Solar® Turbines
A Caterpillar Company

Industry Leader for Gas Turbine Power

Powering the Future Through Sustainable, Innovative Energy Solutions

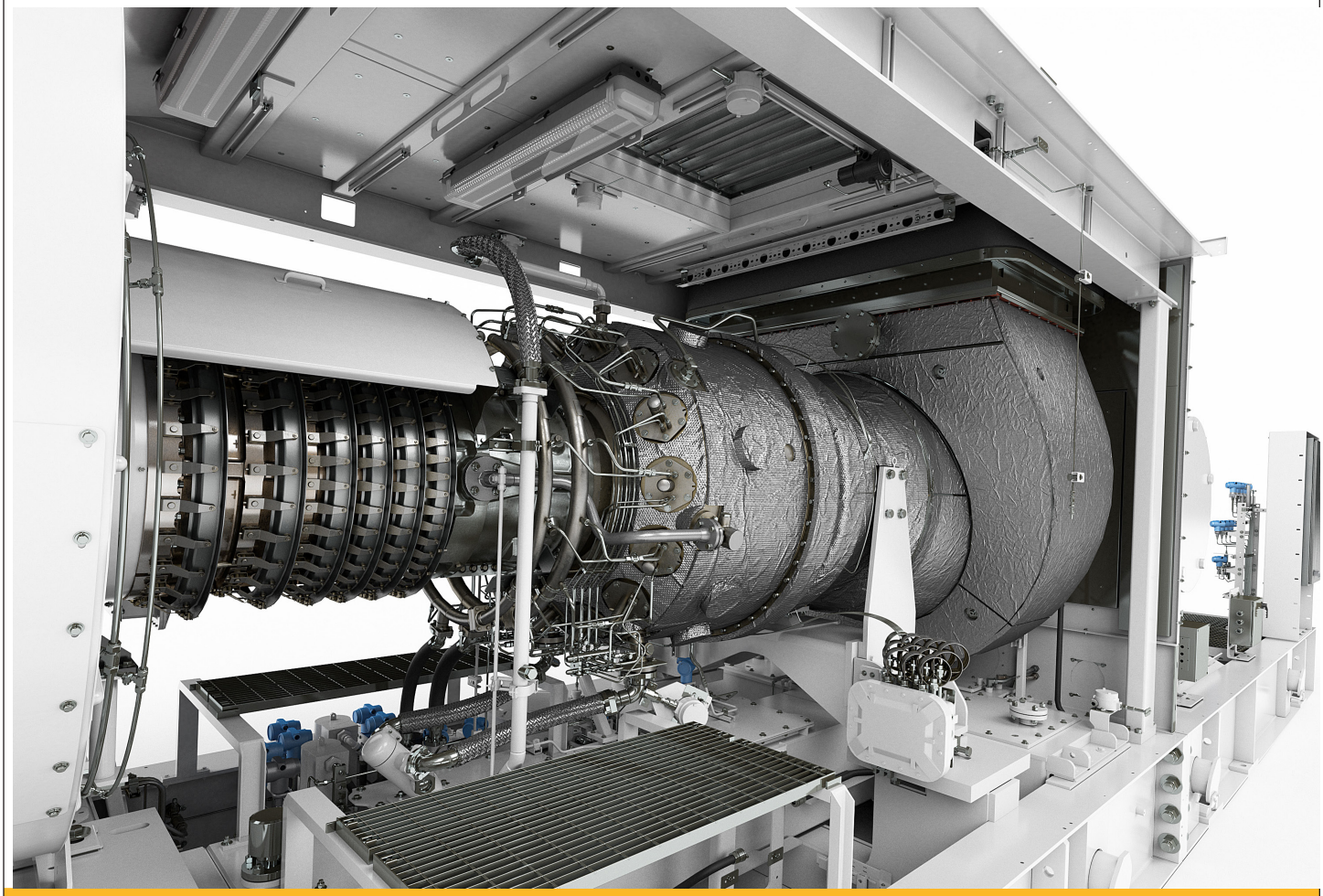
Solar Turbines, a subsidiary of Caterpillar Inc., is a leading producer of industrial gas turbines and turbomachinery packages in the 1 to 39 MW (1590 to 52,500 hp) range.

Headquartered in San Diego, California, Solar designs and builds its proven line of compressor sets, mechanical-drive packages and generator sets using state-of-the-art operations certified by DNV to conform to the ISO 9001:2008 Quality Systems Standard.

Since Solar entered the industrial gas turbine business in 1960 with the Saturn® turbine, Solar's fleet has grown to more than 16,000 units worldwide. These units have logged more than 3 billion hours in more than 100 countries in some of the toughest, most challenging arctic, desert, tropical and offshore environments. This unparalleled experience gives testimony to the robust design and wide user acceptance of Solar's products.

Solar's compact, lightweight and durable gas turbines offer the highest thermal efficiencies in their power classes. Other advantages include ease of transport and installation, long life, high performance, availability and reliability.

