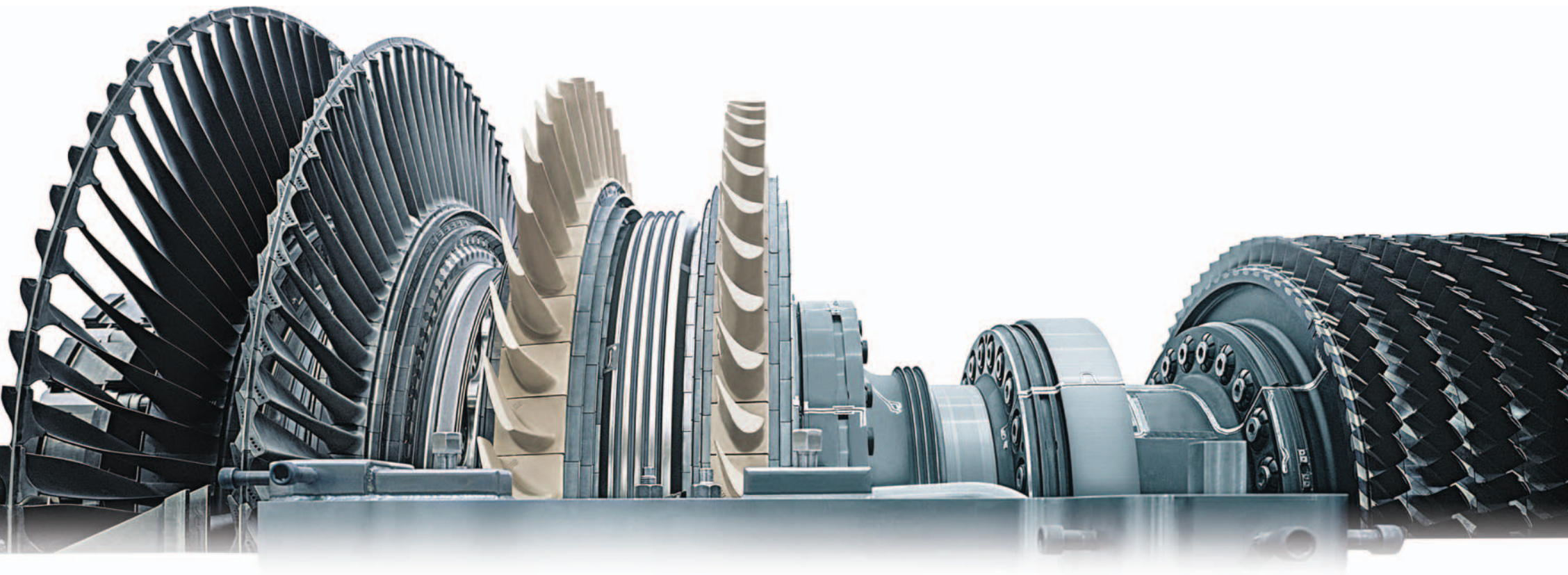


GE Energy

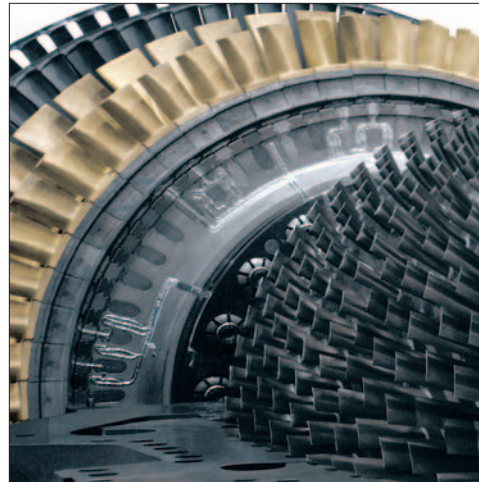
GAS TURBINE AND COMBINED CYCLE PRODUCTS



imagination at work

The Power of Technology, Experience and Innovation

The world demands a reliable supply of clean, dependable power. Always on the cutting edge of gas turbine technology, GE offers a wide array of technological options to meet the most challenging energy requirements. Using an integrated approach that includes parts, service, repair and project management, we deliver results that contribute to our customers' success. And our reputation for excellence can be seen in everything we do.



GE ENERGY
GAS TURBINE AND COMBINED CYCLE PRODUCTS

	Heavy Duty		Output		Heat Rate	
					Btu/kWh	kJ/kWh
2	MS9001H	CC	520 MW	50 Hz	5,690	6,000
2	MS7001H	CC	400 MW	60 Hz	5,690	6,000
6	MS9001FB	CC	412.9 MW	50 Hz	5,880	6,202
6	MS7001FB	CC	280.3 MW	60 Hz	5,950	6,276
8	MS6001FA	CC	117.7 MW	50 Hz	6,240	6,582
		CC	118.1 MW	60 Hz	6,250	6,593
		SC	75.9 MW	50 Hz	9,760	10,295
		SC	75.9 MW	60 Hz	9,795	10,332
8	MS7001FA	CC	262.6 MW	60 Hz	6,090	6,424
		SC	171.7 MW	60 Hz	9,360	9,873
8	MS9001FA	CC	390.8 MW	50 Hz	6,020	6,350
		SC	255.6 MW	50 Hz	9,250	9,757
10	MS9001E	CC	193.2 MW	50 Hz	6,570	6,930
		SC	126.1 MW	50 Hz	10,100	10,653
11	MS7001EA	CC	130.2 MW	60 Hz	6,800	7,173
		SC	85.1 MW	60 Hz	10,430	11,002
12	MS6001B	CC	64.3 MW	50 Hz	6,950	7,341
		CC	64.3 MW	60 Hz	6,960	7,341
		SC	42.1 MW	50/60 Hz	10,642	11,226
13	MS6001C	CC	62.8 MW	50 Hz	6,321	6,667
		CC	62.8 MW	60 Hz	6,321	6,667
		SC	42.3 MW	50 Hz	9,410	9,927
		SC	42.3 MW	60 Hz	9,410	9,927
14	Small Heavy-Duty and Aero-derivative Gas Turbine Products Overview					
16	IGCC (Integrated Gasification Combined Cycle) Overview					

