Contents

- Brief introduction to engine
- Product features
- Service Assurance

Dual fuel Genset of Tellhow EST

2000-4000KW

Contents

Brief introduction to engine

Tellhow EST's dual-fuel generator set is an advanced generator set jointly developed and manufactured by Tellhow Si-tech and CSIC. The dual-fuel engine used by the unit passed the type approval of the China Classification Society and the design approval of the French Classification Society in 2017. The power range of generator sets is 2000 - 4000 KW.

The products are widely used in marine main engines, marine generator sets, offshore equipment, electric propulsion systems, etc. Now more than 200 complete machines have been sold, and the main user is the Chinese Navy.

Tellhow EST first used this generator set in a road-based power station. After actual verification, the strict requirements of marine equipment make this generator set have higher reliability, lower fuel consumption, better emissions, and lower The cost of use.

Brief introduction to engine

Domestic leader

World class

Main technological:

- The gas mode uses diesel micro-ignition, and the diesel injection halo is only 1%;
- The best performance in both oil and gas modes at the same time;
- The gas and oil switch quickly within one second, and the fluctuation rate of the speed meets the requirements of the specification;
- Low fuel consumption and high thermal efficiency.

Parameter	Unit	ACD320G	ACD320DF	
			Gas mode	Diesel mode
Bore/stroke	mm	320/420		
Rotating speed	rpm	720/750		
Compression ratio	E	12.5		
Mean effective pressure	bar	20.0/19.2		
Maximum explosion pressure	bar	200		
Power	kW	2430(405kW/cylinderX 6 cyc.)		
Thermal efficiency	%	47.2	45.2	45.3
Fuel consumption	—	7627KJ/kWh	7964KJ/kWh	186g/kWh
Emission level	—	IMO TIER I	IMO TIER I	IMO TIER II
Weight	t	35	35.5	

Brief introduction to engine

Model comparison

a) Gas engine								
	ACD		HIMSEN		MHI		ROLLS-ROYCE	
	6ACD320G		H35/40G		KU30G		C26:33L9	
Rotating speed [min-1]	720	750	720	750	720	750	900	1000
Cylinder arrangement	L6,7,8,9		L6-L9,V12-V20		V12-V18		L6,8,9	
Bore [mm]	320		350		300		260	
Stroke[mm]	420		400		380		330	
Single cylinder power [kW]	405		480		305		245	270
BMEP [bar]	20	19.2	20.8	20	18.9	18.2	20.5	18.5
Piston speed[m/s]	10.08	10.5	9.6	10	9.1	9.5	10	11
Gas consumption rate/thermal efficiency [Nm³/kWh]/[%] (36.0MJ/Nm³)	0.211	47.2	0.212	47.18	0.205	48.8	0.21	48
Weight[t]	35		—		40-60		23.9	
Application	Power station Main propulsion		Power station		Power station		Power station Main propulsion	

Brief introduction to engine

Model comparison

b) Dual fuel engine

		ACD		MAN		MAK		WARTSILA	
		6ACD320DF		6L32/40DF		6M34DF		6L34DF	
Rotating speed [min-1]		720	750	720	750	720	750	900	1000
Cylinder arrangement		L6,7,8,9		L6,7,8,9		L6,8,9		L6,9	
Bore [mm]		320		350		300		260	
Stroke[mm]		420		400		380		330	
Single cylinder power [kW]		405		385	400	500		500	
BMEP [bar]		20	19.2	19.9	19.9	19.9	19.1	22	
Piston speed[m/s]		10.08	10.5	9.6	10	11.04	11.5	9.6	10
FUEL consumption	Gas model [Nm³/kWh]/[%]	0.221	46.5	0.228	43.8	0.214	46.7	0.202	47.2
	Diesel model [g/kWh]/[%]	186	46	195	43.2	188	44.8	189	44.6
Weight[t]		35		38		39.5		34	
Application		Power station Main propulsion		Power station		Power station		Power station Main propulsion	

Brief introduction to engine

Design life of main components (h)

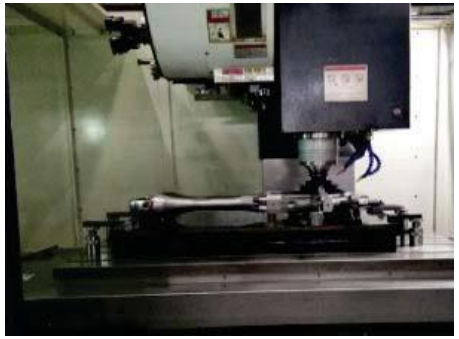
Time interval	10000	20000	30000	40000	50000	60000
Open plug, cylinder liner						60000
Connecting rod bearing/ crankshaft bearing				32000		
Intake valve				32000		
Vent			24000			
Gas injection valve		16000				
Injector	8000					
Spark plug	4000					

The service life of the cylinder block, crankshaft, camshaft and other components is 25 years. The overhaul period is as long as 60,000 hours.