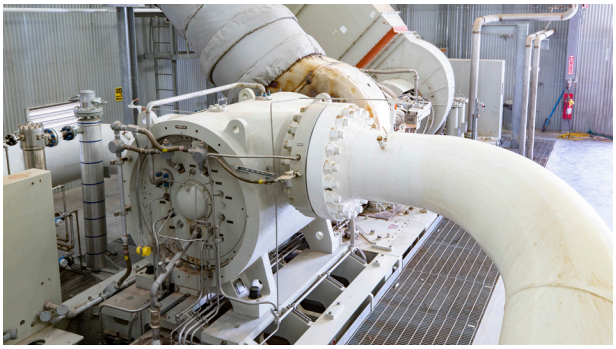
Units in the Centaur®, Mercury™, Taurus™, Mars® and Titan™ gas turbine families are available with Solar's pollution prevention SoLoNOx™ dry low emissions combustion system. Customers have installed more than 3800 gas turbines with SoLoNOx, logging more than 487 million hours. Solar's experience with dry, lean-premixed combustion technology, designed to meet low emissions regulations, is unmatched in the gas turbine industry.



Package Specifications

COMPRESSOR SETS

Solar manufactures gas turbine-driven compressor sets designed for applications in the oil and gas industry including transmission, natural gas gathering, storage/withdrawal and gas lift. Solar® compressor sets are fully assembled and tested at the factory to allow for quick installation. Their compact size, light weight, low maintenance requirements and dependability have led to wide use throughout the world, particularly at remote and offshore facilities.



Taurus 60 Compressor Set - USA

CENTRIFUGAL COMPRESSORS

Solar manufactures a broad range of rugged centrifugal compressors designed specifically to match the operating speeds of the Solar turbines. They include modularized components for maximum simplicity, interchangeability, operational flexibility and field restaging.

Compressor Set/Mechanical Drive Specifications

Gas Turbine Model	Nominal Output kW	Nominal Output hp	Thermal Efficiency %	Length m	Length ft-in.	Width m	Width ft-in.	Height m	Height ft-in.	Weight kg	Weight lb
Saturn 20	1185	1590	24.6	4.7	15' 4"	1.9	6' 1"	2.0	6' 8"	6805	15,000
Centaur 40	3500	4700	27.9	6.0	19' 9"	2.5	8' 1"	2.7	8' 11"	14 970	33,000
Centaur 50	4590	6150	30.0	6.0	19' 9"	2.5	8' 1"	2.7	8' 11"	16 330	36,000
Taurus 60	5740	7700	32.0	6.0	19' 9"	2.5	8' 1"	2.7	8' 11"	15 420	34,000
Taurus 70	8290	11,110	35.4	7.7	25' 3"	2.6	8' 8"	3.3	10' 9"	24 495	54,000
Mars 90	9860	13,220	33.2	9.1	30' 0"	3.0	9' 8"	3.1	10' 3"	33 565	74,000
Mars 100	11 860	15,900	34.4	9.1	30' 0"	3.0	9' 8"	3.1	10' 3"	33 565	74,000
Titan 130	17 500	23,470	37.4	9.1	30' 0"	3.4	11' 2"	3.4	11' 4"	36 540	80,560
Titan 250	23 790	31,900	40.6	10.3	33' 9"	3.9	12' 11"	3.4	11' 3"	49 900	110,000
Titan 350	35 000	47,000	41.0	12.8	42' 0"	4.0	13' 0"			52 890	116,500
Titan 350	39 000	52,500	41.0	12.8	42' 0"	4.0	13' 0"			52 890	116,500

Gas Compressor Specifications

Compressor Model	Number of Stages	Pressure Rating* kPag	Pressure Rating* psig	Maximum Flow m^3/min	Maximum Flow ft^3/min	Minimum Flow m^3/min	Minimum Flow ft^3/min	Maximum Total Head kJ/kg_m	Maximum Total Head $ft\text{-}lb_f/lb_m$
Production Compressors									
C16	1-10	31 025	4500	60	2200	4	200	209	70,000
C31	4-9	34 475	5000	142	2000	15	500	242	81,000
C33	1-10	18 620	2700	270	9500	23	800	257	86,000
C40	1-6	17 235	2500	255	9000	17	600	239	80,000
C41	1-10	25 855	3750	510	18,000	21	750	269	90,000
C41 Dual Compartment	4-10	25 855	3750	510	18,000	21	750	389	130,000
C50	1-5	10 350	1500	565	20,000	57	2000	239	80,000
C51	1-10	20 685	3000	710	25,000	57	2000	269	90,000
C51 Dual Compartment	4-10	20 685	3000	710	25,000	57	2000	389	130,000
C61	1-10	20 685	3000	990	35,000	79	2800	269	90,000
Pipeline Compressors									
C40	1-2	11 030	1600	300	11,000	42	1500	108	36,000
C45	1-3	15 513	2250	525	18,500	108	3800	167	56,000
C65	1-2	11 030	1600	680	24,000	142	5000	108	36,000
C75	1-3	15 510	2250	850	30,000	68	2420	120	40,000
C85	1-2	11 030	1600	1275	45,000	283	10,000	108	36,000

At ISO conditions: 15°C (59°F), sea level, 60% relative humidity, zero inlet or exhaust duct losses. Natural gas fuel. Single-body compressor skid. Driver package only.

