future, we will do our best to bolster public confidence and trust.



### COMPANY HISTORY

- **1987. 03** Established DONGWOO Precision
- **2000. 05** ISO 9001 certified
- **2003. 03** Established EM Korea Co., Ltd.
- **2003. 10** R&D center opened
- **2005. 09** The Merger of DONGWOO Precision and EM KOREA Co., Ltd.
- **2006. 07** ISO 14001 Certified
- **2006. 11** Awarded the tower of ten million dollar export
- **2007. 10** Listed in KOSDAQ (Korea Securities Dealer's Automated Quotations)
- **2010. 12** Cumulative production of 10,000 sets of CNC Lathes
- **2011. 05** Awarded Silver Tower order of Industrial Service Merit
- **2012. 03** AS9100 certified
- **2013. 09** Defense Quality Management System certified
- **2013. 10** Constructed Hydrogen station for Hydrogen fuel-cell car in Daegu, Korea (EMK)
- **2014. 04** First shipment of localized TBM
- **2015. 06** Development of Hydraulic Distributor for LCH/LAH (Korean Air force Helicopter)
- **2016. 01** Physical Division to EM Korea Co., Ltd. and EM Solution Co., Ltd.
- **2016. 12** Development of Hydraulic reservoir for KFX
- **2017. 04** Obtained the order of Shield Blanket for ITER (International Thermonuclear Experimental Reactor) project
- **2017. 06** Produced OBIGGS for Helicopter(KUH)
- **2017. 10** Development of ø8m TBM (KAIA)
- **2017. 11** Awarded of Defense Quality Management System
- **2018. 05** Designated as developer of the MRO Technology for B737/A320 Landing Gear System
- **2019. 01** MRO&U contract with LM in hydraulic systems



#### • Changwon Headquarter

Defense/Aero, TBM, Power Generation/ITER, Energy/Environment  
[Site 44,000m<sup>2</sup>, Building 24,000m<sup>2</sup>]

#### • Haman Plant

Machine Tools  
[Site 40,000m<sup>2</sup>, Building 23,000m<sup>2</sup>]

# TBM(Tunnel Boring Machine)



**It Goes More Deeply, Longer, Rapidly and Safely.**

EM Korea is the first company to be designated as a TBM construction machine manufacturer approved by the Ministry of Land, Infrastructure, and Transport in Korea . EMK produces small and medium sized TBM, less than 3m long.

It also has made an agreement with JIMT in Japan on the sales and joint production of TBM up to 15m long to lead an economical construction of tunnel, secure the safety at tunnel work site and protect the nevironment.

## TBM type



### Semi Shield TBM

- Construction method that pushes rebar and concrete pipe with rear jack while digging with cutter.
- Ground displacement and environmental damage are minimized
- Possible in various geological and narrow places.



### Shield TBM

- construction method that excavates with a cutter and simultaneously vents back to a segment, and then pushes the segment using a propulsion jack
- Longer drilling than Semi-Shield TBM is possible.
- Construction under high water pressure and sharp section is possible.