Brief introduction to engine

Cooperation supplier

Machine body casting and processing



Connecting rod and cylinder head processing

HOERBIGER
Ingersoll Rand
DUAP
uni
ZOLLERN
VULKAN
GEISLINGER
MAHLE
WOODWARD
GEA
DENSO
NORIS
NORMA
ABB
ERS
ALFING
Gali
NTEC
BOLL

Product features

Contents

Product features

Product features

Technical feature

High performance
Intelligent
Easy to operate

Thermal efficiency： 47.2%

PMAX ： 200bar

BMEP： 19.2bar

ECU intelligent control

Easy to disassemble and assemble

Product features

Technical feature

Crankcase closed breathing system

Fully meet the emission targets of TIER III

Basically no SO_x, low No_x

CO_2 and NOx <2.4g/kW·h

Product features

Technical feature

Safe, reliable durable

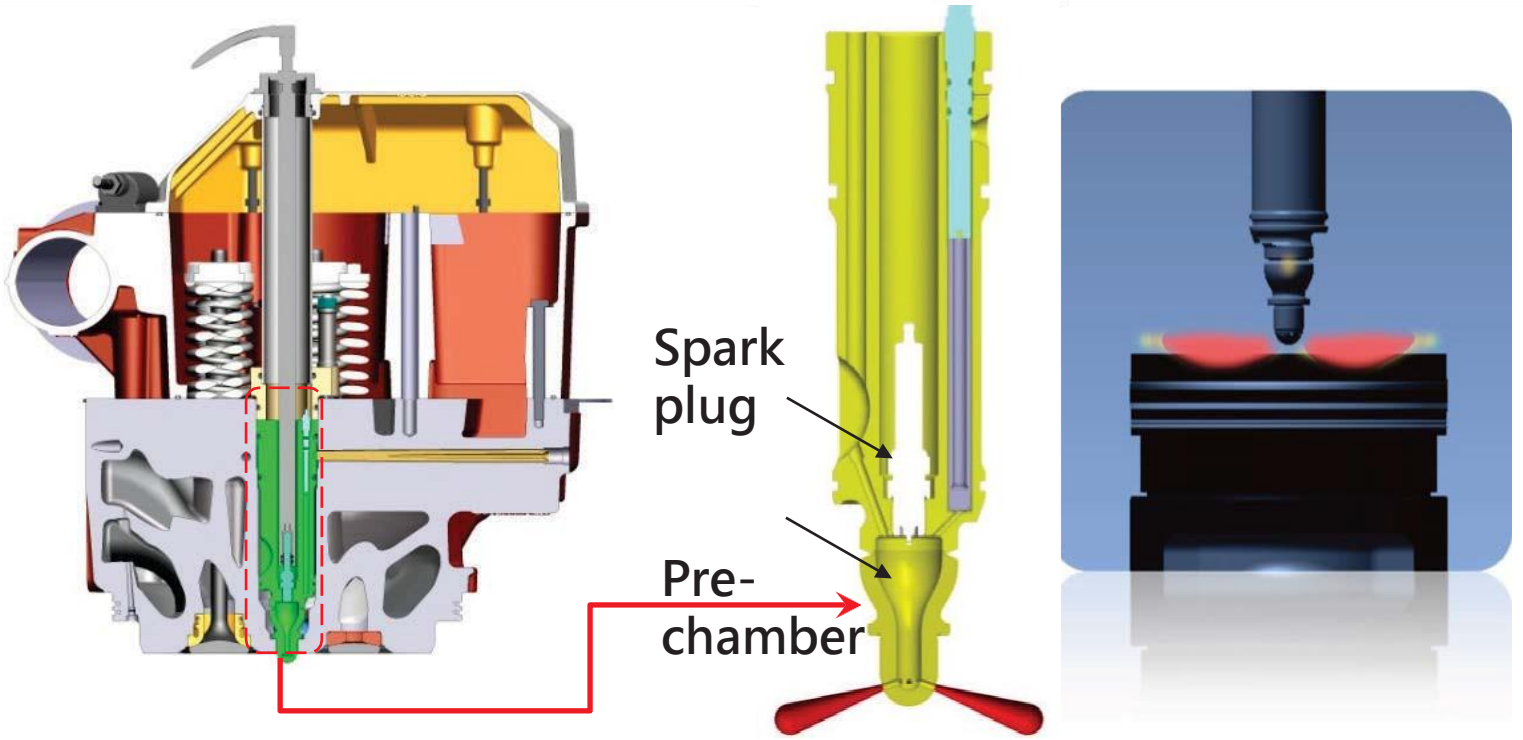
- Adopt gas double wall pipe
- Inlet and exhaust explosion-proof valve
- Gas leakage monitoring and other design
- Achieve intrinsic safety
- Long design life of parts, 60000h overhaul period

