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GAS GENERATOR SET

INDUSTRY-LEADING POWER SYSTEM SOLUTIONS PROVIDER

POWER SYSTEM SOLUTIONS PROVIDER

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ABOUT EPIOR

Suzhou Epior Technology Co., Ltd. has its headquarters in Suzhou High-tech Zone. Its wholly-owned subsidiary, Suzhou Xinshengpu Power Technology Co., Ltd., is located in Zhangjiagang Economic and Technological Development Zone and owns a modern manufacturing base covering an area of 14,000 square meters.

Epior focuses on the research, development and manufacturing of technologies for green, intelligent, low-carbon, high-performance, high-speed and high-power engine products. It has created three core product lines, namely the megawatt-level high-power power system, diesel power system and gas power system, covering a diversified fuel system including diesel, gas, methanol, hydrogen and other fuels.

Epior's high-power engines and power generation products provide reliable power support for critical infrastructure and have been widely and deeply applied in many key fields that are crucial to national economy and people's livelihood. From security power supplies for critical facilities with extremely high requirements for stability and reliability, such as data centers, nuclear power plants, military power supplies, and medical facilities, to the main power fields including ship propulsion, oil and gas extraction, fracturing trucks, locomotives, and large mining trucks, Epior's products can be found in these applications.

EPIOR GAS GENERATOR SET

Provide you with a comprehensive power solution

Epior is committed to the research and development of high-speed (≥1500rpm) gas engines and gas generator sets. After years of research, trial production, testing and application, we have successfully developed gas generator sets covering the power range of 800~2000kW. We can provide customers with gas generator sets with good performance and reliable functions, and can provide the best energy solutions with various customized configurations.

Gas genset advantages

Fuel flexibility
Natural gas
Field gas
Coalmine gas
Biogas & landfill gas

Environmental-friendly
Low emission (NOX, CO, PM)
Reduction in GHG emissions

Reduce full lifecycle costs
Long maintenance Interval
Easy to maintain components
lower maintenance costs.

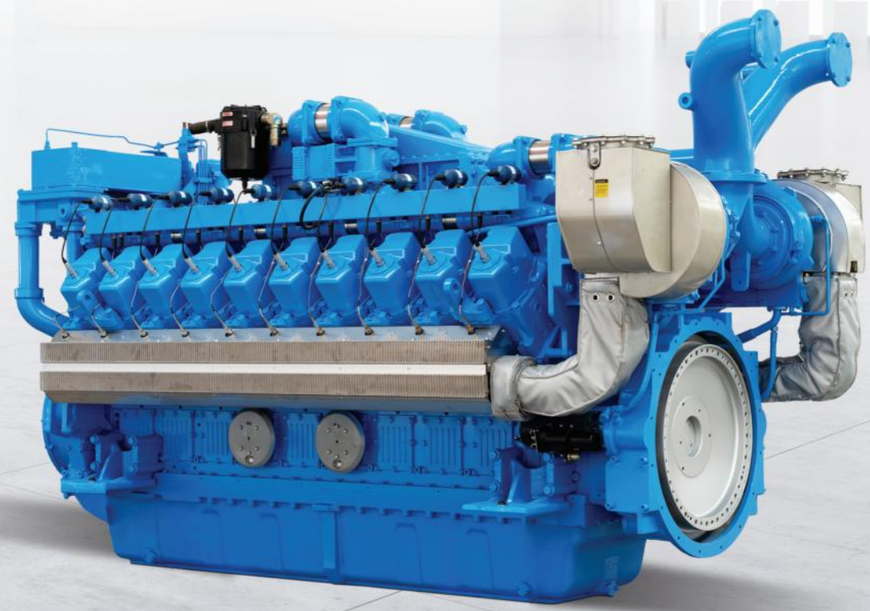
High power efficiency
41% Elec. Efficiency 42%
86% Total Efficiency 86%
High power density
Long Maintenance Interval

Durability & reliability
Rigorous design and test procedure
Reliable parts
Mature workmanship
Advanced controlling concepts
Continuous improvement

POWER RANGE

Epior has successfully developed gas generator sets covering the power range of 800~2000kW.

1500rpm@50Hz,NG,
Methane Number≥80,
NOx≤500mg/Nm³@5%O_2



APPLICATION AREAS

General requirements for gas
Gas temperature:0-40℃
Relative humidity:≤80%

Natural gas:
Gas pressure:20-50kpa
Methane number:≥80

Coalbed gas:
Gas pressure:2-20kpa
Gas concentration:8-50%

Biogas and landfill gas:
H_2S content:≤200ppm

Natural Gas

Coal Mine Gas

Landfill Gas

Oil Field Gas

Biogas

Epior provides world-class gas power solutions and complete lifecycle support

For benefits of both customers and environment, Epior gas generator set is very competitive in power density and durability. It is featured by high-efficiency which leads to not only low fuel consumption and low emission, but also a longer service life. In addition, the generators are also marked by its short starting time, easy and simple assembling, convenient maintenance, and flexible operation.

