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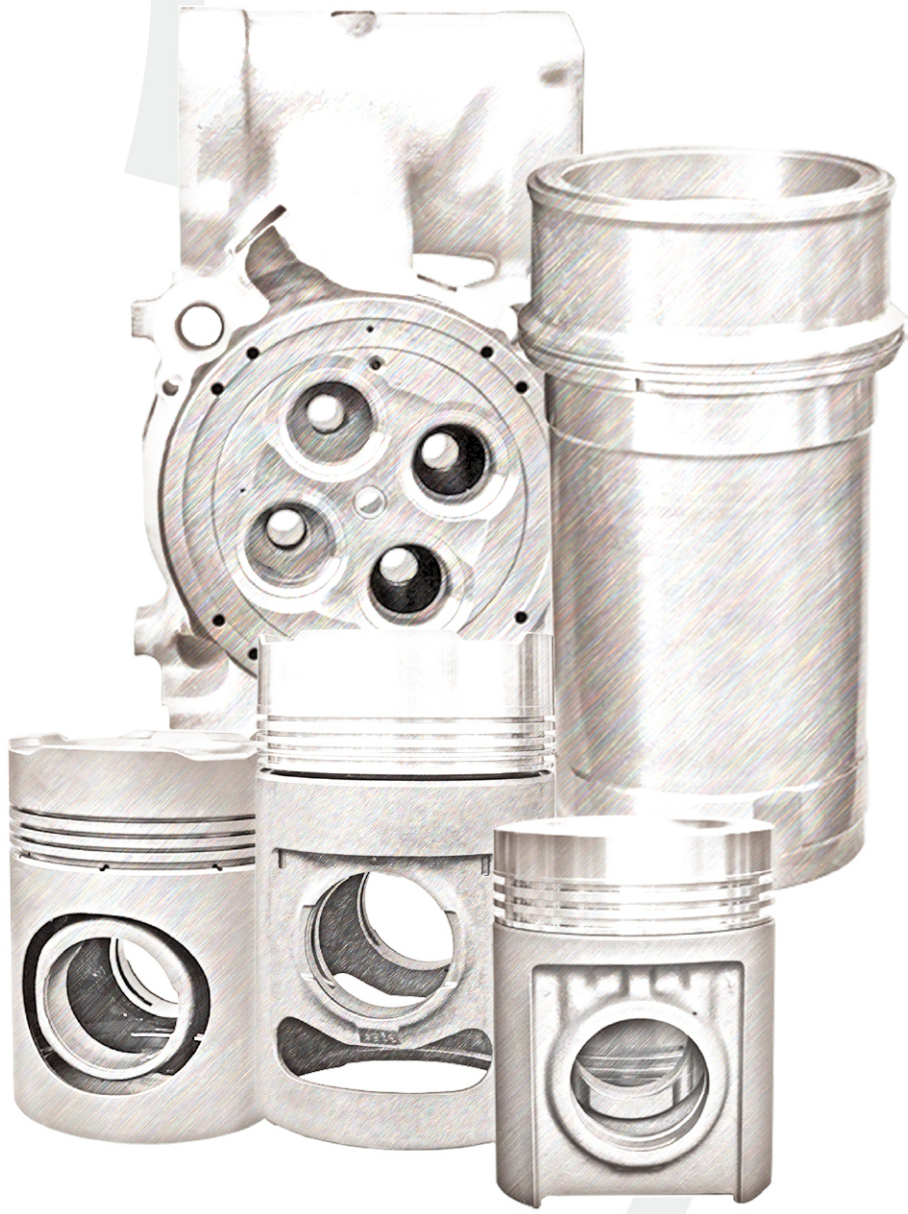
SAMYOUNG MACHINERY CO., LTD.