Product features

Design innovation

Pre-chamber spark plug ignition:

Using a spark plug ignition system with a pre-combustion chamber, the ignition energy of the spark plug is amplified close to 10,000 times, realizing simultaneous ignition in all areas. It ignites more quickly and burns more fully.

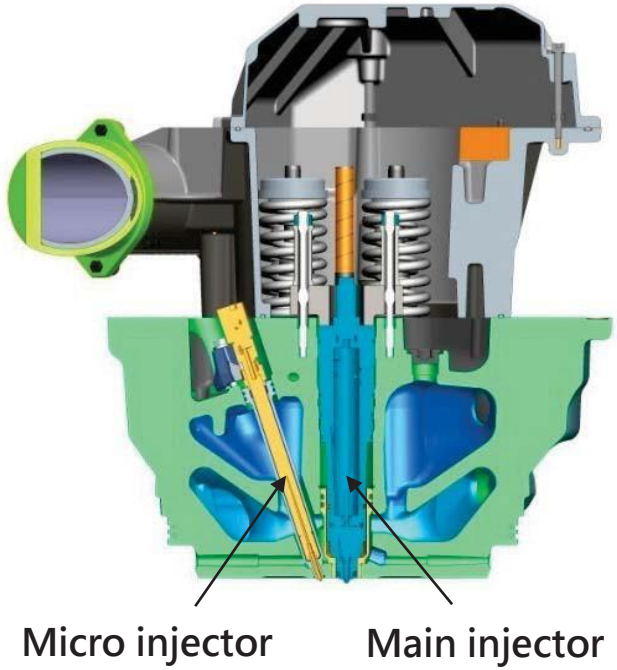


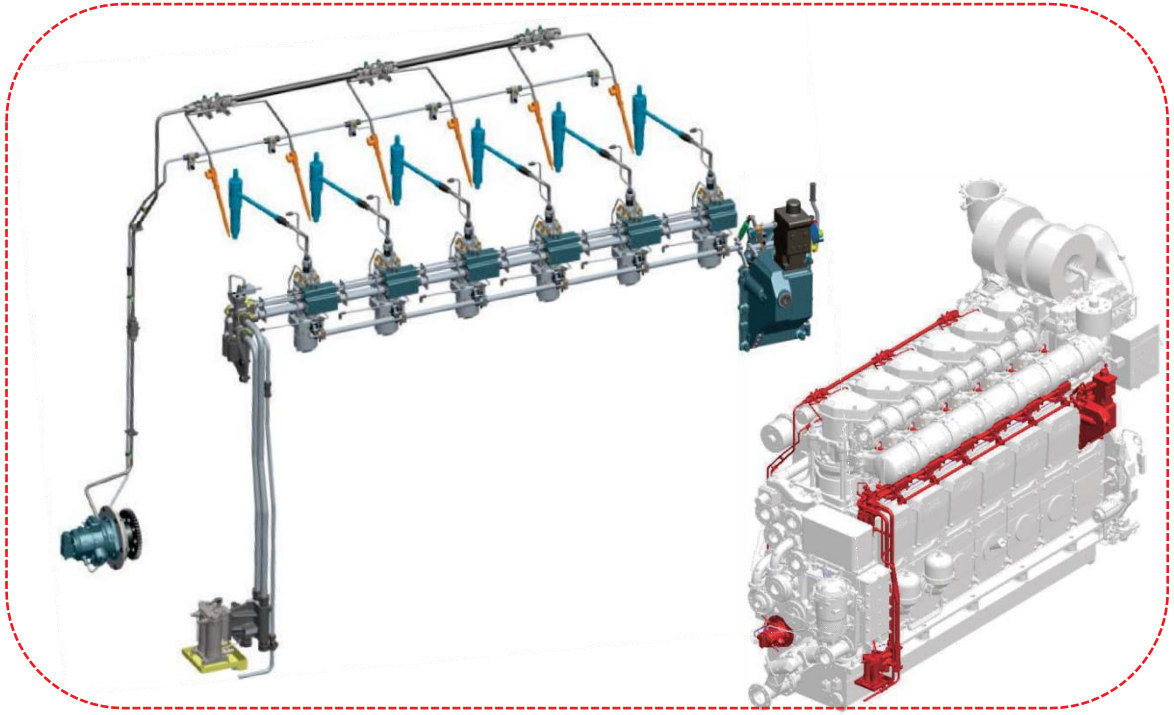
Product features

Design innovation

The combination of main fuel injector and micro fuel injector can realize micro ignition:

With dual injector configuration, the main injector is used for diesel injection and the micro injector is used for gas mode ignition. The rail pressure is as high as 1200bar, and the amount of pilot fuel is only 1%.



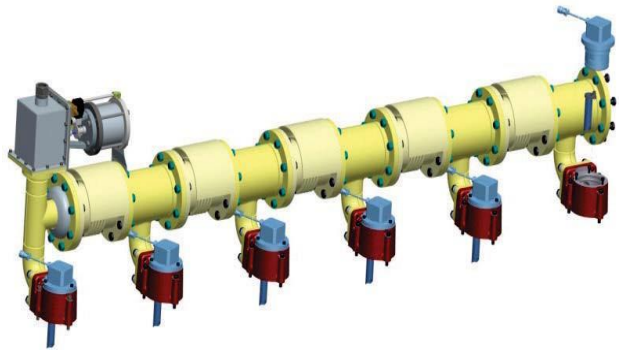


Product features

Design innovation

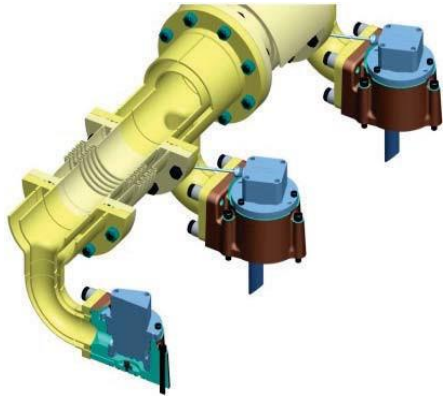
Multi-point gas supply system

- More precise
  Independent gas supply
- Safer
  No gas in the inlet
- More environmentally friendly
  Effectively avoid the overlap angle of the gas valve, and the gas is not discharged outside



Double wall tube

- All gas pipelines adopt double wall structure
- Continuous ventilation, gas leakage monitoring
- Intrinsically



SOGAV valve