FEATURES & BENEFITS

- **Highest efficiency in its power range**
  Electrical efficiency of up to 43.6%
  Maximum profitability through rock-bottom operating costs
  More efficiency through numerically optimized, low-loss flow design

- **Optimized lube oil management**
  Lowest-in-class lube oil consumption:0.35g/kWh
  Longer oil change intervals
  Oil tank and integrated daily refill tank

- **Flanged genset concept**
  Vibration-decoupled base frame for lower installation costs and reliable operation
  Greater integrated lube oil volume
  Integrated oil management

- **Improved turbo charger for a wide field of deployment**
  Longer maintenance intervals
  Wider suction air temperature window

- **Higher availability and longer useful life**
  Optimized combustion through evenly charged cylinders
  Optimized combustion with lower peak pressure
  Smoothly running, low-vibration genset

- **Maximum reliability**
  Very good island mode capability
  Fulfills G1, G2 & G3 classes according to IS0 8528 with less than 10 steps in most applicati

- **Control system**
  Easy human-machine interface
  Fully integrated remote access
  Expanded scope,e.g.synchronization.power switch, and plant control

HIGH-QUALITY COMPONENTS

The most advanced components can provide greater power, compact design, wide application, and high efficiency will ensure the achievement of this goal.

Gas Engine

- Specially designed to achieve optimal performance
- Compact design
- Small footprint
- The highest power density- Included angle 90°
- Excellent performance under high temperature&high humidity conditions

Crankcase

- Crankcase cast as one piece
- Integral coolant ducts
- Integral oil supply for piston cooling
- Wet cylinder liners
- Crankshaft bearing caps secured vertically and horizontally
- Large inspection port covers
- Crankcase ventilation (closed circuit)

Crankshaft

- Forged steel crankshaft
- High fatigue strength
- Induction hardened

Connecting Rod

- Machined as one piece, providing high rigidity and weight optimization
- Forged , split bearing shells
- Upper conrod bearing lubricated by piston cooling oil as it returns
- Lubrication of lower conrod bearing via crankshaft oiling

Cylinder head

- Individual cylinder head- high firing pressure
- Two inlet and two exhaust valves per cylinder low fuel consumption
- Centrally located spark plug-low smoke index and exhaust emission
- Metallic sealing ring for sealing against the crankcase

Camshaft

- Forged Camshaft
- Camshaft driven directly by crankshaft
- Sleeve bearing for camshaft
- Machined as one piece, providing high rigidity and weight optimization

Turbocharger

- Advanced turbocharger from ABB
- Increase Engine inlet density
- Improve Fuel efficiency
- Reduce exhaust emissions and noise

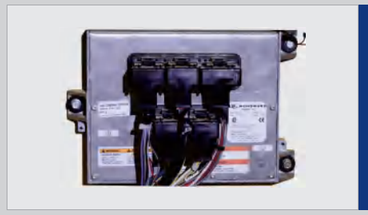
OTHER PARTS

Gas intake valve group

Water air cooling

Supercharger

Ignition module



ECU Control system

X5 SERIES
NATURAL GAS APPLICATION

Min. MN: 80
NOx≤500mg/Nm³

Generator set	Unit	XE512-N	XE516-N	XE520-N
Engine				
Engine type		X512-N	X516-N	X520-N
Power	kW	1263	1684	2105
Rotation speed	rpm	1500	1500	1500
Structure		V90°	V90°	V90°
Cylinder No.		12	16	20
Bore	mm	171	171	171
Stroke	mm	210	210	210
Displacement	L	57.87	77.17	96.46
Compression ratio		13.5	13.5	13.5
Mean effective pressure	MPa	1.75	1.75	1.75
Gas consumption rate	MJ/kW·h	8.78	8.67	8.57
Lube oil consumption rate	g/kW·h	0.35	0.35	0.35
Generator				
Manufacturer		EPIOR	EPIOR	EPIOR
Generator type		XFS 1500	XFS 2000	XFS 2500
Power factor	cos φ	0.8	0.8	0.8
Efficiency	%	95	95	95
Capacity	kVA	1500	2000	2500
Pole No.		4	4	4
Frequency	Hz	50	50	50
Protection grade		IP23	IP23	IP23
Insulation grade		H	H	H
Generator set				
Length	mm	4545	5360	6278
Width	mm	1795	1795	1795
Height	mm	2465	2465	2465
Net weight	kg	10650	14700	18500
Energy balance				
Electrical power	kW	1200	1600	2000
Jacket water heat	kW	423	571	696
Inter-cooling water heat	kW	124	157	205
Outlet temperature of jacket water	℃	84 / 92	84 / 94	84 / 94
Heat (exhaust cooled to 120℃)	kW	574	756	934
Exhaust temperature	℃	~500	~500	~500
Efficiency				
Electrical efficiency	%	41	41.5	42
Heat efficiency	%	43.5	43.7	43.8
Total efficiency	%	84.5	85.2	85.8