NOTE: All ratings are net plant based on ISO conditions and natural gas fuel.
All CC ratings shown above are based on a 1 GT/1 ST configuration.

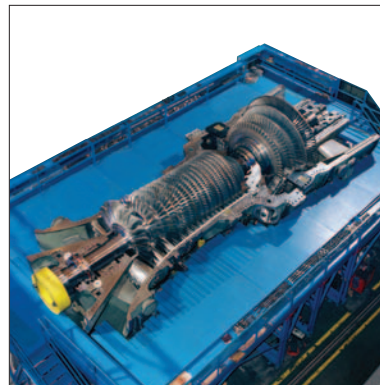
H System™

World's Most Advanced Combined Cycle Gas Turbine Technology

GE's H System™—the world's most advanced combined cycle system and the first capable of breaking the 60% efficiency barrier—integrates the gas turbine, steam turbine, generator and heat recovery steam generator into a seamless system, optimizing each component's performance. Undoubtedly the leading technology for both 50 and 60 Hz applications, the H delivers higher efficiency and output to reduce the cost of electricity of this gas-fired power generation system.

Closed-Loop Steam Cooling

Open loop air-cooled gas turbines have a significant temperature drop across the first stage nozzles, which reduces firing temperature and thermal efficiency. The closed-loop steam cooling system allows the turbine to fire at a higher temperature for increased performance. It is this closed-loop steam cooling that enables the H System™ to achieve 60% fuel efficiency capability while maintaining adherence to the strict low NO_x standards and reducing CO₂ emissions. Additionally, closed-loop cooling also minimizes parasitic extraction of compressor discharge air, thereby allowing more air to flow to the combustor for fuel premixing, thereby enabling lower emissions.



An MS9001H is seen during assembly in the factory.

MS9001H/MS7001H COMBINED CYCLE PERFORMANCE RATINGS

		Net Plant Output (MW)	Heat Rate (Btu/kWh) (kJ/kWh)		Net Plant Efficiency	GT Number & Type
50 Hz	S109H	520	5,690	6,000	60.0%	1 × MS9001H
60 Hz	S107H	400	5,690	6,000	60.0%	1 × MS7001H

Baglan Bay Power Station is the launch site for GE's H System™.



RSP10042-05

R0027903-13-03

Single Crystal Materials

The use of these advanced materials and Thermal Barrier Coatings ensures that components will stand up to high firing temperatures while meeting maintenance intervals.

Dry Low NO_x Combustors

Building on GE's design experience, the H System™ employs a can-annular lean pre-mix DLN-2.5 Dry Low NO_x (DLN) Combustor System. Fourteen combustion chambers are used on the 9H, and 12 combustion chambers are used on the 7H. GE DLN combustion systems have demonstrated the ability to achieve low NO_x levels in several million hours of field service around the world.

Small Footprint/High Power Density

The H System™ offers approximately 40% improvement in power density per installed megawatt compared to other combined cycle systems, once again helping to reduce the overall cost of producing electricity.

Thoroughly Tested

The design, development and validation of the H System™ has been conducted under a regimen of extensive component, sub-system and full unit testing. Broad commercial introduction has been controlled to follow launch units demonstration. This thorough testing approach provides the introduction of cutting edge technology with high customer confidence.



A 9H gas turbine is readied for testing.



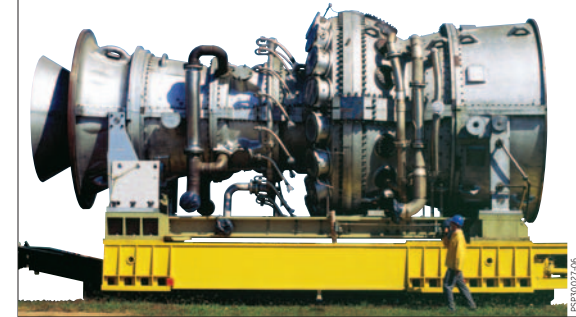
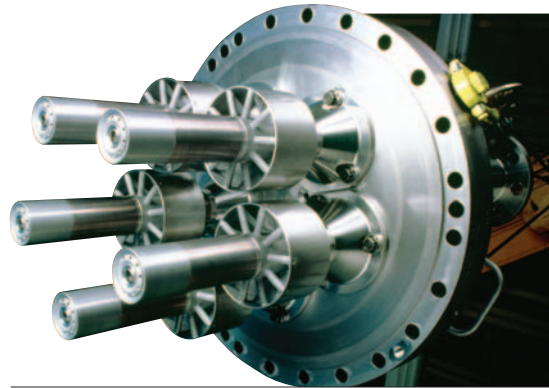
World's first H turbine is transported through Wales to Baglan Bay Power Station.