- Electronically controlled gas injection valve
- Precise timing and quantitative injection
- 16000h long life

Product features

Design innovation

Exhaust bypass valve

- According to the combustion conditions in the cylinder, the exhaust bypass flux of the turbocharger is automatically adjusted, and the air-fuel ratio is accurately controlled to ensure excellent combustion in the cylinder.

Inlet\Exhaust Pipe Explosion-proof Valve

- It is installed on the inlet/exhaust manifold, once an explosion occurs, it will automatically open to release the pressure.

Closed GVU

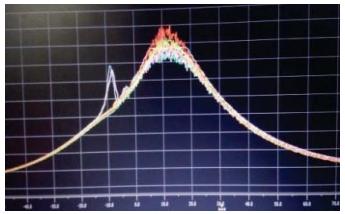
- Closed, intrinsically safe
- With double wall exhaust
- With gas vortex monitoring
- Adopt Euro T brand gas pressure regulator

Product features

Design innovation

Cylinder pressure sensor

- Continuously monitor the combustion pressure in the cylinder, reflect the combustion situation in real time, and realize the automatic control of the combustion of each cylinder to ensure that each cylinder is working at its best advantage.



Torque flange

- It is installed at the output end of the flywheel to monitor the torque in real time and accurately control the amount of gas injection to ensure a stable engine speed.