Note:
1. Total output heat deviation: ±8%, 10-15% margin is recommended when designing cooling system.
2. The above data is based on the following conditions: Output voltage U=400 V, Frequency f= 50Hz, Power factor PF=1.
3. The temperature of the exhaust gas from CCHP is cooled to 120℃, the temperature of the exhaust gas from biogas CCHP is cooled to 180℃.
4. This material is only for reference. The data is not used as a binding value. The data in the quotation shall prevail.

X5 SERIES
BIOGAS APPLICATION

NOx≤500mg/m³
Biogas (60%CH_4/30%CO_2, others N_2)
Landfill gas (50%CH_4/25%CO_2, others N_2)
Low calorific value≥5.0kWh/Nm³
H_2S content<200ppm

Generator set	Unit	XE512-B	XE516-B	XE520-B
Engine				
Engine type		X512-B	X516-B	X520-B
Power	kW	1064	1436	1755
Rotation speed	rpm	1500	1500	1500
Structure		V90°	V90°	V90°
Cylinder No.		12	16	20
Bore	mm	171	171	171
Stroke	mm	210	210	210
Displacement	L	57.87	77.17	96.46
Compression ratio		13.5	13.5	13.5
Mean effective pressure	MPa	1.47	1.49	1.46
Gas consumption rate	MJ/kW·h	9.23	9.11	9.00
Lube oil consumption rate	g/kW·h	0.35	0.35	0.35
Generator				
Manufacturer		EPIOR	EPIOR	EPIOR
Generator type		XFS 1320	XFS 1800	XFS 2250
Power factor	cos φ	0.8	0.8	0.8
Efficiency	%	94	94	94
Capacity	kVA	1320	1800	2250
Pole No.		4	4	4
Frequency	Hz	50	50	50
Protection grade		IP23	IP23	IP23
Insulation grade		H	H	H
Generator set				
Length	mm	4545	5360	6278
Width	mm	1795	1795	1795
Height	mm	2465	2465	2465
Net weight	kg	10650	14700	18500
Energy balance				
Electrical power	kW	1000	1350	1650
Jacket water heat	kW	489	672	789
Inter-cooling water heat	kW	126	161	224
Outlet temperature of jacket water	℃	84 / 92	84 / 94	84 / 94
Heat (exhaust cooled to 120℃)	kW	544	724	874
Exhaust temperature	℃	≤550	≤550	≤550
Efficiency				
Electrical efficiency	%	39	39.5	40
Heat efficiency	%	45.2	45.6	45.7
Total efficiency	%	84.2	85.1	85.7

X5 SERIES

HIGH CONCENTRATION COAL MINE GAS APPLICATION

NOx≤500mg/Nm³
High concentration coal mine gas
(40%CH_4, others: air)
CH_4%>25%

Generator set	Unit	XE512-M	XE516-M	XE520-M
Engine				
Engine type		X512-M	X516-M	X520-M
Power	kW	1064	1436	1755
Rotation speed	rpm	1500	1500	1500
Structure		V90°	V90°	V90°
Cylinder No.		12	16	20
Bore	mm	171	171	171
Stroke	mm	210	210	210
Displacement	L	57.87	77.17	96.46
Compression ratio		13.5	13.5	13.5
Mean effective pressure	MPa	1.47	1.49	1.46
Gas consumption rate	MJ/kW·h	9.23	9.11	9
Lube oil consumption rate	g/kW·h	0.35	0.35	0.35
Generator				
Manufacturer		EPIOR	EPIOR	EPIOR
Generator type		XFS 1320	XFS 1800	XFS 2250
Power factor	cos φ	0.8	0.8	0.8
Efficiency	%	94	94	94
Capacity	kVA	1320	1800	2250
Pole No.		4	4	4
Frequency	Hz	50	50	50
Protection grade		IP23	IP23	IP23
Insulation grade		H	H	H
Generator set				
Length	mm	4545	5360	6278
Width	mm	1795	1795	1795
Height	mm	2465	2465	2465
Net weight	kg	10650	14700	18500
Energy balance				
Electrical power	kW	1000	1350	1650
Jacket water heat	kW	441	593	717
Inter-cooling water heat	kW	114	171	216
Outlet temperature of jacket water	℃	84 / 92	84 / 92	84 / 94
Heat (exhaust cooled to 120℃)	kW	579	772	932
Exhaust temperature	℃	≤550	≤550	≤550
Efficiency				
Electrical efficiency	%	39	39.5	40
Heat efficiency	%	44.2	44.9	45.2
Total efficiency	%	83.2	84.4	85.2