F Class

World's Most Experienced Advanced Technology Gas Turbines

With over ten million hours of operation, our F class turbines have established GE as the clear industry leader for successful fired hours in advanced technology gas turbines. Representing the world's largest, most experienced fleet of highly efficient gas turbines, designed for maximum reliability and efficiency with low life cycle costs, our F class turbines are favored by both power generators and industrial cogenerators requiring large blocks of reliable power.

Introduced in 1987, GE's F class gas turbines resulted from a multi-year development program using technology advanced by GE's aircraft engine team and GE Global Research. GE continually advances this technology by incrementally improving the F class product to attain ever higher combined cycle efficiencies, while maintaining reliability and availability.

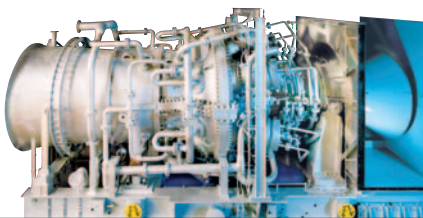
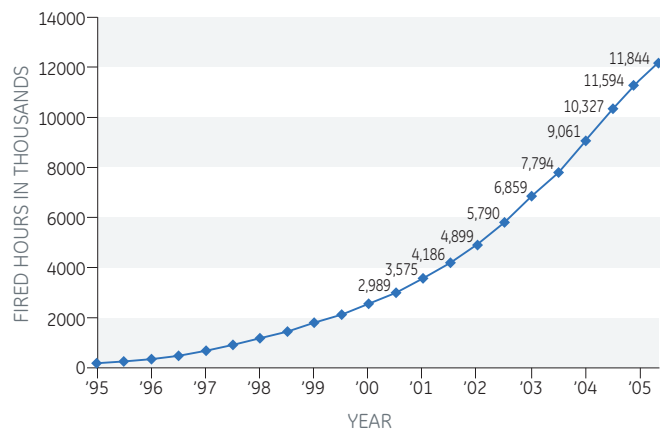


An MS9001FA gas turbine ships from the plant.

Dry Low NO_x combustor systems allow GE's F Class turbines to meet today's strict environmental emissions requirements.

Our F class gas turbines, including the 6F (either 50 or 60 Hz), the 7F (60 Hz) and the 9F (50 Hz), offer flexibility in cycle configuration, fuel selection and site adaptation. All F class gas turbines include an 18-stage axial compressor and a three-stage turbine, and they feature a cold-end drive and axial exhaust, which is beneficial for combined cycle arrangements where net efficiencies over 58% can be achieved.

F/FA/FB EXPERIENCE



Half of all 6FA installations are located in Europe. This CHP plant is owned by Porvoo, Finland.

MS7001FB and MS9001FB

GE's Most Advanced Air-Cooled Gas Turbine

The FB is the latest evolutionary step in GE's proven F series. Taking F technology to a new level of output and efficiency, we've applied our cutting-edge technology, including the materials developed for the H System™, and the experience gained in over ten million advanced gas turbine fired hours. The result is a large combined cycle system designed to provide high performance and low electrical cost.

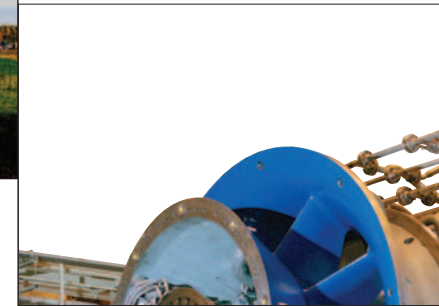
Improved output and efficiency means better fuel economy and reduced cost of producing electricity. With today's competitive markets and unpredictable fuel prices, this—now more than ever—is the key to success.



Hunterstown, PA 7FB launch site.



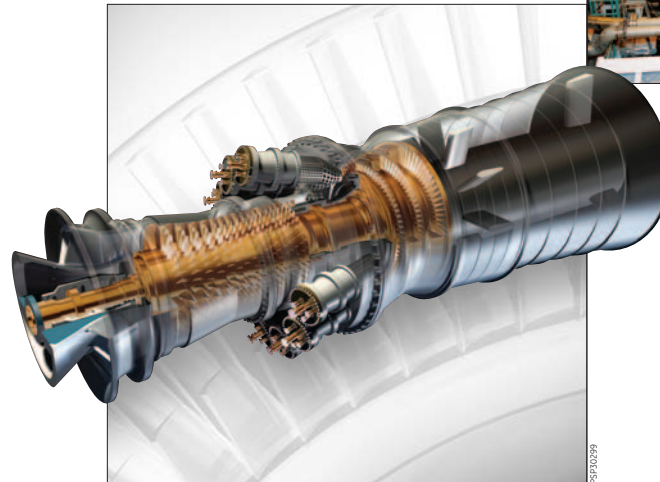
This MS9001FB is seen on half shell during assembly.



This MS7001FB is shown in the factory.

