

Earth Friendly Engine

H46/60V HiMSEN Family.....

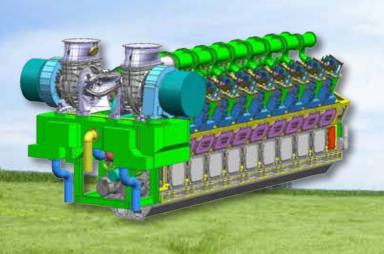
The new H46/60V medium speed engine will have a unique design to meet not only new emissions regulations but also client requests for easier maintenance concept. To realize high reliability and performance, state-of-the-art technology has been adapted together with a huge amount of analysis work and field experience.

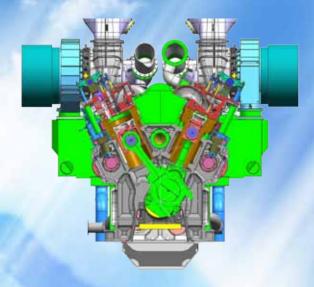
Application of Dual Valve Timing makes it possible to optimize combustion behavior at full load and to minimize NOx emissions during part load operation. It can be used for typical marine propulsion, electric propulsion and land based power generation. The Vee configuration of H46V will be available engines of 12 to 20 cylinders and power of up to 26MW.

- Structural strength minimizing thermal load, noise and vibration
- Highly efficient turbocharging
- Advanced Miller timing
- Optimized combustion chamber with crown shape and nozzle specification.
- Efficient lubricating and cooling system

■ Technical Data

| Specification | Unit | H46/60V | | |
|--------------------------------|------------|---------|-------|-------|
| Bore / Stroke | mm | 460/600 | | |
| Swept Volume | liter/cyl. | 99.7 | | |
| Bank Angle | ۰ | 50 | | |
| Engine Speed | rpm | 500 | 514 | 600 |
| Frequency | Hz | 50 | 60 | 50/60 |
| Output | kW/cyl. | 1,200 | 1,200 | 1,300 |
| Piston Speed | m/s | 10.0 | 10.3 | 12.0 |
| Mean Effective Pressure (BMEP) | bar | 26.1 | 26.1 | 28.1 |
| Power density | b.m/s | 289.4 | 289.4 | 313.2 |
| Max. Firing Pressure (P.max) | bar | 250 | | |





Main Features

Performance characteristics

- High Output in the similar range engines
- Low Fuel Oil Consumption
- Quick acceleration & load response

Maintenance

- Easier maintenance by modularized design
- Minimal the number and kind of components

Earth-friendly engine

- Low NOx emissions
- Complies with IMO Tier II
- Low Vibration & Noise

Major Application

Marine

- Propulsion System
- Generating Sets

Stationary

- Diesel Power Plant
- Pre-fabricated Power Plant
- Emergency Generating Sets for Nuclear Power Plant

■ Main Data

| Engine Type | 600 rp | m/60 Hz | 600 rpm/50 Hz | | |
|-------------|--------|-----------|---------------|-----------|--|
| Engine Type | Engine | Generator | Engine | Generator | |
| 12H46/60V | 15,600 | 15,210 | 15,600 | 15,210 | |
| 14H46/60V | 18,200 | 17,745 | 18,200 | 17,745 | |
| 16H46/60V | 20,800 | 20,280 | 20,800 | 20,280 | |
| 18H46/60V | 23,400 | 22,815 | 23,400 | 22,815 | |
| 20H46/60V | 26,000 | 25,350 | 26,000 | 25,350 | |
| | 514 rp | m/60 Hz | 500 rpm/50 Hz | | |
| Engine Type | Engine | Generator | Engine | Generator | |
| 12H46/60V | 14,400 | 14,040 | 14,400 | 14,040 | |
| 14H46/60V | 16,800 | 16,380 | 16,800 | 16,380 | |
| 16H46/60V | 19,200 | 18,720 | 19,200 | 18,720 | |
| 18H46/60V | 21,600 | 21,060 | 21,600 | 21,060 | |
| 20H46/60V | 24,000 | 23,400 | 24,000 | 23,400 | |

Remarks

- 1) The alternator outputs are calculated for an efficiency of 97.5% and a power factor of 0.8 lagging.
- 2) Power adjusting between -5% derating is generally accepted, other power adjusting must be consulted to engine builder.
- 3) In case of diesel oil(Distillate Fuels ISO8217 DM Grade) operation continuously.