Samyoung

Diesel engine expert
leading the industry with innovation



Marine
Diesel Engine Components



SAMYOUNG'S
OPTIMIZED REDESIGN TECHNOLOGY UPGRADES YOUR ENGINE TO A HIGH PERFORMANCE AND ECO-FRIENDLY ENGINE

DIESEL ENGINE EXPERT LEADING THE INDUSTRY WITH INNOVATION

Samyoung is a world leading company in diesel engine industry. Since 1975 lots of accumulated knowledge and experience in the industry enables Samyoung to manufacture its products with world-highest productivity and price competitiveness accompanied by high performance and environment-friendliness.

HISTORY

1975	Established Samyoung Machinery Industrial Co.
1977	Production of chrome plated cylinder liner for ALCO Engine Developed a new material of high wear-resistance, GT metal for cylinder liner
1978	Production of pistons for EMD 567C
1983	Production of cylinder liners for EMD 645E Production of cylinder heads for EMD 645E
1990	Production of cylinder heads of medium-speed marine diesel engine for MAN L23/30 & L28/32
1992	Production of pistons for Pielstick engine
1999	Production of pistons for MAN L23/30 & L28/32
2000	Production of front end boxes for MAN L27/38 Acquired ISO 9001 Certification
2003	Production of front end boxes for HIMSEN H21/32
2004	Production of pistons for HIMSEN H21/32 & H25/33
2005	Production of cylinder heads for HIMSEN H21/32 & H25/33 Production of engine blocks for HIMSEN H17/28
2006	Production of engine blocks for MAN L27/38
2009	Awarded the Korean World-Class Product for pistons of medium-speed marine diesel engine by Ministry of Knowledge Economy
2010	Awarded the Korean World-Class Product for cylinder heads of medium-speed marine diesel engine by Ministry of Knowledge Economy
2013	Acquired ISO 14001 Certification Moved to a new Gongju factory (Head office & production line for piston and cylinder head)
2016	Awarded The Prize for Excellence of the Management Transparency 2016 (by five national economic organizations of Korea)

CERTIFICATION

MARINE ENGINE PARTS

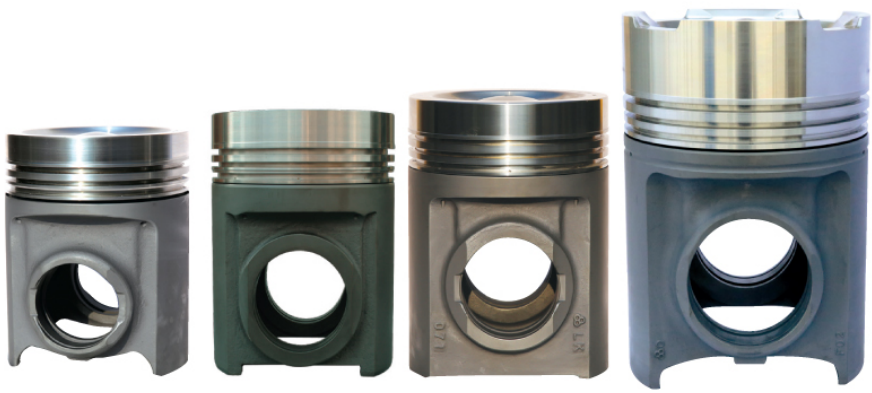
PISTON

Samyoung pistons are manufactured utilizing the latest design and technology and Samyoung's over 40 years of piston making experiences, resulting in a surpassing performance. Samyoung proudly won 2009 Korean World-Class Product Award for the piston of medium-speed marine diesel engines. Samyoung is capable of not only manufacturing the pistons but also designing a new piston for a medium-speed diesel engine. Accompanied by the latest calculation methods such as FE analysis, elastohydrodynamics and multi-axial fatigue analysis, Samyoung's piston design guarantees solid reliability and outstanding performance at the same time.

MAN	L16/24, L21/31, L23/30(H), L27/38, L28/32(H), L28/32S, L32/40
HIMSEN	H17/28, H21/32, H25/33, H32/40



L21/31 L23/30 L27/38 L28/32 L32/40



H17/18 H21/32 H25/33 H32/40

GT PISTON

GT Piston is Samyoung's unique, high efficient and self-developed piston made with over 40 years' piston design and casting know-how. Samyoung is proud to introduce GT Piston.