Note:
1. Total output heat deviation: ±8%, 10-15% margin is recommended when designing cooling system.
2. The above data is based on the following conditions: Output voltage U=400 V, Frequency f=50Hz, Power factor PF=1.
3. The temperature of the exhaust gas from CCHP is cooled to 120℃, the temperature of the exhaust gas from biogas CCHP is cooled to 180℃.
4. This material is only for reference. The data is not used as a binding value. The data in the quotation shall prevail.

X5 SERIES

LOW CONCENTRATION COAL MINE GAS APPLICATIONS

NOx≤500mg/Nm³
Low concentration coal mine gas
(20%CH_4, others: air)
CH_4%: 8%~25%
Particle size<5μm
Particle content<50mg/10kWh

Generator set	Unit	XE512-LM	XE516-LM	XE520-LM
Engine				
Engine type		X512-LM	X516-LM	X520-LM
Power	kW	1064	1436	1755
Rotation speed	rpm	1500	1500	1500
Structure		V90°	V90°	V90°
Cylinder No.		12	16	20
Bore	mm	171	171	171
Stroke	mm	210	210	210
Displacement	L	57.87	77.17	96.46
Compression ratio		13.5	13.5	13.5
Mean effective pressure	MPa	1.47	1.49	1.46
Gas consumption rate	MJ/kW·h	9.23	9.11	9.00
Lube oil consumption rate	g/kW·h	0.35	0.35	0.35
Generator				
Manufacturer		EPIOR	EPIOR	EPIOR
Generator type		XFS 1320	XFS 1800	XFS 2250
Power factor	cos φ	0.8	0.8	0.8
Efficiency	%	94	94	94
Capacity	kVA	1320	1800	2250
Pole No.		4	4	4
Frequency	Hz	50	50	50
Protection grade		IP23	IP23	IP23
Insulation grade		H	H	H
Generator set				
Length	mm	4545	5360	6278
Width	mm	1795	1795	1795
Height	mm	2465	2465	2465
Net weight	kg	10650	14700	18500
Energy balance				
Electrical power	kW	1000	1350	1650
Jacket water heat	kW	465	608	705
Inter-cooling water heat	kW	110	168	234
Outlet temperature of jacket water	℃	84 / 92	84 / 92	84 / 94
Heat (exhaust cooled to 120℃)	kW	580	767	924
Exhaust temperature	℃	≤550	≤550	≤550
Efficiency				
Electrical efficiency	%	39	39.5	40
Heat efficiency	%	43.9	44.0	44
Total efficiency	%	82.9	83.5	84.0

X5 SERIES
APG FIELD GAS APPLICATION

NOx≤500mg/Nm³
MN>45

Generator set	Unit	XE512-F	XE516-F
Engine			
Engine type		X512-F	X516-F
Power	kW	851	1135
Rotation speed	rpm	1500	1500
Structure		V90°	V90°
Cylinder No.		12	16
Bore	mm	171	171
Stroke	mm	210	210
Displacement	L	57.87	77.17
Compression ratio		9.5	9.5
Mean effective pressure	MPa	1.17	1.17
Gas consumption rate	MJ/kW·h	9.73	9.73
Lube oil consumption rate	g/kW·h	0.43	0.43
Generator			
Manufacturer		EPIOR	EPIOR
Generator type		XFS 1250	XFS 1500
Power factor	cos φ	0.8	0.8
Efficiency	%	94	94
Capacity	kVA	1250	1500
Pole No.		4	4
Frequency	Hz	50	50
Protection grade		IP23	IP23
Insulation grade		H	H
Generator set			
Length	mm	4545	5360
Width	mm	1795	1795
Height	mm	2465	2465
Net weight	kg	10650	14700
Energy balance			
Electrical power	kW	800	1067
Jacket water heat	kW	410	480
Inter-cooling water heat	kW	150	245
Outlet temperature of jacket water	℃	84 / 92	84 / 92
Heat (exhaust cooled to 120℃)	kW	560	740
Exhaust temperature	℃	≤550	≤550
Efficiency			
Electrical efficiency	%	37	37
Heat efficiency	%	44	43
Total efficiency	%	81	80

Note:
1. Total output heat deviation: ±8%, 10-15% margin is recommended when designing cooling system.
2. The above data is based on the following conditions: Output voltage U=400 V, Frequency f=50Hz, Power factor PF=1.
3. The temperature of the exhaust gas from CCHP is cooled to 120℃, the temperature of the exhaust gas from biogas CCHP is cooled to 180℃.
4. This material is only for reference. The data is not used as a binding value. The data in the quotation shall prevail.