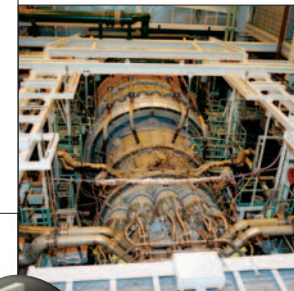
In developing the FB, we followed a specific course that significantly improved the key driver of efficiency—firing temperature. The FB firing temperature was increased more than 100 degrees Fahrenheit over GE's FA technology, resulting in combined cycle efficiency rating improvements of better than one percentage point. Output improvements of more than 5% were also achieved. These improvements equate to more MW per MBtu of natural gas burned.

The use of advanced turbine materials, such as Single Crystal First Stage Buckets, ensures that components can stand up to the higher firing temperatures of the FB without an increase in maintenance intervals. Providing the basis of process rigor, Six Sigma methodologies were used to assure a highly reliable robust design optimized for lowest cost of electricity. Indeed, in developing the FB, we were able to maintain many of the proven features of GE's most successful advanced technology turbine, the F/FA.



MS7001FB/MS9001FB COMBINED CYCLE PERFORMANCE RATINGS

		Net Plant Output (MW)	Heat Rate (Btu/kWh) (kJ/kWh)		Net Plant Efficiency	GT Number & Type
50 Hz	S109FB	412.9	5,880	6,202	58.0%	1 x MS9001FB
	S209FB	825.4	5,884	6,206	58.0%	2 x MS9001FB
60 Hz	S107FB	280.3	5,950	6,276	57.3%	1 x MS7001FB
	S207FB	562.5	5,940	6,266	57.5%	2 x MS7001FB



An MS7001FB is seen in test cell.

MS6001FA, MS7001FA and MS9001FA

Proven Performance in a Mid-Size Package

The highly efficient gear-driven 6FA gas turbine is a mid-size version of the well-proven 7FA and 9FA. Its output range, high exhaust energy, full packaging and robust design ideally suit applications ranging from cogeneration and district heating to pure power generation in combined cycle and Integrated Gasification Combined Cycle (IGCC).

To meet the need for mid-size power blocks with high performance in combined heat and power applications, the high-speed 6FA produces 75.9 MW of simple cycle power at 35% efficiency and 117 MW of combined cycle power at 54.7% net efficiency. In IGCC operation, gross plant efficiencies can reach up to 46%.

A classic example of GE's evolutionary designs, the 6FA is a 2/3 scale of the 7FA. Its aerodynamically scaled 18-stage axial design reduces combustion chambers from 14 to 6. A cold-end drive allows exhaust gases to be directed axially into the HRSG. With over 860,000 operating hours and 61 units installed or on order, the 6FA provides major fuel savings over earlier mid-range units in base-load operation. Adaptable to single or multi-shaft configurations, it burns a variety of fossil fuels, which can be switched after start-up without sacrificing performance. On natural gas the available Dry Low NO_x (DLN) system can achieve NO_x emissions of 15 ppm.

Industry Standard for 60 Hz Power in All Duty Cycles

The wide range of power generation applications for the 7FA gas turbine includes combined cycle, cogeneration, simple cycle peaking and IGCC in both cycle and base load operation with a wide range of fuels. Its high reliability—consistently 98% or better—provides customers more days of operation per year while minimizing overall life cycle cost.

MS6001FA SIMPLE CYCLE PERFORMANCE RATINGS

		50 Hz Power Generation	60 Hz Power Generation
Output	(MW)	75.9	75.9
Heat Rate	(Btu/kWh) (kJ/kWh)	9,760 10,295	9,795 10,332
Pressure Ratio		15.6:1	15.7:1
Mass Flow	(lb/sec) (kg/sec)	447 203	449 204
Turbine Speed	(rpm)	5,231	5,254
Exhaust Temperature	(°F) (°C)	1,117 603	1,118 603
Model Designation		PG6111FA	PG6111FA

MS6001FA COMBINED CYCLE PERFORMANCE RATINGS

		Net Plant Output (MW)	Heat Rate (Btu/kWh) (kJ/kWh)		Net Plant Efficiency	GT Number & Type
50 Hz	S106FA	117.7	6,240	6,582	54.7%	1 × MS6001FA
	S206FA	237.9	6,170	6,508	55.3%	2 × MS6001FA
60 Hz	S106FA	118.1	6,250	6,593	54.6%	1 × MS6001FA
	S206FA	237.5	6,210	6,550	54.9%	2 × MS6001FA



KEPCO's Seoinchon Plant, one of the world's largest combined cycle plants, has operated for more than 40,000 hours in daily start/stop cyclic duty.

As an industry leader in reducing emissions, the 7FA's DLN-2.6 combustor (proven in hundreds of thousands of operating hours) produces less than 9 ppm NO_x and CO—minimizing the need for exhaust cleanup systems and saving millions for our customers.

With 100s of units in operation, GE continually makes incremental design enhancements to improve output, efficiency, reliability and availability—for new units and upgrades to existing units. GE adds customer value with power augmentation equipment that provides additional gas turbine performance in summer peak demand periods—including inlet cooling, steam injection, and peak firing.

Proven Excellence in Reliable 50 Hz Combined Cycle Performance

Power producers around the world require reliable power generation—which makes the 9FA the 50 Hz gas turbine of choice for large combined cycle applications. As an aerodynamic scale of the highly successful 7FA gas turbine, the 9FA provides key advantages that include a fuel-flexible combustion system and higher output performance.