Knock sensor

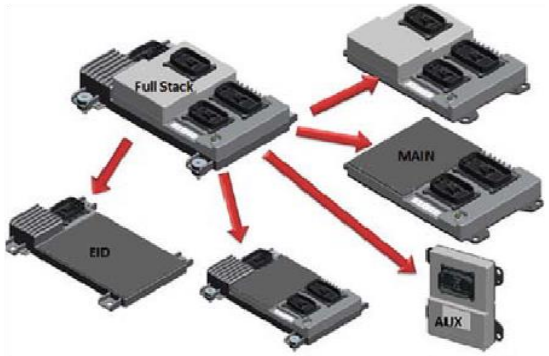
- Continuously monitor engine knocking to prevent engine knocking and protect the engine.

Product features

Design innovation

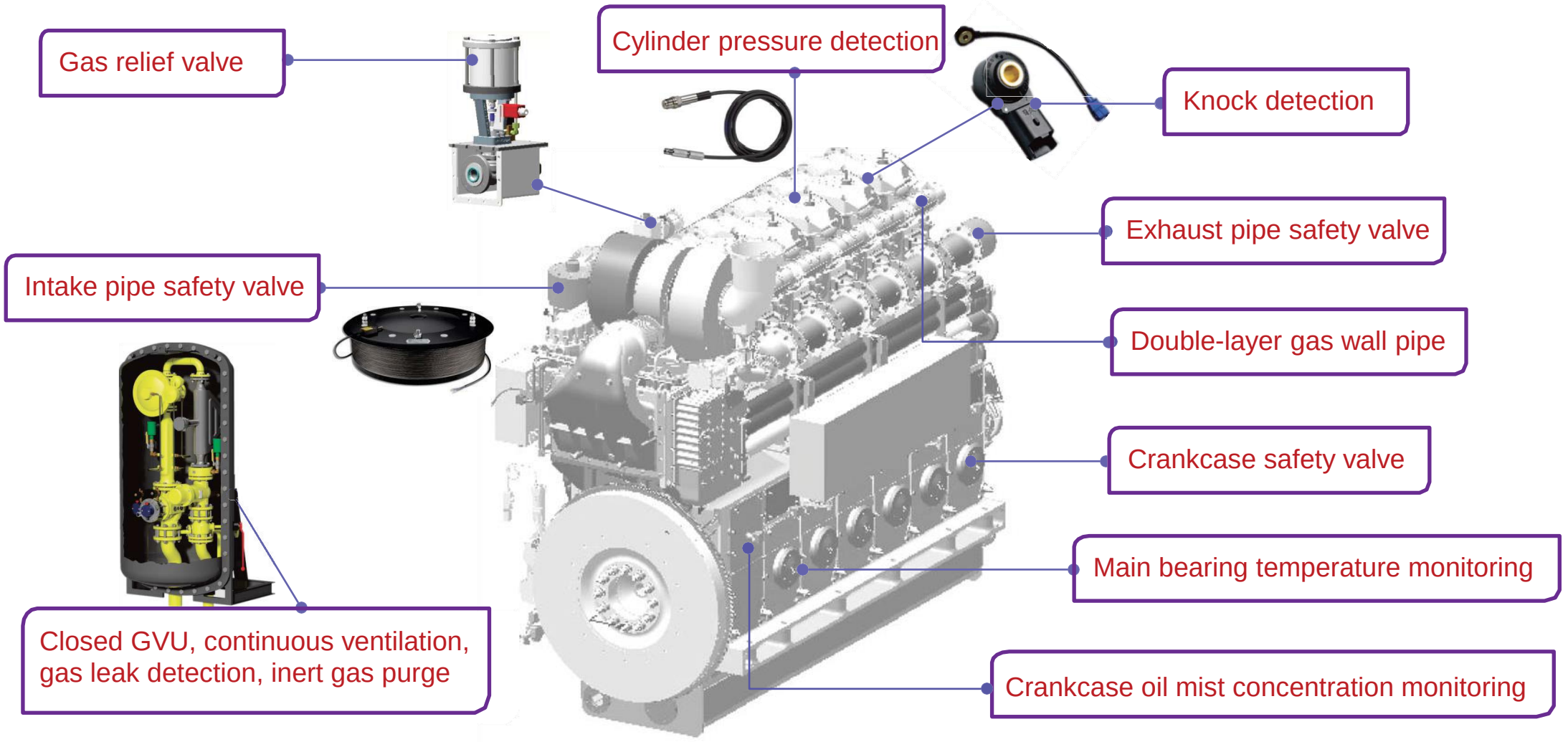
The whole genset adopts ECU control system, intelligent control and digital display.Fully automated and precise control of air-fuel ratio, combustion pressure and ignition timing of each cylinder, realizes independent control of each cylinder, and effectively improves the performance of each cylinder and the intelligence of the engine.

