KSK
Facts & Figures

1960
15 AUG

Established in 1960

President & CEO:
Tetsuro Komaba

485 employees in Japan

92 m. €
Annual sales
(fiscal year 2016)

7,500 t
Annual casting volume

500
Active part numbers

MAIN PRODUCTS
Transmission control box, power shift
device, change lever, engine and
transmission aluminum die-cast parts
and assemblies

REFERENCE CUSTOMERS
Toyota Group (Aisin AI, Aisin AW,
Daihatsu, Denso, Hino, Toyota), Isuzu,
Mitsubishi-Fuso, UD Trucks, Dynax,
ThyssenKrupp Presta

ALUMINUM MATERIAL
JIS ADC12 (DIN EN AC-46000)
JIS ADC14 (DIN EN AC-48100)
KSK
Product groups

Keihin Seimitsu Kogyo (KSK) is a manufacturer of aluminum diecast parts and assemblies and transmission control systems.

Product group 1: Aluminum diecast parts and assemblies for transmissions and engines

Product example: valve body for AT

Product group 2: Transmission control systems

Product example: power shift for medium duty truck
KSK is a systems supplier that manufactures products in an integrated manner from design to diecasting through to processing and assembly.

- R&D department with 17 developers at Tochigi plant, Japan
- Two production sites in Japan and one in Indonesia
- Diecasting machines with a range from 135 to 800 tons of clamping force
- KSK - best when it comes to combine its die-casting and mechanical engineering prowess
KSK
Diecasting materials

KSK’s aluminum die-cast products are made of materials JIS ADC12 and JIS ADC14.

ADC12 is the material that is widely used in the Japanese automotive industry.

JIS ADC12 is close to EN AC-46000 and JIS ADC14 is close to EN AC-48100.

In the case of a valve housing DAIMLER has confirmed ADC12 as a feasible substitute for aluminum alloys used in the German automotive industry.
KSK Production

KSK has its own concept of Lean Manufacturing (*Monozukuri*) which is closely connected to its longstanding *Kaizen* activities (CIP).

One-piece flow production is the basis of KSK’s manufacturing concept.

70% of machinery and 100% of tools are designed and manufactured in-house.

(The video is only shown at on-site presentations)
KSK Locations

4| NKI plant:
Joint venture with Astra Auto Parts
Land: 13,000 m²
Building: 3,000 m²
Functions:
• Sales
• Engineering
• Manufacturing

1| Hokkaido plant:
Land: 28,000 m²
Building: 6,506 m²
Function:
• Manufacturing

2| Tochigi plant:
Land: 33,000 m²
Building: 13,587 m²
Functions:
• R&D
• Quality Assurance
• Engineering
• Production control
• Manufacturing
• Purchasing

3| Head Office
Yokohama City
Functions:
• Sales
• Administration

5| Europe Liaison Office:
Function:
• Sales support
### KSK Certificates and Awards

Customers have repeatedly acknowledged KSK’s strengths in the fields of innovation, *Kaizen*, as well as the reliability and quality of KSK’s products.

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<th>Certificates</th>
<th>Customer and TPM awards</th>
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| **KSK in Japan:**  
  - IATF16949 / ISO9001 (2005)  
| **Recent awards:**  
  - Toyota (2014): 'Technology Development Award'  
  - Hino (2015): 'Global Contribution Award'  
  - Hino (2015): 'Excellent Cost Reduction Award'  
  - Aisin AI (2015): 'Excellent Quality Award'  
  - The Japan Society for Technology of Plasticity (2015): 'Technology and Development Award'  
| **NKI in Indonesia:**  
  - ISO 9001 (2000)  
| ** TPM Awards:**  
  - TPM Special Award for TPM Achievement (2010)  
  - TPM Award for Excellence in Consistent TPM Commitment (2014)  

KSK Clients

KSK is a tier 1 and 2 supplier to the automotive industry. Clients include Japanese producers of truck and passenger cars and customers abroad.

Transmission parts make up 71% of sales (2016).

Since the 1990s Toyota Group has evolved to make up 55% of sales today.