* MAWP (Maximum Allowable Working Pressure)

Package Specifications

Solar gas compressors are designed to have from 1 to 10 stages to handle flows from 4 to 1275 m^3/min (200 to 45,000 ft^3/min) and maximum allowable working pressures to 34 473 kPa (5000 psi). Dual compartment models allow for intercooling and side streams. They may be driven, either directly or through a gearbox, by Solar gas turbines or by electric motors. With two or three compressors mounted in tandem, the package can provide up to 40:1 pressure ratios.

Electronic Assembly - USA

Customer Support - USA

MECHANICAL-DRIVE PACKAGES

Solar manufactures mechanical-drive packages that are completely factory packaged and tested to drive a variety of centrifugal and reciprocating compressors for air, process and refrigeration applications. They also drive pumps for waterflooding and transportation of crude oil and other liquid products. To facilitate the driver/driven equipment interface, Solar offers single-source responsibility for a complete package when Solar supplies the driven equipment. Solar can provide the packaging expertise required when the driven equipment is supplied by other manufacturers.

Electric Motor Drive - USA

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GENERATOR SETS

Solar manufactures gas turbine-driven generator sets for combined heat and power (CHP), base-load electricity, dispersed power, combined cycle, peak shaving, district heating/cooling, mobile, and standby power applications for a variety of facilities including colleges and universities, hospitals, industrial/processing facilities, and distributed power plants.

For overall system thermal efficiencies of 70% or more, these units can be applied in CHP or combined cycle cofigurations where the heat from the turbine exhaust is used to produce steam, preheated combustion air, or hot air for drying or heating processes.

Titan 130 PGM - USA

Generator Set Specifications

Gas Turbine Model	Nominal Output kWe*	Thermal Efficiency %	Standard Voltages	Length m	Length ft-in.	Width m	Width ft-in.	Height m	Height ft-in.	Weight kg	Weight lb
Saturn 20	1210	24.3	240-4160	6.7	22' 0"	2.4	8' 0"	2.7	8' 11"	10 205	22,500
Centaur 40	3515	27.9	3300-13 800	9.8	32' 4"	2.6	8' 11"	3.2	10' 7"	33 480	73,820
Centaur 50	4600	29.3	3300-13 800	9.8	32' 3"	2.6	8' 6"	3.2	10' 5"	37 785	83,300
Mercury 50	4600	38.5	3300-13 800	11.2	36' 6"	3.2	10' 5"	3.7	12' 3"	45 660	100,700
Taurus 60	5670	31.5	3300-13 800	9.8	32' 3"	2.6	8' 6"	3.2	10' 5"	37 920	83,600
Taurus 65	6500	33.1	6900-13 800	9.8	32' 2"	2.6	8' 6"	3.3	10' 9"	39 600	87,300
Taurus 70	8180	34.4	6900-13 800	11.1	36' 3"	2.9	9' 2"	3.7	12' 1"	61 775	136,215
Mars 100	11 350	32.9	6900-13 800	14.2	46' 6"	2.8	9' 2"	3.8	12' 6"	82 145	181,000
Titan 130	16 530	35.4	6900-13 800	14.2	46' 6"	3.2	10' 11"	3.2	10' 7"	94 395	208,100
Titan 250	23 100	39.4	11 000-13 800	18.2	59′ 6″	3.4	11′ 1″	3.9	12′ 9″	141 150	311,100
Titan 350	34 000	39.3	11 000-13 800	21.9	72′ 0″	4.0	13′ 0″			184 160	406,000
Titan 350	38 000	40.2	11 000-13 800	21.9	72′ 0″	4.0	13′ 0″			184 160	406,000

At ISO conditions: 15°C (59°F), sea level, 60% relative humidity, zero inlet or exhaust duct losses. Natural gas fuel. Continuous duty.
*Measured at the generator terminals.

SOLUTION PROVIDER

Solar offers complete solutions for your 1 to 60 MW project power needs. Our products are marketed and serviced from more than 60 locations around the world. We are dedicated to providing quality products and prompt, comprehensive support such as field service, overhaul, refurbishment, certified parts and technical training.

Solar's Customer Services team is unrivaled in its dedication to support our customers around the world. Our experienced technicians in strategically located facilities are ready to respond to ensure our customers' equipment is operating as efficiently and effectively as possible.

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ISO-9001
DNV
CERTIFICATED FIRM