- Upgrade your engine to an environment-friendly engine by reducing exhaust gas.
- Enhance power of your engine by preventing blowby and decreasing pressure inside crankcase.
- Maximize efficiency of your engine by reducing fuel and oil-consumption.
- Make your engine a trouble-free engine by keeping engine temperature low.

Bore	210 mm	Stroke	320 mm
Piston Crown Material		Ductile Cast Iron	
Piston Skirt Material			



* Optimized piston and piston ring for any type of engine (Ø160 - Ø320) can be developed.

PISTON RING

Samyoung's patented OA Keeper Ring set guarantees you better engine performance satisfying environmental issues.



PISTON RINGS

Samyoung's OA Keeper® Rings feature

- Environment friendly
- Drastic reduction in smoke
- Less oil consumption
- Prevented scuffing
- Remarkably decreased blow-by

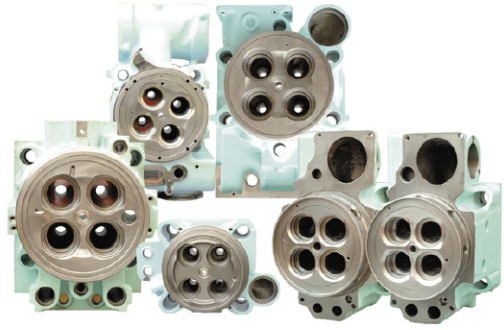
* Customized piston rings can be ordered at our web site.

MARINE ENGINE PARTS

CYLINDER HEAD

Samyoung Cylinder Heads are manufactured utilizing the latest design and technology and Samyoung's plenty of Cylinder Head making experiences, resulting in a surpassing performance. Samyoung proudly won 2010 Korean World-Class Product Award for the cylinder heads of medium-speed marine diesel engines. Thousands of Samyoung's cylinder heads which have been in maritime, locomotive and stationary services all around the world for years have proven their reliability and trustworthiness.

MAN	L16/24, L21/31, L23/30
	L28/32, L27/38, L32/40
HIMSEN	H17/28, H21/32, H25/33, H32/40



L23/30, L27/38, L28/32, L32/40, H25/33

CYLINDER LINER

Manufactured by sand casting, Samyoung cylinder liners have more wear-resistance, longer life expectancy and less emission than any other's.

MAN	L16/24, L21/31, L23/30(H)
	L28/32(H), L27/38, L32/40
HIMSEN	GT170, GT210, GT250, GT320 (Compatible with HIMSEN)



ENGINE BLOCK

Samyoung engine block guarantees superior and stable quality with the latest casting technology and machining equipment.

MAN	L16/24(5L-9L), L21/31(5L-9L), L23/30(5L-8L)
	L28/32(5L-8L), L27/38(5L-9L), V28/33D(12, 16, 20)
HIMSEN	H17/28(5H-9H), H21/32(5H-9H), H25/33(5H-9H), H32/40(5H-7H)

FRONT END BOX, AFTER END BOX AND ETC.

Samyoung is confident in its high quality front end box which is difficult to manufacture due to the complicated structure.