The 9FA gas turbine is configured with the robust DLN-2.0+. Ideally suited for diverse fuels, this combustor is the industry leader in pollution prevention for 50 Hz combined cycle applications with greater than 56% efficiency, achieving less than 25 ppm NO_x.

The 9FA can be configured to meet site and power requirements. For re-powering applications with space limitations, it can be configured in a single-shaft combined cycle arrangement with the generator and steam turbine. For large combined cycle or cogeneration plants where flexible operation and maximum performance is the prime consideration, it can be arranged in a multi-shaft configuration where one or two gas turbines are combined with a single steam turbine to produce power blocks of 390 or 786 MW.

MS7001FA SIMPLE CYCLE PERFORMANCE RATINGS

		60 Hz Power Generation
Output	(MW)	171.7
Heat Rate	(Btu/kWh) (kJ/kWh)	9,360 9,873
Pressure Ratio		16.0:1
Mass Flow	(lb/sec) (kg/sec)	981 445
Turbine Speed	(rpm)	3,600
Exhaust Temperature	(°F) (°C)	1,114 601
Model Designation		PG7241FA

MS7001FA COMBINED CYCLE PERFORMANCE RATINGS

		Net Plant Output (MW)	Heat Rate (Btu/kWh)	Heat Rate (kJ/kWh)	Net Plant Efficiency	GT Number & Type
60 Hz	S107FA	262.6	6,090	6,424	56.0%	1 × MS7001FA
	S207FA	529.9	6,040	6,371	56.5%	2 × MS7001FA

MS9001FA SIMPLE CYCLE PERFORMANCE RATINGS

		50 Hz Power Generation
Output	(MW)	255.6
Heat Rate	(Btu/kWh) (kJ/kWh)	9,250 9,757
Pressure Ratio		17.0:1
Mass Flow	(lb/sec) (kg/sec)	1,413 641
Turbine Speed	(rpm)	3,000
Exhaust Temperature	(°F) (°C)	1,116 602
Model Designation		PG9351FA

MS9001FA COMBINED CYCLE PERFORMANCE RATINGS

		Net Plant Output (MW)	Heat Rate (Btu/kWh)	Heat Rate (kJ/kWh)	Net Plant Efficiency	GT Number & Type
50 Hz	S109FA	390.8	6,020	6,350	56.7%	1 × MS9001FA
	S209FA	786.9	5,980	6,308	57.1%	2 × MS9001FA

MS9001E

Fuel-Flexible 50 Hz Performer

The MS9001E gas turbine is GE's 50 Hz workhorse. With more than 390 units, it has accumulated over 14 million fired hours of utility and industrial service, many in arduous climates ranging from desert heat and tropical humidity to arctic cold. Originally introduced in 1978 at 105 MW, the 9E has incorporated numerous component improvements. The latest model boasts an output of 126 MW and is capable of achieving more than 52% efficiency in combined cycle.

Whether for simple cycle or combined cycle application, base load or peaking duty, 9E packages are comprehensively engineered with integrated systems that include controls, auxiliaries, ducts and silencing. They are designed for reliable operation and minimal maintenance at a competitively low installed cost.

Like other GE E-class technology units, the Dry Low NO_x combustion system is available on 9E, which can achieve NO_x emissions under 15 ppm when burning natural gas.

With its flexible fuel handling capabilities, the 9E accommodates a wide range of fuels, including natural gas, light and heavy distillate oil, naphtha, crude oil and residual oil. Designed for dual-fuel operation, it is able to switch from one fuel to another while running under load. It is also able to burn a variety of syngases produced from oil or coal without turbine modification. This flexibility, along with its extensive experience and reliability record, makes the 9E well suited for IGCC projects.

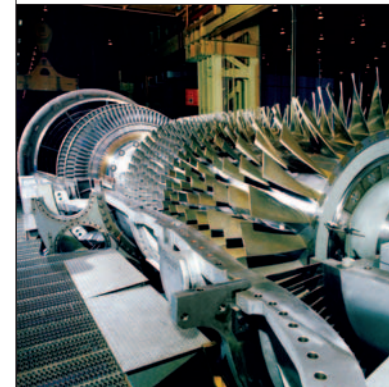
In simple cycle, the MS9001E is a reliable, low first-cost machine for peaking service, while its high combined cycle efficiency gives excellent fuel savings in base load operations. Its compact design provides flexibility in plant layout as well as the easy addition of increments of power when a phased capacity expansion is required.

MS9001E SIMPLE CYCLE PERFORMANCE RATINGS

		50 Hz Power Generation
Output	(MW)	126.1
Heat Rate	(Btu/kWh) (kJ/kWh)	10,100 10,653
Pressure Ratio		12.6:1
Mass Flow	(lb/sec) (kg/sec)	922 418
Turbine Speed	(rpm)	3,000
Exhaust Temperature	(°F) (°C)	1,009 543
Model Designation		PG9171E

MS9001E COMBINED CYCLE PERFORMANCE RATINGS

		Net Plant Output (MW)	Heat Rate (Btu/kWh)	Heat Rate (kJ/kWh)	Net Plant Efficiency	GT Number & Type
50 Hz	S109E	193.2	6,570	6,930	52.0%	1 × MS9001E
	S209E	391.4	6,480	6,835	52.7%	2 × MS9001E



The MS9001E gas turbine is designed to attain high availability levels and low maintenance costs, resulting in extremely low total cost of ownership.