## EMK's TBM Series



**CKE-1500**  
Semi-shielded machine (Slurry)



**ET-2280**  
Semi-shielded machine (Slurry)



**SS-IDRT-2840**  
Semi-shielded machine (Slurry)



**ET-3540**  
Shield machine (EPB)



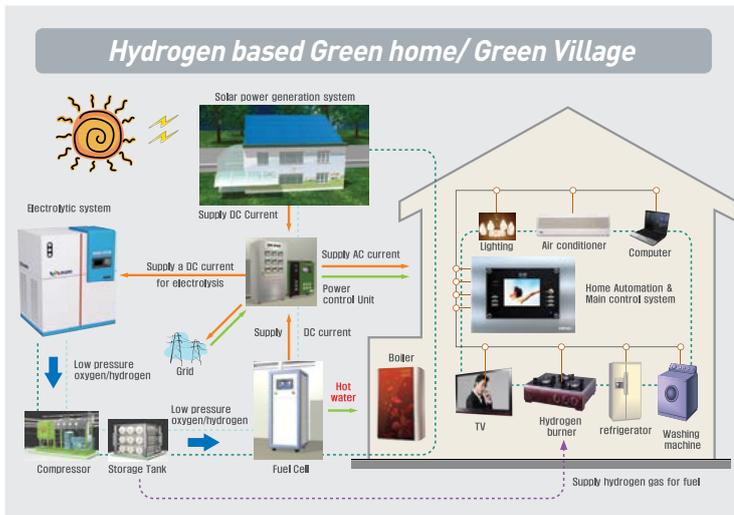
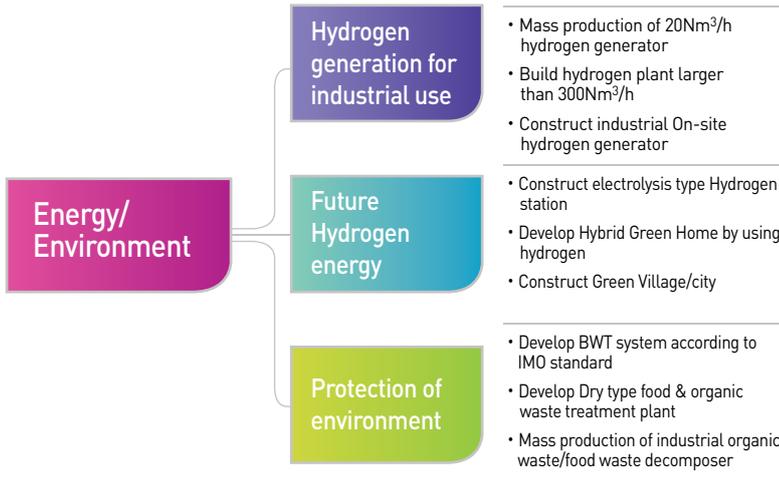
**ET-3540 (R30m Type)**  
Shield machine (EPB)



**HP-SST-3540**  
Shield machine (Slurry)

# Energy/Environment

EMK works to be at the forefront of hydrogen generation technology and hydro-electrolysis systems development incorporating such advances as a combined hydro-electrolysis system with solar light power generation and a patented electrolysis stack design.



# Defense/Aerospace

Through a reliable production line and strict quality control, EMK has positioned itself as a leader in manufacturing products with the advanced technology that is accumulated in 30 years. EMK is currently involved with system development for weapon programs and seeks to work on next generation weapon developing projects.



## Aerospace

- T-50 / TA-50 / FA-50 : Hydraulic reservoir, Door actuator, Landing gear parts
- KUH (Korea Utility Helicopter) : Landing gear parts, OBIGGS
- A340/A350/A380/B787 : Landing gear parts
- KFX : Hydraulic reservoir, Manifold, Gun flow limiter
- LAH/LCH : Hydraulic reservoir, Manifold, Accumulator, Rotor brake
- MRO(B738/A320) : Landing gear parts



## Ground Weapons

- Self-Propelled Howitzer (K-9) : Firing assembly, Cylinder assembly, Cradle assembly
- 30mm Wheel armored Vehicle : Primary power unit, Ammunition system
- Infantry Fighting Vehicle (K-21) : Slip rings, Ammunition system, Pre-cleaner
- KH178/179 : Equilibrator and recoil mechanism assembly