Note: The picture on the right shows the Chinese operation interface. In actual use, we can provide interfaces in multiple languages.



Product features

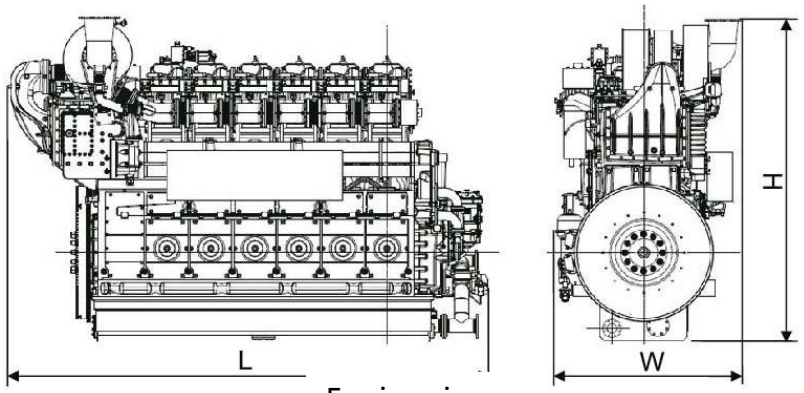
Safety configuration



Product features

Structure size

a) Engine structure size：



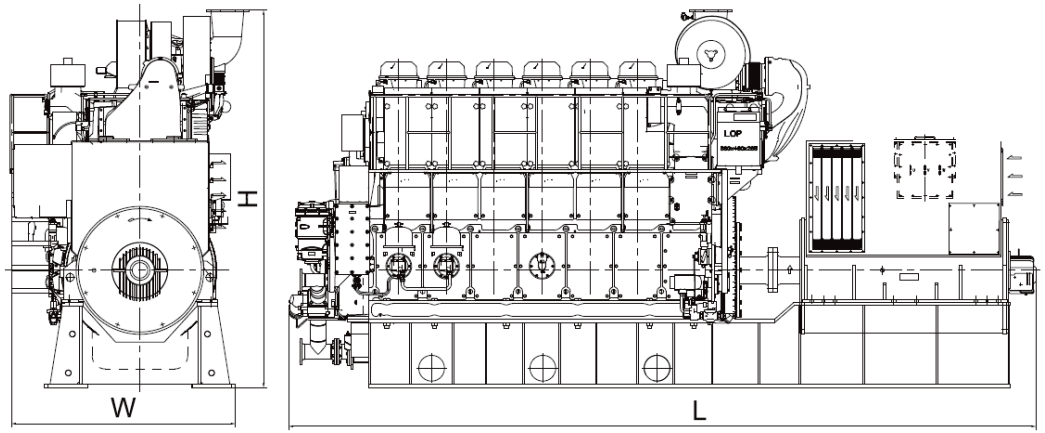
Engine size

Type / Data	Cylinder	Power kW	Speed r/min	L mm	W mm	H mm	Weight T
6ACD320G/DF	6	2430	720/750	5747	2256	3879	35
7ACD320G/DF	7	2835		6267		3879	39
8ACD320G/DF	8	3240		6787		3929	44
9ACD320G/DF	9	3645		7307		3929	49