In Indonesia:
NKI supplies to the transplants of Japanese OEMs as well as to local automotive companies.

In Germany:
Supply of valve housings for DAIMLER power steerings started in 2001. KSK has continued to supply stable quality from Japan for >15 years.

Sales percent by customer:
- Isuzu: 34%
- Toyota: 32%
- Hino: 11%
- Daihatsu: 10%
- Aisin AW: 5%
- Denso: 4%
- Aisin AI: 3%
- Daihatsu: 1%
- Others: 11%
Innovations by KSK
'Semi-hot chamber diecasting' technology

KSK actively suggests material conversion from steel to aluminum by this realizing substantial gains in weight and costs.

KSK’s ‘Semi-hot chamber diecasting’ technology creates aluminum parts with extremely few blowholes and the properties of steel.

The low porosity-castings can be T6 heat treated. This allows for converting steel parts to KSK’s high-strength, air-tight die-cast aluminum.

KSK participated in the development and was the 1st company in Japan to apply the technology.

Cost reduction 30%  Weight reduction 55%

Steel part: pressed and welded
Aluminum part: die-cast
Innovations by KSK
'Center gate diecasting' technology

KSK actively suggests material conversion from steel to aluminum by this realizing substantial gains in weight and costs.

- With the 'Center gate diecasting' technology the molten metal is evenly poured from the center into the mold.
- This improves the quality of cylindrical parts and creates high-strength, high density parts that require less or no mechanical processing.
- Even distribution of the metal in the cavity means constant cooling and less distortion.
- Cost reduction 5-20% Weight reduction >50%

- Steel part: pressed, welded and machined
- Aluminum part: die-cast, no processing of outer gear toothing required
Innovations by KSK
The 'Ultimate One Piece Flow Line'

KSK has taken Lean Production to a new level:
One Piece Flow from diecasting to packaging

An ideal production line has no inventory in between its different manufacturing processes.

KSK managed to integrate diecasting into the subsequent mechanical processing line.

In 2014 KSK received Toyota’s Technology Development Award for it’s OPF-line.

Inventory reduction  98%
Lead time reduction  65%  Cost reduction  25%

Diecasting  Machining  Final Inspection
Innovations by KSK
'Plastic Flow Binding' technology

KSK developed a high-strength, high-precision method for joining materials as an alternative for the bolt joining of parts.

Pressure is applied to the aluminum part. The material ‘flows’ into fine steel grooves in order to obtain mechanical meshing (Patents acquired).

Application in serial production started in 2013. The below actuator housing (engine part) is assembled with a standard press machine.

Cost reduction 34%  Weight reduction 18%
Innovations by KSK
One-Motor Electric Transmission Control

KSK is currently developing a simplified electric transmission control for use in lightweight and compact transmissions.

So far, transmission control systems required either the use of two motors or three solenoids.
The system is well-suited for automating manual transmissions (AMT) as well as for HVs & EVs.

KSK’s innovative approach needs only one motor for operating a transmission (SHIFT and SELECT).
Space reduction 60%  Weight reduction 60%
(prototype for commercial vehicles depicted)
Product group: Aluminum die-cast parts and assemblies
High strength and air-tight die-cast parts

Medium duty truck
1 CASE
   Mass: 308g
2 FRONT COVER
   Mass: 490g
4 ENGINE FOOT
   Mass: 1000g

Light duty truck
3 SPRING SEAT
   Mass: 690g
5 COVER
   Mass: 315g

Mercedes E Class
6 VALVE HOUSING
   Mass: 380g
Product group: Aluminum die-cast parts and assemblies
High quality die-cast parts – Centergate diecasting method

**ELGRAND**
1. DRUM ASSY
   mass: 1120g
2. PISTON; DIRECT CLUTCH
   mass: 447g

**MOVE**
2. PISTON
   mass: 182g
6. PISTON
   mass: 61g

**CAMRY**
7. HUB
   mass: 140g

**TUNDRA**
3. BALANCER
   mass: 266g

**IS350**
4. PISTON; BRAKE
   mass: 278g
Product group: Transmission control systems
Change lever – Passenger Cars

ATRAI
1 MT LEVER: INPANE TYPE
mass: 1350g

XENIA
2 MT LEVER
mass: 1320g

MOVE
4 MT LEVER
mass: 2340g

COPEN
4 MT LEVER
mass: 2340g

TERIOS
3 MT LEVER
mass: 1640g

HIJET
5 MT LEVER
mass: 2300g
Product group: Transmission control systems
Change lever – Commercial Vehicles