FEB

MAN	L16/24, L21/31, L27/38
HIMSEN	H17/28, H21/32, H25/33, H32/40

AEB

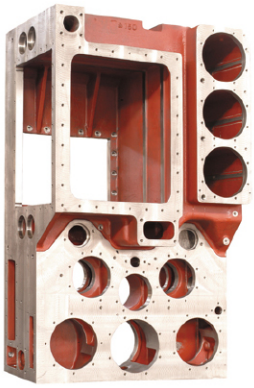
MAN	L27/38

COOLER CASING

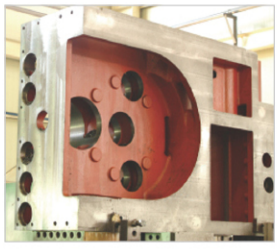
MAN	L21/31

THERMOSTAT HOUSING

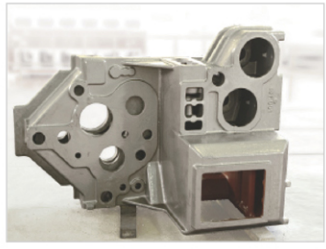
MAN	L21/31, L27/38



H25/33 FEB



H21/32 FEB



H17/28 FEB



L27/38 THERMOSTAT HOUSING

TORSIONAL VIBRATION DAMPER

Samyoung's viscous torsional vibration damper (SV DAMPER) is the optimum solution of torsional vibration reduction for medium-speed diesel engines. Samyoung optimized all processes from design to manufacturing and developed viscous dampers with high performances at reasonable prices. And SV dampers are tested by self-developed torsional vibration tester for high reliability.

ADVANTAGES OF SV DAMPER

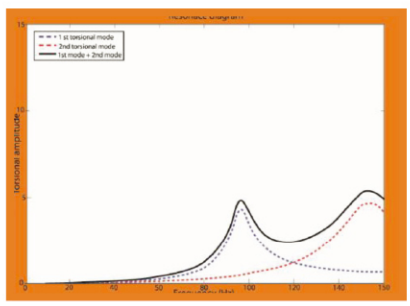
- High cost-effective solution for torsional vibration reduction
- Providing damping effect in wide frequency range
- Rapid and satisfied after sales service
- Selection of damper size based on reliable torsional vibration calculation

■ SPECIFICATION

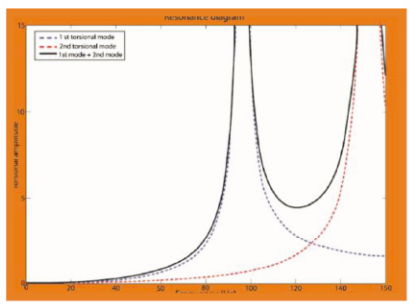
Damper type	Viscous damper
Outer diameter	600~900mm
Total weight	100~350kg
Damping medium	Silicone Oil



Samyoung's ø690mm SV Damper



With SV Damper



Without SV Damper

TECHNOLOGY

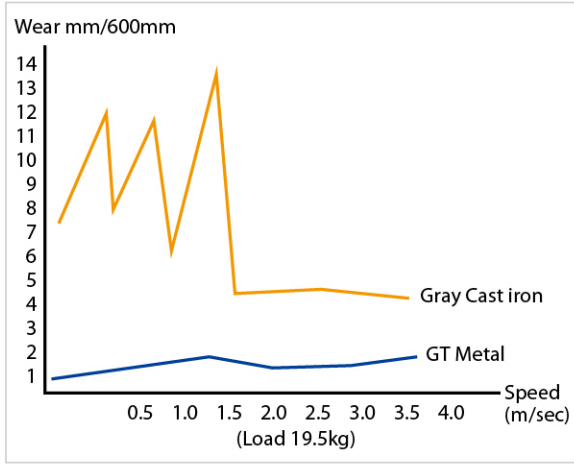
1. Upgrade your engine to an environment-friendly engine.
2. Improve the power of your engine.
3. Maximize the efficiency of your engine by reducing fuel and oil consumption.
4. Make your engine a trouble-free engine.

We redesign your parts when you provide the specification of engine and measurement of the parts.

GT METAL New Material Development Samyoung GT Metal®

A world leader in the production of high quality cast iron products such as ductile cast iron, vermicular cast iron, alloyed cast iron and gray cast iron.

- Two or three times more durable than gray cast iron.
- Economical due to greater longevity.
- Prevents output power loss through improved anti-erosion and anti-defacement.
- Reduces lube oil consumption by preventing the escape of exhaust gas.
- Reduces frequency of repair for marine engines and provides more opportunities for maintenance during off-duty times.



SDI®-800

SDI(Samyoung Ductile Cast Iron)-800 is high-strength, high-elongation ductile cast iron developed by Samyoung utilizing many years of experience in casting industry. Currently, SDI-800 is widely used in variety of products such as pistons. Due to its excellent mechanical properties and price-competitiveness, demands for SDI-800 are growing very fast in the market.