MS7001EA

Time-Tested Performer for 60 Hz Applications

With more than 750 units in service, the 7E/EA fleet has accumulated tens of millions of hours of service and is well recognized for high reliability and availability.

With strong efficiency performance in simple and combined cycle applications, this 85 MW machine is used in a wide variety of power generation, industrial and cogeneration applications. It is uncomplicated and versatile; its medium-size design lends itself to flexibility in plant layout and fast, low-cost additions of incremental power.

With state-of-the-art fuel handling equipment, advanced bucket cooling, thermal barrier coatings and a multiple-fuel combustion system, the 7EA can accommodate a full range of fuels. It is designed for dual-fuel operation, able to switch from one fuel to another while the turbine is running under load or during shutdown. 7E/EA units have accumulated millions of hours of operation using crude and residual oils.

In addition to power generation, the 7EA is also well suited for mechanical drive applications.



MS7001EA SIMPLE CYCLE PERFORMANCE RATINGS

	60 Hz Power Generation		Mechanical Drive	
Output	(MW)	85.1	(hp)	115,630
Heat Rate	(Btu/kWh)	10,430	(Btu/shp-hr)	7,720
	(kJ/kWh)	11,002		
Pressure Ratio		12.7:1		11.9:1
Mass Flow	(lb/sec)	648	(lb/sec)	659
	(kg/sec)	294		
Turbine Speed	(rpm)	3,600	(rpm)	3,600
Exhaust Temperature	(°F)	997	(°F)	999
	(°C)	536		
Model Designation		PG7121EA		M7121EA

MS7001EA COMBINED CYCLE PERFORMANCE RATINGS

		Net Plant Output (MW)	Heat Rate (Btu/kWh) (kJ/kWh)		Net Plant Efficiency	GT Number & Type
60 Hz	S107EA	130.2	6,800	7,173	50.2%	1 x MS7001EA
	S207EA	263.6	6,700	7,067	50.9%	2 x MS7001EA

An MS7001EA is shown on half shell during assembly.

MS6001B

Reliable and Rugged 50/60 Hz Power

The MS6001B is a performance proven 40 MW class gas turbine, designed for reliable 50/60 Hz power generation and 50,000 hp class mechanical drive service. With availability well documented at 97.1% and reliability at 99.3%, it is the popular choice for efficient, low installed cost power generation or prime movers in mid-range service.

With over 980 units in service, the versatile and widely used 6B gas turbine has accumulated over 45 million operating hours in a broad range of applications: simple cycle, heat recovery, combined cycle, and mechanical drive. It can be installed fast for quick near-term capacity.

The rugged and reliable 6B can handle multiple start-ups required for peak load. It can accommodate a variety of fuels and is well suited to IGCC. In combined cycle operation the 6B is a solid performer at nearly 50% efficiency. It is also a flexible choice for cogeneration applications capable of producing a thermal output ranging from 20 to 400 million Btu/hr.

Like all GE heavy-duty gas turbines, the 6B has earned a solid reputation for high reliability and environmental compatibility. With a Dry Low NO_x combustion system, the 6B is capable of achieving less than 15 ppm NO_x on natural gas.

With its excellent fuel efficiency, low cost per horsepower and high horsepower per square foot, the MS6001B is an excellent fit for selective mechanical applications.

MS6001B SIMPLE CYCLE PERFORMANCE RATINGS

	50/60 Hz Power Generation		Mechanical Drive	
Output	(MW)	42.1	(hp)	58,380
Heat Rate	(Btu/kWh) (kJ/kWh)	10,642 11,226	(Btu/shp-hr)	7,650
Pressure Ratio		12.2:1		12.0:1
Mass Flow	(lb/sec) (kg/sec)	311 141	(lb/sec) (kg/sec)	309 140
Turbine Speed	(rpm)	5,163	(rpm)	5,111
Exhaust Temperature	(°F) (°C)	1,018 548	(°F) (°C)	1,011 544
Model Designation		PG6581B		M6581B

MS6001B COMBINED CYCLE PERFORMANCE RATINGS

		Net Plant Output (MW)	Heat Rate (Btu/kWh) (kJ/kWh)		Net Plant Efficiency	GT Number & Type
50 Hz	S106B	64.3	6,950	7,341	49.0%	1 × MS6001B
	S206B	130.7	6,850	7,225	49.8%	2 × MS6001B
	S406B	261.3	6,850	7,225	49.8%	4 × MS6001B
60 Hz	S106B	64.3	6,960	7,341	49.0%	1 × MS6001B
	S206B	130.7	6,850	7,225	49.8%	2 × MS6001B
	S406B	261.3	6,850	7,225	49.8%	4 × MS6001B



An MS6001B rotor is seen on half shell.

TKC24666-03

MS6001C

High Efficiency and Performance in a 40 MW Class

The 6C is designed for low cost electricity heat recovery applications for both 50 and 60 Hz. Key industry segments for the machine include industrial cogeneration, process industries, municipalities (district heating), combined heat and power, and mid-size combined cycle projects.

Consistent with GE's evolutionary design philosophy, the 6C incorporates technologies that have been validated in service worldwide. This evolutionary approach ensures users of the 6C that they are receiving advanced but well-proven technology.