1. Light duty truck
   - MT LEVER – FOLDABLE & W/SWITCH TYPE
     mass: 1400g

2. AMT LEVER ELECTRIC TYPE
   mass: 1550g

3. Medium duty truck
   - MT LEVER – TILT-FOLDABLE & W/SWITCH TYPE
     mass: 2800g

4. Heavy duty truck
   - MT LEVER
     mass: 2280g

5. Medium duty truck
   - MT LEVER
     mass: 1470g
   - AT LEVER
     mass: 3220g

6. Heavy duty truck
   - MT LEVER
     mass: 2300g
   - MT LEVER – TILT-FOLDABLE & W/SWITCH TYPE
     mass: 2800g
Product group: Transmission control systems
Control box & Power shift

DMAX
1 CONTROL BOX
mass: 1100g

Light duty truck
2 CONTROL BOX
mass: 1900g

Medium duty truck
4 POWER SHIFT
mass: 1350g

Medium duty truck
3 CONTROL BOX
mass: 4200g

Medium duty truck
7 CONTROL BOX
W/POWER SHIFT
mass: 4500g

Light duty truck
6 CONTROL BOX
W/ELECTRIC ACTUATOR
mass: 17500g
Product group: Aluminum die-cast parts and assemblies
Transmission parts – MT parts

FORWARD
1. FRONT COVER (SEMI HOT CHAMBER DIECAST)
   mass: 490g

PRADO
4. HOUSING
   mass: 410g

DMAX
2. SHIFT DURM
   mass: 600g
3. OIL PUMP
   mass: 500g

PROBOX
5. REAR COVER
   mass: 830g
Product group: Aluminum die-cast parts and assemblies
Transmission parts – AT parts

1. HUB (HIGH SILICONE DIECAST)
   mass: 140g

2. PISTON
   mass: 65g

3. DURM (HIGH SILICONE DIECAST)
   mass: 1120g

4. VALVE BODY
   mass: 860g

5. PISTON
   mass: 250g

6. CYLINDER
   mass: 240g

7. REAR COVER
   mass: 2600g

8. COVER
   mass: 80g
Product group: Aluminum die-cast parts and assemblies

Engine parts – Large size parts

**ELF**
1. FRONT COVER
   - Mass: 2200g
2. OIL COOLER
   - Mass: 2800g

**SAFARI**
3. COVER TIMING CHAIN
   - Mass: 1170g
4. CASE OIL COOLER
   - Mass: 1550g
Product group: Aluminum die-cast parts and assemblies
Engine parts – Small size parts

1. CROWN
   - RETAINER
     - mass: 260g

2. SAFARI
   - CAM BRKT
     - mass: 115 ~ 125g

3. PRIUS
   - COVER
     - mass: 310g

4. MOVE
   - HOUSING
     - mass: 500g

5. QUON
   - HOUSING
     - mass: 1550g

6. NOAH
   - HOUSING
     - mass: 560g

7. ELF
   - COVER (SEMI HOT CHAMBER DIECAST)
     - mass: 175g
Product group: Aluminum die-cast parts and assemblies
Others parts

Mercedes E CLASS
1 VALAE HOUSING (SEMI HOT CHAMBER DIECAST)
   mass: 360g

HIJET
2 STRG CENTER ARM
   mass: 2300g

ELF
3 SPRING SEAT (SEMI HOT CHAMBER die-cast ADC12-T6)
   mass: 690g

CROWN
4 COVER
   mass: 1280g

GIGA
5 RATERAL ROD
   mass: 500g
6 RELAY LEVER
   mass: 1000g

PANTHER
7 HIGHT CONTROL ARM
   mass: 900g
THIS IS KSK.