Product features

Structure size

b) Genset structure size：

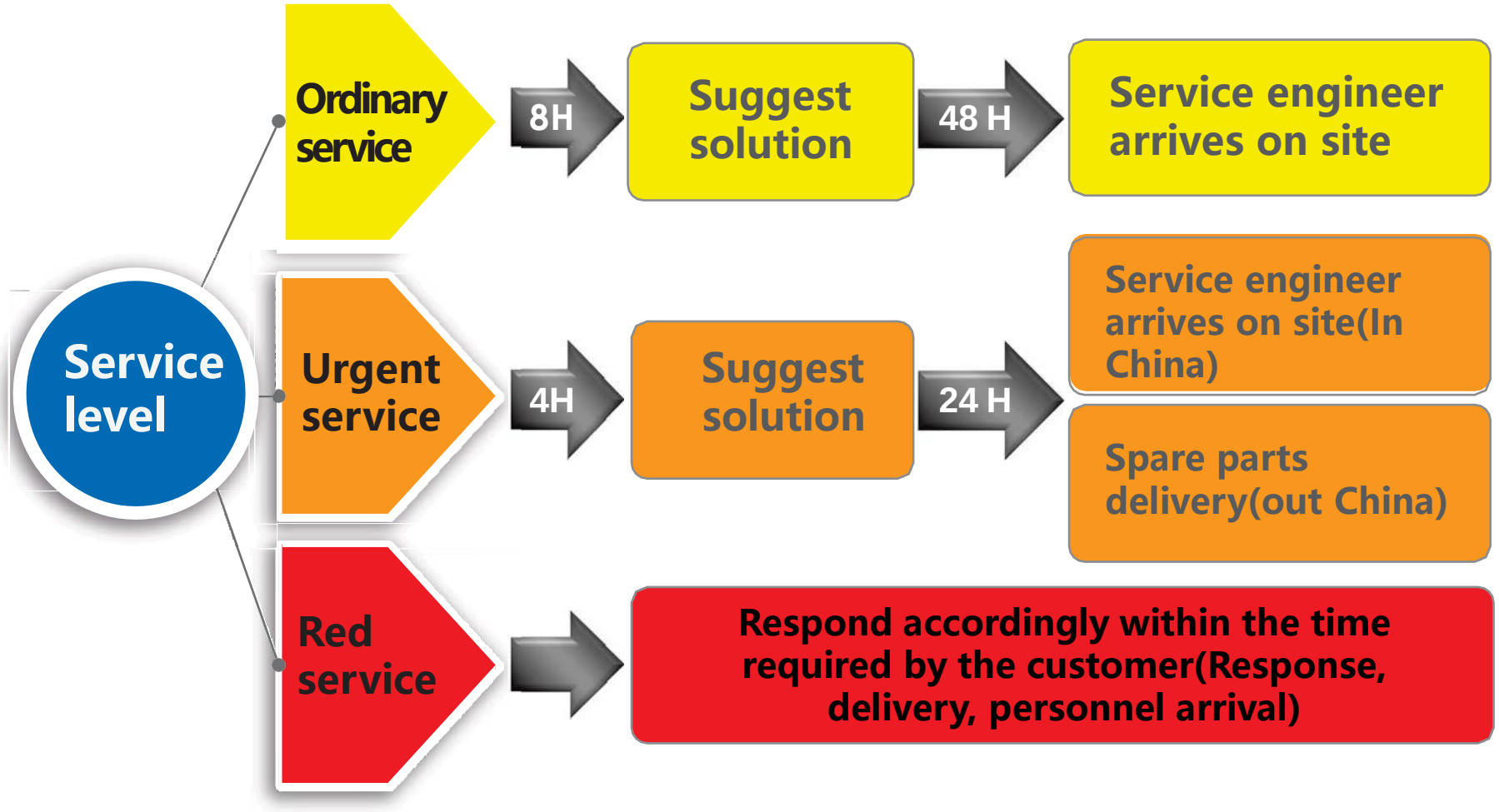


Type / Data	Cylinder	Power kW	Speed r/min	L mm	W mm	H mm	Weight T
ES 2310 DF5	6	2310	720/750	8137	2437	4102	55
ES 2695 DF5	7	2695		8955		4102	62
ES 3080 DF5	8	3080		9710		4305	69
ES3465 DF5	9	3465		10450		4305	76

Contents

Service Guarantee

Response speed



Service Guarantee

Five-star service

Five-star service items * * * * *			
Free	Provide the best quality products	Reserve special key parts, wearing parts, and common spare parts	Extend the warranty period for 1 year
	Provide long-term resident service for six months	Provide after-sales service within 24 hours	Operation and maintenance theory, practical training
Pay the fee	Lower spare parts cost More than 30% discount than European and American brand	Very low service fee More favorable than European and American engineers more than 80%	Operation and maintenance service Worry and trouble

Company vision

We hope and work hard to make our products contribute to China's goal of "carbon neutral, carbon peak" as soon as possible. In order to show that we are a responsible company, we must shoulder a mission: "give priority to the use of advanced technology, products and services, so as to improve the customer experience.". We hope that our small power gas generator sets can provide customers with more competitive procurement costs under the same excellent quality.

THANK YOU !

Energy solutions experts around you, Tellhow EST

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