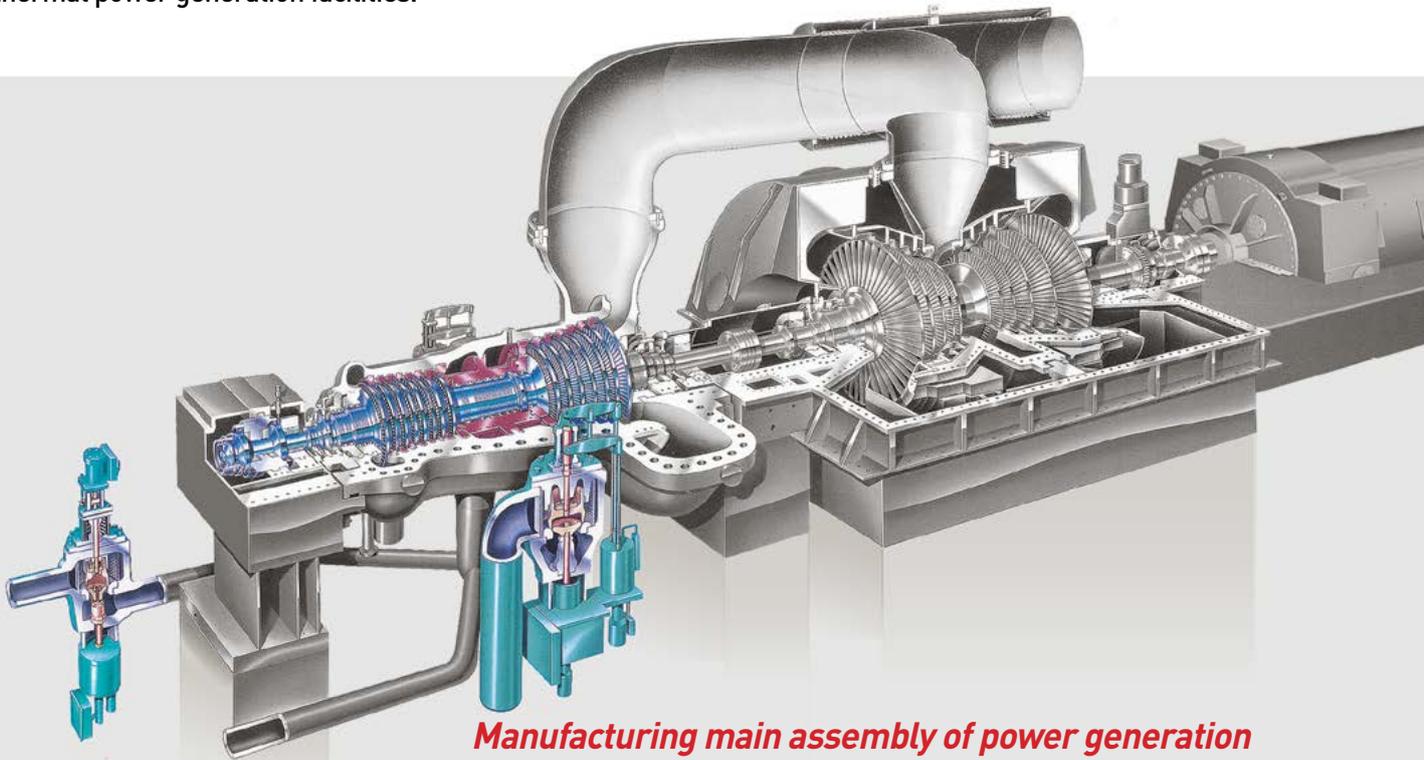
## Naval Weapons

- KMK 45 Gun of warship : Tray housing, Gun barrel housing, Slide
- 76mm Gun of warship : Ammunition system
- 130mm Guided missile Launcher : Structural parts
- 40mm Gun of warship : Gun mount structure



# Power Generation

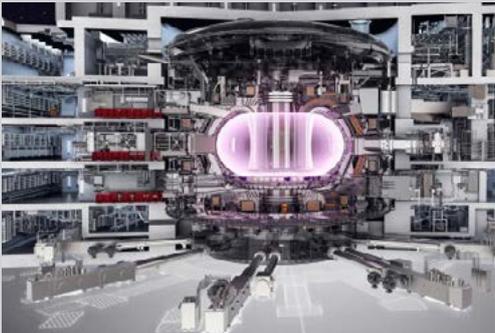
From simple to technically demanding, EMK can provide the solution to your power plant facility needs. EMK focuses on the major assembly and part machining technologies required for high precision and accuracy in nuclear and thermal power generation facilities.