MECHANICAL PROPERTIES

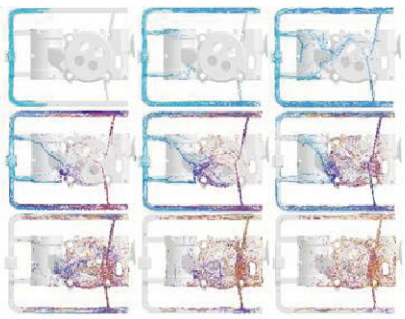
TENSILE STRENGTH	Over 800 MPa
ELONGATION	Over 5%

ENGINEERING AND DESIGN

SUPERIOR DESIGN BASED ON STATE-OF-THE-ART ENGINEERING TECHNOLOGIES AND ACCUMULATED EXPERIENCE TO PROVIDE HIGH PERFORMANCE AND ENVIRONMENT-FRIENDLY PRODUCTS

Samyoung R&D Center has led to innovations in diesel engine industries in the world. Applying and introducing the latest CAD/CAM/CAE technologies, Samyoung R&D Center has high-level design capabilities and rapid development processes for new products.

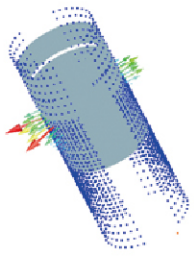
CAD	3D modeling
CAM	NC code generation
CAE	FE analysis
	Casting optimization
	Fatigue evaluation
	EHD (Elastohydrodynamics) analysis
	Piston ring dynamics
	Torsional vibration analysis
	CFD analysis
Rapid Prototyping	Mold design
	Direct mold production



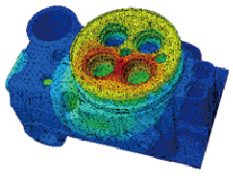
Casting optimization



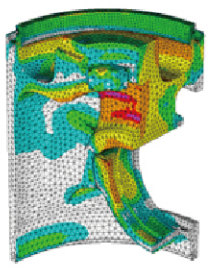
Engine modeling & simulation



Piston EHD analysis



Cylinder head FE analysis



Piston fatigue evaluation



Torsional vibration damper design and analysis

PRODUCTION

CASTING

Samyoung is currently a world leader in the production of high quality cast iron products including ductile, gray and vermicular cast iron. Experience and know-how in casting brings cast iron products of quality. Moreover, since Samyoung develops optimum products with the most advanced casting simulation, Samyoung's casting products guarantee reliable quality no matter how the product is small or large.

FACILITY	TYPE	CAPACITY
Induction Furnace	8 ton x 2	18,000 ton/year
	1.5 ton x 2	
	5 ton x 1	

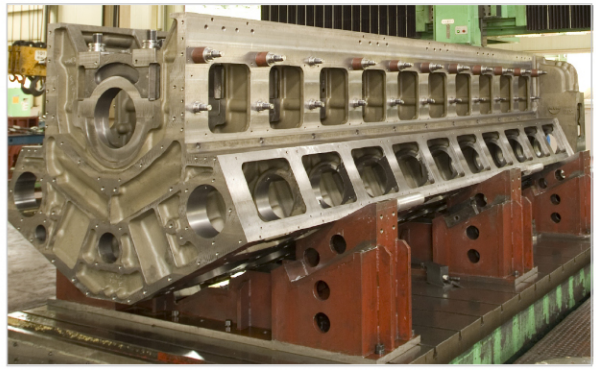


8 ton Induction Furnace

MACHINING

Samyoung is equipped with the latest and the most advanced machining systems such as large scale turnmill and plano millers. Samyoung's machining capability covers various small to large parts of most of medium-speed diesel engines. A modern CAM software is frequently used to guarantee precise machining and to avoid any possible operational mistakes.

