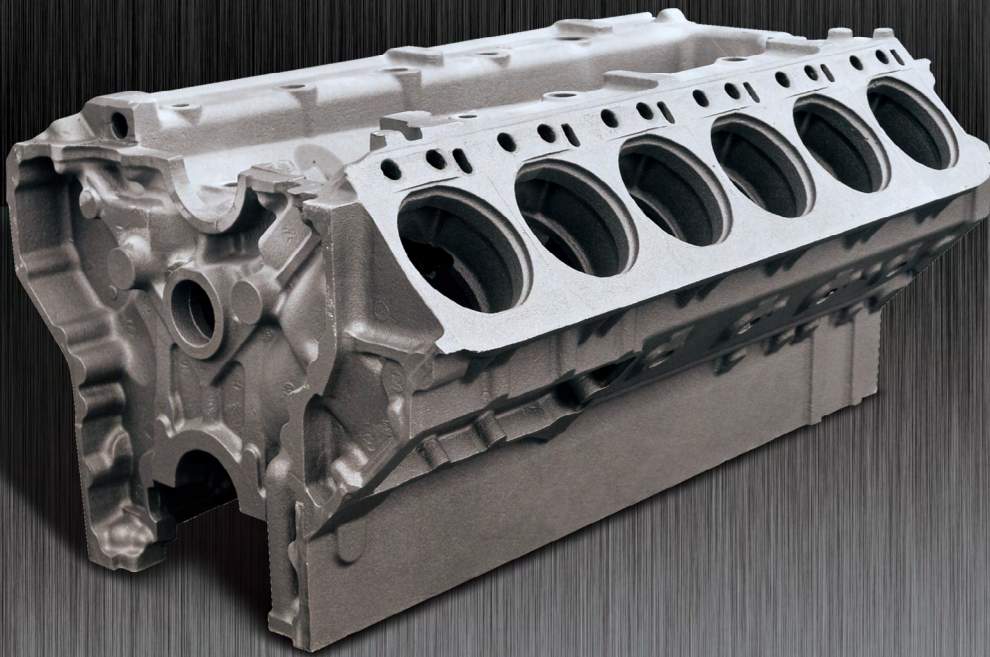




IRON CASTING PRODUCT
CYLINDER BLOCK



Doosan Infracore



Corporate profile

Doosan Infracore ranks among the world's leading makers of construction equipment, machine tools and engines required to build and maintain infrastructure. We were founded in 1937 and have since achieved an unrivalled position in the world. In the 1990s, we have grown to become a truly global player through technological advancements, acquisitions and new product developments.

Doosan Infracore built a global network of large production facilities and sales subsidiaries, along with extensive dealer networks in all regions of the world including North America, Europe and China. Doosan Infracore continues to secure the latest products and technologies in line with the growing demand for green engines and boosting customer value.

Introduction of Engine Business Group

The history of the Doosan Infracore Engine BG goes back to 1958 by offering diesel engines, and the unit today produces and supplies diesel and natural gas engines with high-performance and fuel-efficiency for commercial vehicles, military vehicles, construction equipment, generators and ships around the world. Doosan Infracore is emerging as a global engine producer by developing a full line-up of diesel and gas models that meet increasingly strict environmental regulatory standards.

With the introduction of our new compact diesel Tier 4 final and EU Stage IIIB & IV compliant engines, Doosan Infracore is positioned to become one of the world's top 5 engine makers with advanced environmentally-friendly technology.



History & Award

1950 - 2010'S

1950~70's	1980's	1990's	2000's	2010's
1950's 1958 Marine Engine (AVL)	1980's 1983 Large Engines (MAN license) - D28 Series (15, 18, 22L) Grand Prix of Quality Control (Honor of President/ Korea) 1985 'STORM' engine, (the first in-house designed model, 8, 12L) 1986 Iron Medal of Industry with STORM engine (Honor of President/ Korea) 1988 Small Engines - 3AB1, C223, C240, 4BC2 (1.8, 2.2, 2.4, 3.3L)	1990's 1994 Acquire ISO 9001/9002 'DE & DV' series (8, 12, 15L) Gold Medal of Q.C.C. Contest (Honor of President/ Korea) 1996 Grand Prix Tech. of Environmental Reservation with DE12TI engine (Honor of President/ Korea) 1997 Grand Prix of Quality Management (Honor of President/ Korea) Acquire ISO 14001 1999 'GE' series - CNG engine for city bus (12L)	2000's 2000 Best Award on Engine with GE12TI engine (NGV2000) 2001 Tier II engine 2004 Euro III engine with Common-rail system 2006 GM Group Supplier of the Year (SOY) award 2007 Euro IV engine 2008 CNG engine assembly plant in Atlanta - US07 certified 2009 Joint Venture with XCMG in China : XDEC	2010's 2010 Euro V engine. US10 CNG engine (supplied to LA Metro Bus) 2011 Tier IV-Interim engine 2012 XDEC, start of production Engine plant in China Start of production of Doosan Compact Diesel Engines (1.8, 2.4, 3.4L) 2012 GM Group Supplier of the Year (SOY) award
1970's 1975 Medium duty Engines (MAN license) - D0846, D2156 1979 Light duty Engines (ISUZU license) - 4BA1, 6BB1 (2.8, 5.4L)				