**Manufacturing main assembly of power generation**



## Manufacturing ITER Blanket shield block



• ITER

*EM Korea participates in ITER (international Thermonuclear Experimental Reactor) blanket shield block production*

**ITER Blanket System**

- Absorbing radiation and particle heat fluxes from the plasma and Neutral Beam Shield Through
- Providing thermal shield to the vacuum vessel and external vessel components



• Blanket Module



• Machining



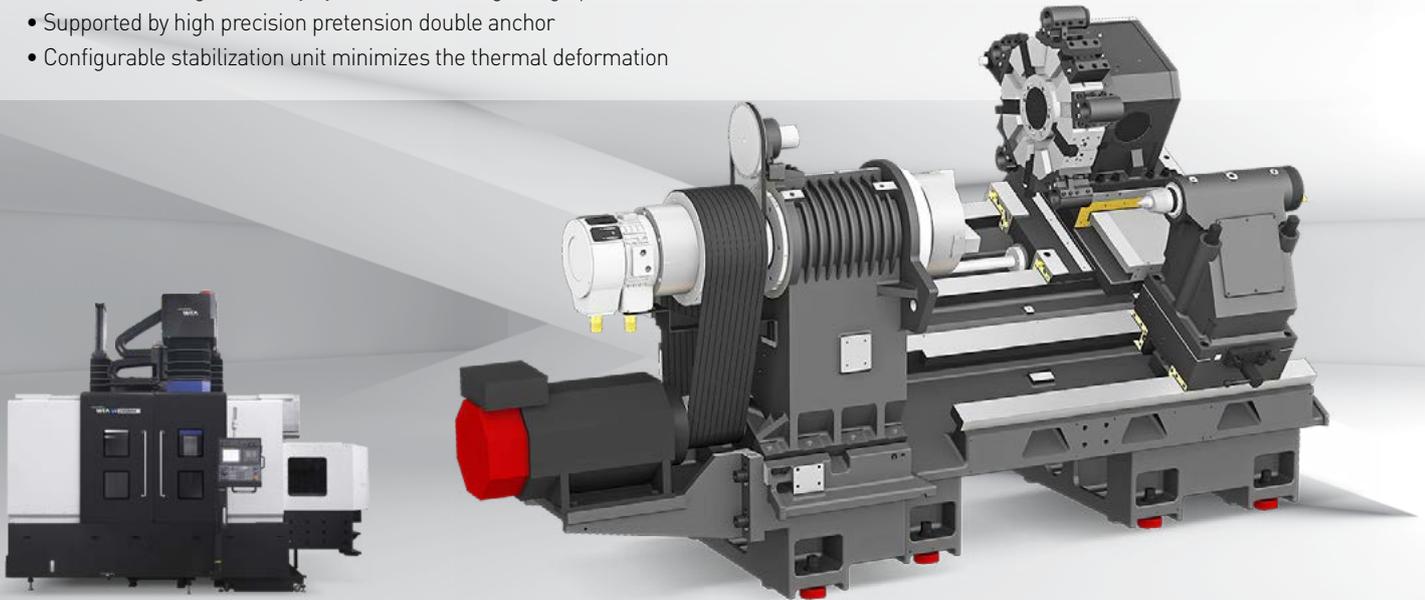
• Blanket Shield Block

# MachineTools



## The Fruit of most advanced Technology & High Precision Mechanism EMK's Machine Tool Series

- A variety of line-up models in a series of production
- Realization of high accuracy by direct connecting of high precision ball screw and servo motor
- Supported by high precision pretension double anchor
- Configurable stabilization unit minimizes the thermal deformation



### Manufacturing completed product of CNC lathes

- Over 2,400 sets of 59 models are produced annually.
- Complete control of the production process from start to finish (Design, machining, assembling, test, inspection and shipment)

Size	6"	8"	10"	12"	15"	17"	18"	22.5"	
Model	SE2000A SE2000MA SE2000PA	SE2000C SE2000MC SE2000PC HD2200 HD2200M HD2200SY HD2200Y	HD2200C HD2200MC HD2600 HD2600LE HD2600M HD2600LME HD2600SY HD2600Y HD2600LSY HD2600LY L280 L280L L280LM L250SY L250Y L300A L300LA L300LMA L300LMSA L300MA L300MSA	HD2600C HD3100 HD3100L HD3100M HD3100LM HD3100Y HD3100SY L300C L300LC L300LMC L300MC L300MSC	12 24"	L400LC L400LMC 25"	L500AW 32"	L600AW LV800L LV800LM LV800R LV800RM 40"	LV800AW-TT 63"
				KL6500AW	LV800LAW LV800RAW	LV1100R LV1100RM	LV1400	LV2000MM	
	59	3	7	21	1	2	2	1	1