The 6C incorporates the flowback of GE's world leading F technology and builds on the experience and performance of the successful Frame 6B technology.

The Frame 6C development has been fully supported by GE's Six Sigma quality initiative. Rigorous Six Sigma methodology has been employed at all steps of the development program, addressing such key factors as customer needs, product design, manufacturing, product validation and testing. The 6C features 6 can-annular combustion chambers with dual-fuel capability, DLN-2.0 combustor (for 15 ppm NO_x with gas fuel), as well as advanced Mark VI Control Systems.



An MS6001C is shown fully assembled.

MS6001C SIMPLE CYCLE PERFORMANCE RATINGS

		50/60 Hz Power Generation
Output	(MW)	42.3
Heat Rate	(Btu/kWh) (kJ/kWh)	9,410 9,927
Pressure Ratio		19.0:1
Mass Flow	(lb/sec) (kg/sec)	258 117
Turbine Speed	(rpm)	7,100
Exhaust Temperature	(°F) (°C)	1,065 574
Model Designation		PG6591C

MS6001C COMBINED CYCLE PERFORMANCE RATINGS

		Net Plant Output (MW)	Heat Rate (Btu/kWh) (kJ/kWh)		Net Plant Efficiency	GT Number & Type
50 Hz	S106C	62.8	6,321	6,667	54.0%	1 × MS6001C
	S206C	126.7	6,273	6,617	54.4%	2 × MS6001C
60 Hz	S106C	62.8	6,321	6,667	54.0%	1 × MS6001C
	S206C	126.7	6,273	6,617	54.4%	2 × MS6001C

Small Heavy-Duty and Aeroderivative Gas Turbines

A Broad Portfolio of Packaged Power Plants

GE provides a broad range of power packages from 5 MW to nearly 100 MW for simple cycle, combined cycle or cogeneration applications in the utility, private and mobile power industries. Marine applications for these machines range from commercial fast ferries and cruise ships to military patrol boats, frigates, destroyers and aircraft carriers.

Oil & Gas

GE is a world leader in high-technology turbine products and services for the oil & gas industry. We offer full turnkey systems and aftermarket solutions for production, LNG, transportation, storage, refineries, petrochemical and distribution systems.

SMALL HEAVY-DUTY GAS TURBINES

		Output (kW)	Heat Rate (Btu/kWh) (kJ/kWh)		Pressure Ratio	Turbine Speed (rpm)	Exhaust Flow (lb/sec) (kg/sec)		Exhaust Temp. (°F) (°C)	
Generator Drive*	GE5	5,500	11,130	11,740	14.8:1	16,630	43.1	19.6	1,065	574
	GE10	11,250	10,884	11,481	15.5:1	11,000	104.7	47.5	900	482
	MS5001	26,830	12,028	12,687	10.5:1	5,094	276.1	125.2	901	483
		Output (shp)	Heat Rate (Btu/shp-h)		Pressure Ratio	Turbine Speed (rpm)	Exhaust Flow (lb/sec) (kg/sec)		Exhaust Temp. (°F) (°C)	
Mechanical Drive**	GE5	7,510	8,080	—	14.6:1	12,500	44.2	20.0	1032	556
	GE10	15,575	10,543	—	15.5:1	7,900	103.3	46.9	903	484
	MS5002C	38,005	8,814	—	8.8:1	4,670	274.1	123.4	963	517
	MS5002E	43,690	8,650	—	10.8:1	4,670	311.7	141.4	948	509

*ISO conditions - natural gas - electrical generator terminals

**ISO conditions - natural gas - shaft output



The powerful LM6000 is one of the most fuel-efficient simple cycle gas turbines in the world.