Introduction of CASKOD_



Caskod was the Division of the Doosaninfracore that spun-off and had been established as an employee ownership corporation on February 2001. In 1975, Engine parts casting plant started as Korea's first manufacturer of engine blocks and heads which are the core components of diesel engine. The primary business area specializes in engine block, head, hydraulic

parts of casting iron. As for major clients, Caskod supplies over 50 types totaling 1.5 million parts to Doosan Infracore, GM-Korea, KYB, Mottrol company. Caskod makes an effort to offer a complete guarantee of product's quality and delivery through the certification of ISO9001, TS16949, ISO14001.

1970~80's

1970's

1975 New foundry shop in Incheon(Medium duty Diesel engine Cylinder Block & Head)

1980's

1981 Light Duty Diesel engine Cylinder Block & Head

1986 Gasoline engine Cylinder Block for passenger car(K/T 470 1.5L & 1.6L)

1990's

1991 Export Diesel engine Cylinder Block to Japan(SUZU Motors, NISSAN Diesel)

1995 Engineering & Product development for Oversea plant. New foundry shop for Hydraulic parts in Incheon.



2000's

2001 CASKOD employee buy out from Doosan Infracore(Production part)

Gasoline engine Cylinder Block for small passenger car(T4 1.0L & 1.2L)
Diesel engine Cylinder Block & Head for DI(Tier II)

2002 Diesel engine Cylinder Block for KIA motor (KK 6.2L)

2003 Diesel engine Cylinder Block & Head for Doosan Infracore(Euro III Common-rail)

2004 Diesel engine Cylinder Block for GM-Korea(Euro IV VM 2.0L)

2005 Proto type Deisel engine CGI Cylinder Block for Hyundai Motor(V6 3.0L)

2006 GM Group Supplier of the Year(SOY) award
Diesel engine Cylinder Block for Doosan Infracore(Euro IV)

2007 GM Group Supplier of the Year(SOY) award
Gasoline engine Cylinder Block for GM-Korea(GEN-III 1.4L/1.6L/1.8L)

2008 Proto type Diesel engine Cylinder Block for GM-Korea(Euro V FAM-Z 2.0L/2.2L)
CNG engine Cylinder Head for Doosan Infracore

2009 Diesel engine Cylinder Block for GM-Korea(Euro V FAM-Z 2.0L/2.2L)

2010's

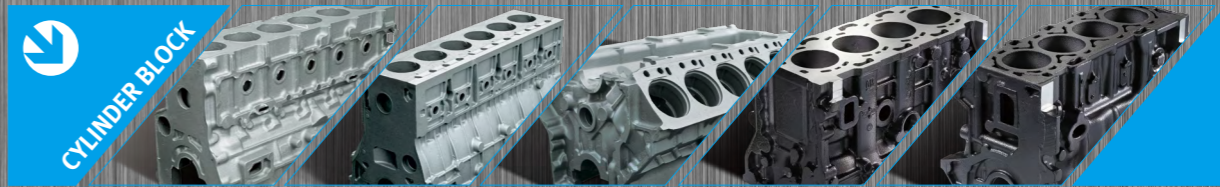
2010 Diesel engine Cylinder Block for Doosan Infracore(Euro V)

2011 Diesel engine Cylinder Block for Doosan Infracore(Tier IV)
Gasoline engine Cylinder Block for GM-UZ(GEN-II 1.2L/1.5L)

2012 Compact Diesel engine Cylinder Block & Head for Doosan Infracore(G2 1.8L/2.4L/3.4L)
GM Group Supplier of the Year(SOY) award.



Product Line-Up



	D24	FAMZ	GEN III
Type	Diesel Cyl.Block	Diesel Cyl.Block	Gasoline Cyl.Block
Dispacement (CC)	2,400	2,000	1,600
Material	FC25	FC25	FC25
Weight(Kg)	70	61	35
Engine	Fork lift, Idustiral Vehicle	SUV,Passenger car	Passenger car

	DL06	DL08	D2842
Type	Diesel Cyl.Block	Diesel Cyl.Block	Diesel Cyl.Block
Dispacement (CC)	5,900	7,600	22,000
Material	FC25	FC25	FC25
Weight(Kg)	165	260	420
Engine	Excavator, Marine E/G, Generator	Excavator, Truck, Bus	Marine E/G, Generator