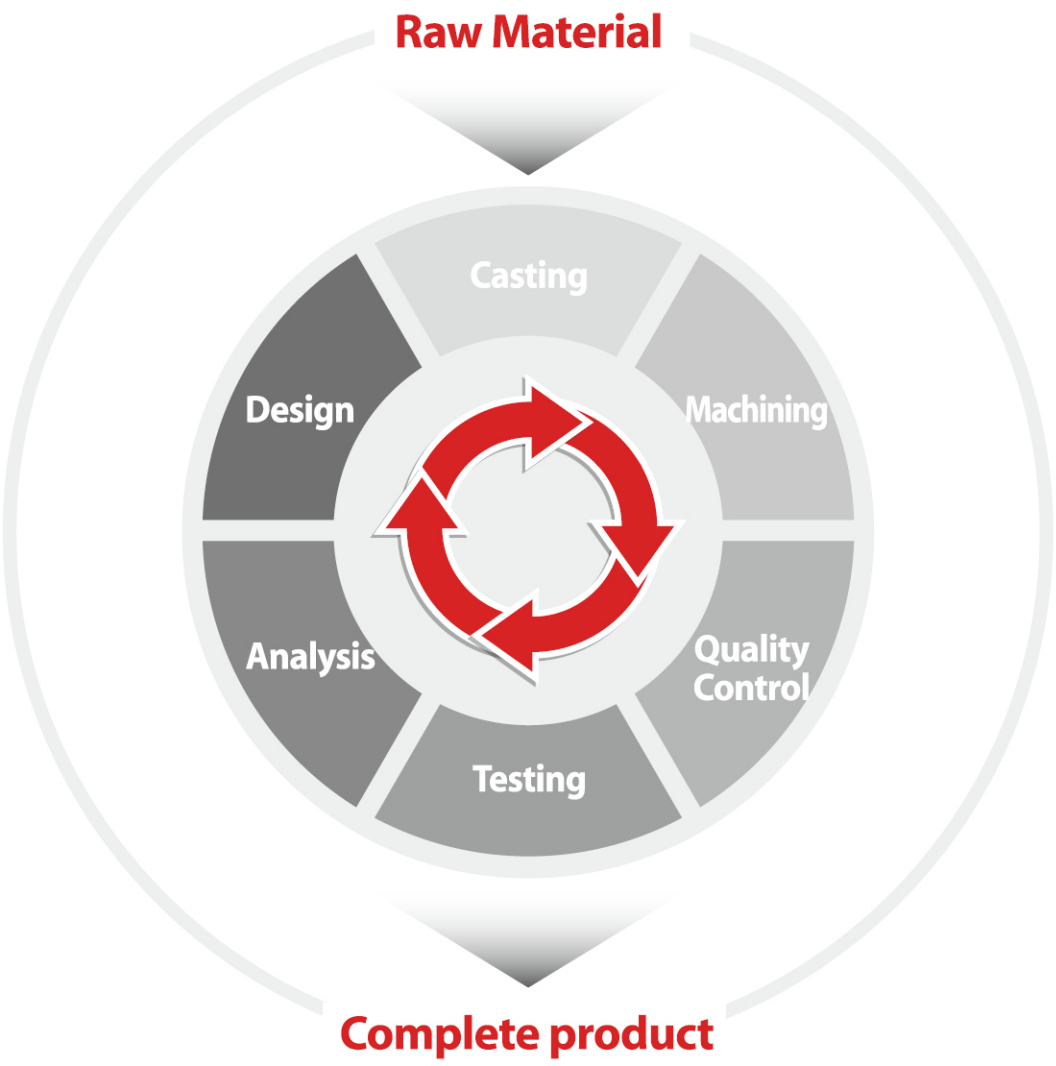
PRODUCT	CAPACITY
Piston	20,000pcs/year
Cylinder Head	12,000pcs/year
Cylinder Liner	4,000pcs/year
Engine Block	600pcs/year
Front End Box	720pcs/year
Other Parts	Based on Q'ty



VERTICAL INTEGRATION

ONE OF SAMYOUNG'S KEY CHARACTERISTICS TO MAKE SAMYOUNG SPECIAL

Samyoung is a vertically-integrated company from casting to final machining. It is remarkably easy for Samyoung to apply latest new technology to any processes in the entire manufacturing.



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Samyoung | *diesel innovation™*

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