AERODERIVATIVE GAS TURBINES

	Output (kW)	Heat Rate		Pressure Ratio	Turbine Speed (rpm)	Exhaust Flow		Exhaust Temp.		
		(Btu/kWh)	(kJ/kWh)			(lb/sec)	(kg/sec)	(°F)	(°C)	
50 Hz Power Gen	LMS100PA	98,894	7,563	7,979	40:1	3,000	458	208	782	416
	LMS100PB	98,359	7,569	7,873	40:1	3,000	456	207	783	417
	LM6000PC Sprint*	50,041	8,461	8,925	31.5:1	3,627	302	137	813	434
	LM6000PC	42,890	8,173	8,621	29.2:1	3,627	284	129	817	436
	LM6000PD Sprint	46,903	8,272	8,725	30.9:1	3,627	292	132	834	446
	LM6000PD	41,711	8,374	8,833	29.3:1	3,627	279	127	838	448
	LM6000PD (liquid fuel)	40,400	8,452	8,915	28.5:1	3,627	272	123	853	456
	LM2500RC	32,916	8,880	9,369	23:1	3,600	202	92	976	524
	LM2500RD	32,689	8,901	9,391	23:1	3,600	201	91	977	525
	LM2500PH	26,463	8,673	9,148	19.4:1	3,000	168	76	927	497
	LM2000PE	22,346	9,630	10,158	18.0:1	3,000	154	70	1001	538
	LM2000PS	17,674	9,779	10,315	16.0:1	3,000	142	64	894	479
	LM1600PE	13,748	9,749	10,283	20.2:1	7,900	104	47	915	491
60 Hz Power Gen	LMS100PA	98,816	7,569	7,986	40:1	3,600	458	207.6	780	416
	LMS100PB	98,196	7,582	7,872	40:1	3,600	456	207	782	417
	LM6000PC Sprint*	50,080	8,434	8,896	31.3:1	3,600	299	136	819	437
	LM6000PC	43,471	8,112	8,557	29.1:1	3,600	282	128	824	440
	LM6000PD Sprint	46,824	8,235	8,686	30.7:1	3,600	290	132	837	447
	LM6000PD	42,336	8,308	8,763	29.3:1	3,600	278	126	846	452
	LM6000PD (liquid fuel)	40,200	8,415	8,876	28.1:1	3,600	268	122	857	458
	LM2500RC	33,394	8,753	9,235	23:1	3,600	201.9	91.6	976	524
	LM2500RD	33,165	8,774	9,257	23:1	3,600	201	91	977	525
	LM2500PH	27,763	8,391	8,850	19.4:1	3,600	167	76	922	494
	LM2500PE	23,292	9,315	9,825	19.1:1	3,600	153	69	992	533
	LM2000PS	17,606	9,587	10,112	15.6:1	3,600	139	63	886	474
	LM1600PE	13,769	9,735	10,268	20.2:1	7,900	104	47	894	479
Mechanical Drive		Output (hp)	Heat Rate (Btu/shp-h)		Pressure Ratio	Turbine Speed (rpm)	Exhaust Flow (lb/sec) (kg/sec)		Exhaust Temp. (°F) (°C)	
	LM6000PC	59,355	5,941	—	29.1:1	3,600	282	127.9	824	440
	LM2500RC	45,740	6,435	—	23:1	3,600	202	92.0	980	527
	LM2500RD	45,417	6,450	—	23:1	3,600	200.9	91.1	981	527
	LM2500PE	31,164	6,780	—	19.5:1	3,600	152	69.0	976	524
	LM2000PE	24,146	6,992	—	15.6:1	3,600	138.6	62.9	885	474
	LM1600PE	19,105	7,016	—	20.2:1	7,900	104.3	47.3	915	491

*Sprint 2002 deck is used with water injection to 25 ppmvd for power enhancement.

NOTE: Performance based on 59°F amb. Temp., 60% RH, sea level, no inlet/exhaust losses on gas fuel with no NO_x media, unless otherwise specified.

GE Energy's Oil & Gas products are installed in major upstream, midstream, downstream and distribution applications around the world.



PSP0305

ET08543

The Next Generation Power Plant

Making Environmental Compliance Affordable

Integrated Gasification Combined Cycle (IGCC) technology is increasingly important in the world energy market, where low cost opportunity feedstocks such as coal, heavy oils and pet coke are the fuels of choice. And IGCC technology produces low cost electricity while meeting strict environmental regulations.

The IGCC gasification process “cleans” heavy fuels and converts them into high value fuel for gas turbines. Pioneered by GE almost 30 years ago, IGCC technology can satisfy output requirements from 10 MW to more than 1.5 GW and can be applied in almost any new or re-powering project where solid and heavy fuels are available.

Optimal Performance

For each gasifier type and fuel, there are vast numbers of technical possibilities. Integrated Gasification Combined Cycle (IGCC) systems can be optimized for each type of fuel as well as site and environmental requirements. Using knowledge gained from successfully operating many IGCC units, GE has optimized system configurations for all major gasifier types and all GE IGCC gas turbine models.

Experience

GE engages experts from throughout the gasification industry at both operating and research levels to develop the most economical and reliable approaches to IGCC technology. Using the same combined cycle technology for IGCC that we use for conventional systems, GE offers extensive experience and high levels of reliability.

GE GAS TURBINES FOR IGCC APPLICATIONS

Gas Turbines		IGCC	
Model	Syngas Power Rating	Model	Syngas CC Output Power
GE10	10 MW (50/60 Hz)	GE10	14 MW (50/60 Hz)
6B	42 MW (50/60 Hz)	106B	63 MW (50/60 Hz)
7EA	90 MW (60 Hz)	107EA	130 MW (60 Hz)
9E	150 MW (50 Hz)	109E	210 MW (50 Hz)
6FA	90 MW (50/60 Hz)	106FA	130 MW (50/60 Hz)
7FA	197 MW (60 Hz)	107FA	280 MW (60 Hz)
9FA	286 MW (50 Hz)	109FA	420 MW (50 Hz)
7FB	232 MW (60 Hz)	207FB	750 MW (60 Hz)



This 550 MW IGCC is located at the Saras oil refinery in Sardinia. The three GE 109E single-shaft combined cycle units have accumulated over 12,000 hours of syngas operation.

GE Value

GE is a leading global supplier of power generation technology, energy services and management systems, with an installed base of power generation equipment in more than 120 countries. GE Energy provides innovative, technology-based products and service solutions across the full spectrum of the energy industry.

Our people, products and services provide enhanced performance, competitive life cycle costs and continuous technological innovation with unmatched experience. Our Customer-Centric approach, combined with Six Sigma quality methodology, assures that customer needs are defined up front and that performance against customer expectations is measured and managed every step of the way.

Industries Served:

- Commercial and industrial power generation
- Distributed power
- Energy management
- Oil & Gas
- Petrochemical
- Gas compression
- Commercial marine power
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