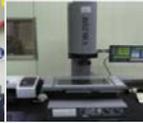
### Manufacturing components of machine tools

- **CNC Lathe** : Head stock, Tool post, Mill turret, Saddle unit, Tail stock, Sub spindle
- **Machining Center** : Hi-speed spindle, Tool lock system

# Main Facility

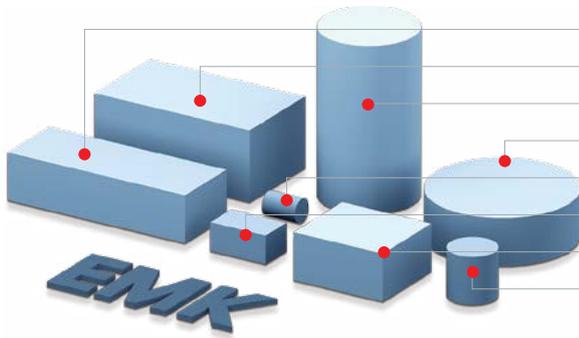
**Manufacturing equipment** | Changwon Plant (28 Model / 80 Items), Haman Plant (12 Model / 26 Items)

**Test & Evaluation facilities** | Changwon Plant (100 Model / 1,995 Items), Haman Plant (60 Model / 798 Items)

5 Axis Machine  <b>DMG DMU125FD</b> (1,250 × 1,250 × 1,000)	5 Axis Machine  <b>SNK RB-250F</b> 3,800x2,500x2,600x3,800	5 Axis Machine  <b>PAMA SPEEDMAT HP6</b> 5,250x2,900x600x850	JIG Boring Machine  <b>DIXI 350TPA</b> (1,000 × 1,000 × 1,000)	Plano Miller  <b>Hankook PME-40ES100</b> (10,300 x 5,000 x 2,800 x 1,800)	Vertical Turning Center  <b>Hankook VTC-30/40E</b> (Ø4,000-Max Swing)	Boring Machine  <b>Mitsubishi MAF-RS150C</b> (1,250 × 1,250 × 1,000)		
 <b>CMM</b> (2,000 × 4,200 × 1,500)	 <b>Projector</b>	 <b>Shape Measuring Instrument</b>	 <b>Laser tracker</b>	 <b>Pollution level analyzer</b>	 <b>System thermal Deflection Measuring Instrument</b>	 <b>Noise &amp; Vibration Measuring instrument</b>	 <b>Hydraulic Tester</b>	 <b>Environment Tester</b>

# EMK Capability

## Maximum Machining Capacity



- **Surface Grinding Machine** X × Y × Z : 1,200 × 550 × 600
- **5-Face Machine** X × Y × Z : 10,500 × 5100 × 4,800
- **Horizontal Turning Center** Swing : Ø2,200 × 6,000L
- **Vertical Turning Center** Swing : Ø4,000 × 2,500L
- **Cylindrical Grinding Machine** Swing : Ø500×1,500L
- **Boring Machine** X × Y × Z : 1,800 × 1,500 × 1,500
- **Horizontal Boring Machine** X × Y × Z : 12,000 × 4,500 × 2,000
- **5-Axis Machine(PAMA)** 3,800 x 2,500 x 2,600 x 3,800 (+95°/-120°)
- **5-Axis Machine(SNK)** 5,250 x 2,900 x 600 x 850 (115° x 360°)

## EMK Performance Capability

- **Design**  
- Optimized design ability to meet the customer's needs
- **Assembly**  
- Secure the assembly line of a 100 ton(+50 ton) overhead crane
- **Testing**  
-3D measurement, Thermal displacement, Noise, Vibration, Configuration, Projector, Balancing, Environmental test
- **Quality Assurance**  
-ISO 9001/14001, AS9100, Defense Quality Management System
- **Special Process**  
-Surface treatment, Nitride, Painting, Plating, Welding, Heat treatment



### Changwon Headquarter

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