CONVERSION TABLE

Unit	Multiplying factor	=Unit B
Length		
mm	0.03937	in
m	39.37	in
mm	3.281	ft
km	0.6214	mile
Volume		
Unit A	Multiplying factor	=Unit B
mL(=cm³)	0.06102	in3
L(=dm³)	0.03531	ft3
m3	0.2642	gaiion(us)
Quality		
Unit A	Multiplying factor	=Unit B
g	0.03527	oz
kg	2.2046	lb
t	2204.6	lb
Pressure		
Unit A	Multiplying factor	=Unit B
pa	0.0209	psf
kPa	0.1451	psi
Pa	0.01	mbar
bar	1.02	kgf/cm2
Energy		
Unit A	Multiplying factor	=Unit B
kW-h	1.341	hp-h
kW-h	860.4	kcal
kW-h	3.6	MJ
KJ	0.9479	btu
kcal	3.968	btu
Power		
Unit A	Multiplying factor	=Unit B
kW	1.36	ps
kW	1.341	hp
kW	0.9479	Btu/s
Temperature		
F=(℃ x 9/5)+32	K = ℃ + 273.15	℃ = (F-32) x 5 / 9

APPLICATION CASE

Biogas power generation project

1MW XCHP512*1 set

Coalmine gas power generation project

1.5MW*13 sets containerized low-concentration gas generator sets

Landfill gas power generation project

1000kW*2sets Biogas generator sets

Biogas Power Generation Project

1000kW*2sets Biogas generator sets

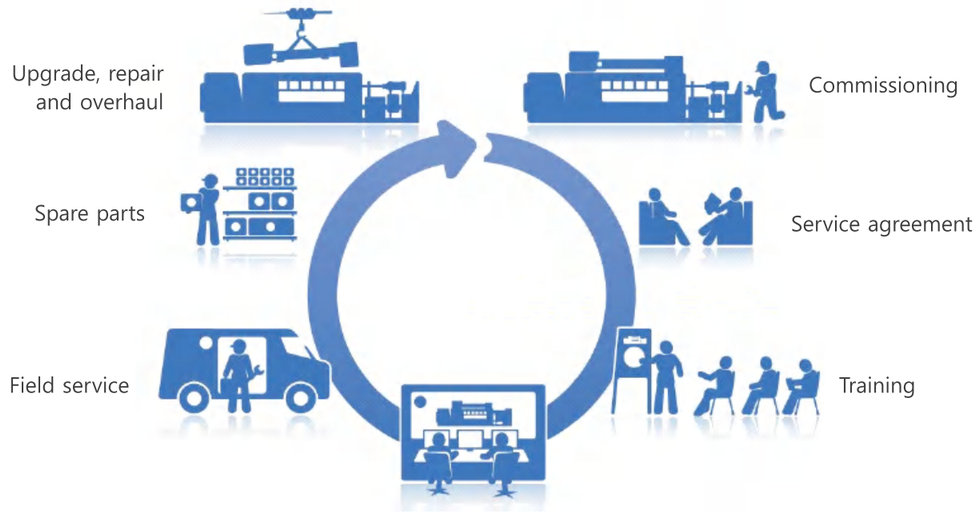
Low-Concentration Gas Cogeneration Project

XEHP516M-LM*4sets Cogeneration

EPIOR SERVICE AND TECHNICAL SUPPORT

Service

Ensure reliable gas power solutions and long lifecycle.
We offer round-the-clock maintenance solutions to ensure gas generating units operate at their best condition.



Contract	Spare parts	Onsite service	Training
Debugging and installation agreement Parts supply agreemen After sales service agreement	Original factory spare parts Warranty spare parts Emergency spare parts	Install Debugging Maintenance	Basic theory Practical operation and maintenance Fault handling

Technical Support

Our detailed analysis of your needs, combined with our extensive research and development experience, ensures that the ideal solution is designed, developed and delivered.
After product delivery Epior provide a full range of technical support to ensure that the units can achieve its best value in any life cycle.