[Iron Foundry Shop]		Space : 24,000m production Material : FC20 ~ FC30
Process	Facilities	Specification
Melting Line	Melting Furnace	Capa : 13 Ton/Hr 2Power 3 Body, 1Power 2 Body
Molding Line	Auto Molding M/C for Green Sand	Capa : 46 Molds/Hr Flask Size : 1,200 x 900 x 380/380
	Furan Molding & Hot Box Line (full automatic. Semi-automatic line)	Flask Size : 1,600 x 1,200 x 450/450 (non-fixed) 1,000 x 700 x 250/200 (fixed)
Core Line	Facility for Resin coated Sand	Capa : 2.2 Ton/Hr
	Core Making M/C	Shell Type : Electric & LNG Type(22 units) Cold Box Type : 6 units
Fettling Ling	Core Dry Oven	Infrared Heating Dry oven/ Microwave oven
	Shot Blast M/C	Cage Type : 2 units ,Hanger Type : 1 units Internal Type : 1 unit
Sand Preparation	Shake-out manipulator	Griper Type : 2 units
	Mixer	Eirich Mixer(Stir Type), Capa : 90 Ton/Hr Auto Sand Control
Painting	Organic (water,thinner base) /Powder painting	



[Tool Design] Manufacturing and Development Cycle



Quality Management

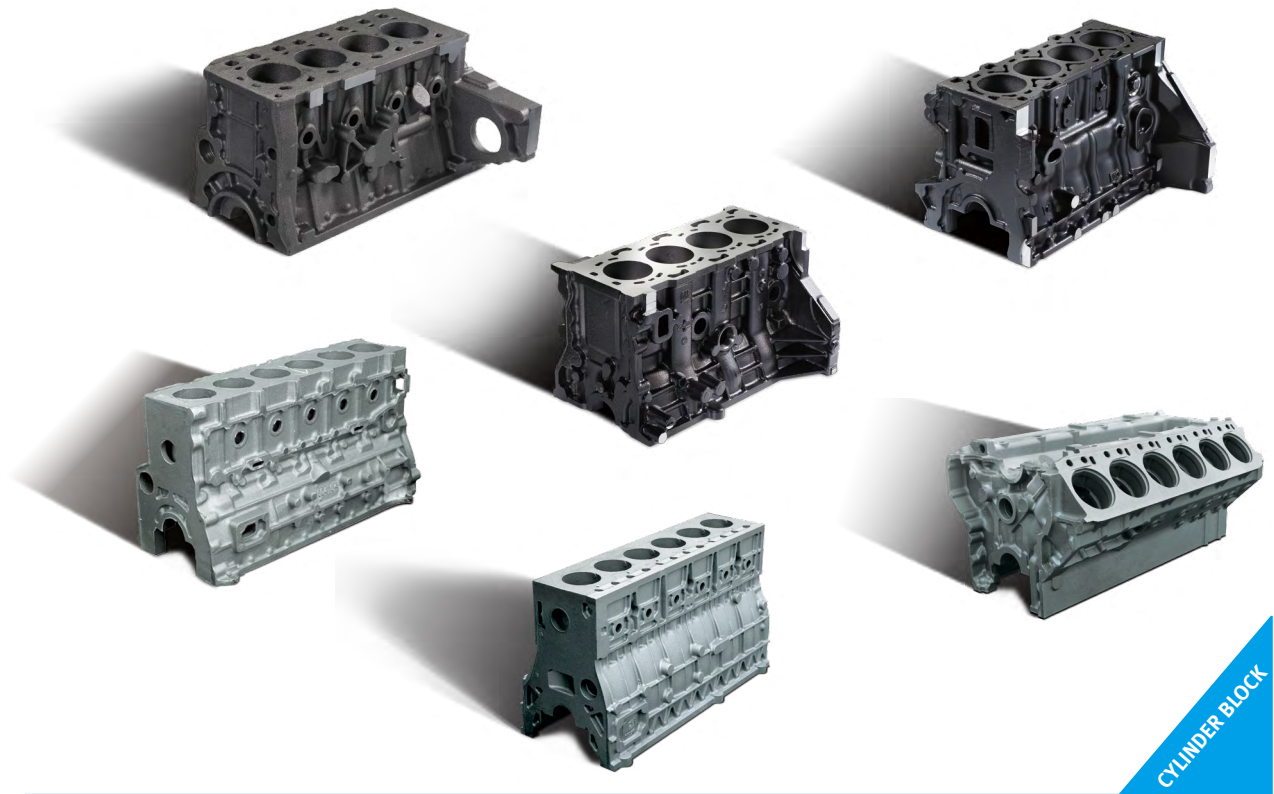
ISO 9001

TS16949

ISO 14001



Engine for Excavator, Wheel loader, Fork lift, Industrial vehicle, Generator, SUV, Passenger car, Truck, Bus



CYLINDER BLOCK



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