■ Specific Fuel Oil Consumption

| Load | 500/514/600 rpm |
|------|-----------------|
| 100% | 176 g/kWh |

Remarks

- 1) Reference condition based on ISO 3046/1 (air press. 1 bar, air temp. 25°C, cooling water temp. 25°C)
- 2) Fuel oil based on MDO, LCV 42,700 kJ/kg
- 3) Warranted at 100% load only
- 4) Without engine driven pump and with +5% tolerance

■ Specific Lubricating Oil Consumption:

0.7 g/kWh

(Tolerance: +25% depending on the operating conditions)

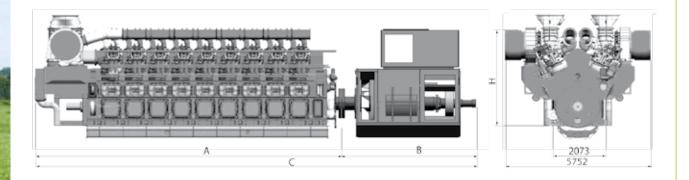
■ Dimensions & Weights

| 600 rpm/60 Hz | | | | | | | | |
|---------------|----------------|------------------------|------------------------|--------------------------------|--------------------------------|-----------------------|--|--|
| Cul | Dimension (mm) | | | | Dry Weight (ton) ₂₎ | | | |
| Cyl. | A | B ₁₎ | C ₁₎ | Н | Engine ₃₎ | Gen-Set ₄₎ | | |
| 12 | 10,410 | 4,124 | 14,534 | 4,740 | 205.3 | 256.4 | | |
| 14 | 11,410 | 4,177 | 15,587 | 4,740 | 216.5 | 270.3 | | |
| 16 | 12,410 | 4,374 | 16,784 | 4,740 | 227.8 | 286.6 | | |
| 18 | 13,410 | 4,275 | 17,685 | 4,740 | 239.0 | 313.0 | | |
| 20 | 14,410 | 4,275 | 18,685 | 4,740 | 250.2 | 329.4 | | |
| | 600 rpm/50 Hz | | | | | | | |
| Col | Dimension (mm) | | | Dry Weight (ton) ₂₎ | | | | |
| Cyl. | Α | B ₁₎ | C ₁₎ | Н | Engine ₃₎ | Gen-Set ₄₎ | | |
| 12 | 10,410 | 4,124 | 14,534 | 4,740 | 205.3 | 256.2 | | |
| 14 | 11,410 | 4,177 | 15,587 | 4,740 | 216.5 | 304.3 | | |
| 16 | 12,410 | 4,374 | 16,784 | 4,740 | 227.8 | 289.3 | | |
| 10 | | | 4 - 40 - | 4 7 40 | 220.0 | 212.0 | | |
| 18 | 13,410 | 4,275 | 17,685 | 4,740 | 239.0 | 313.0 | | |

| 514 rpm/60 Hz | | | | | | | |
|---------------|----------------|------------------------|------------------------|--------------------------------|--------------------------------|-----------------------|--|
| Cul | Dimension (mm) | | | | Dry Weight (ton) ₂₎ | | |
| Cyl. | Α | B ₁₎ | C ₁₎ | Н | Engine ₃₎ | Gen-Set ₄₎ | |
| 12 | 10,410 | 4,287 | 14,697 | 4,740 | 205.3 | 260.9 | |
| 14 | 11,410 | 4,537 | 15,947 | 4,740 | 216.5 | 280.3 | |
| 16 | 12,410 | 4,266 | 16,676 | 4,740 | 227.8 | 299.0 | |
| 18 | 13,410 | 4,416 | 17,826 | 4,740 | 239.0 | 316.5 | |
| 20 | 14,410 | 4,566 | 18,976 | 4,740 | 250.2 | 333.2 | |
| 500 rpm/50 Hz | | | | | | | |
| Cul | C | imensi | on (mm | Dry Weight (ton) ₂₎ | | | |
| Cyl. | Α | B ₁₎ | C ₁₎ | Н | Engine ₃₎ | Gen-Set ₄₎ | |
| 12 | 10,410 | 4,108 | 14,518 | 4,740 | 205.3 | 267.2 | |
| 14 | 11,410 | 4,308 | 15,718 | 4,740 | 216.5 | 285.1 | |
| 16 | 12,410 | 4,266 | 16,676 | 4,740 | 227.8 | 299.2 | |
| 18 | 13,410 | 4,416 | 17,826 | 4,740 | 239.0 | 316.5 | |
| 20 | 14,410 | 4,566 | 18,976 | 4,740 | 250.2 | 330.8 | |

Remarks

- 1): Depending on alternator.
- 2): Weight included a standard alternator (Maker: HHI-EES)
- 3): Without Common bed
- 4): Confirmation from HHI to be needed when applying Note) All dimensions and weight are approximate value







1, Jeonha-Dong, Dong-Gu, Ulsan, 682-792, Korea

Marine Engine

Tel: 82) 52-202-7291 / 7281

E-mail: k110@hhi.co.kr/k150@hhi.co.kr

Stationary Engine

Tel: 82) 52-202-7301~10 E-mail: k120hhi@hhi.co.kr

