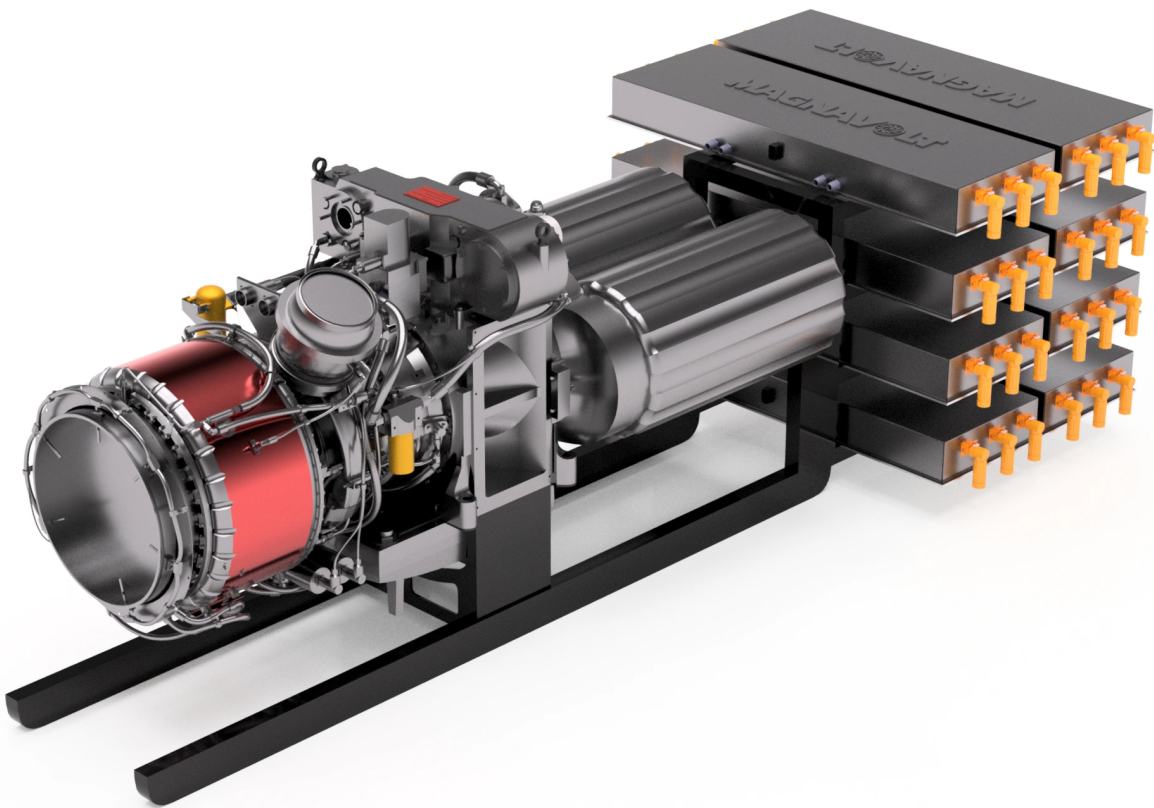


3 MW Deployable Power System

Megawatt power density in a containerized package



MAGNA-502 gas turbine · high-speed generators · eight paralleled EPCU conversion modules

One Machine, From Fuel to Your Bus

A MagnaVolt unit is a complete power plant: the **MAGNA-502** aeroderivative gas turbine drives high-speed generators directly, and the **EPCU** silicon-carbide conversion stage shapes the result into exactly the power your site needs. No reduction gearbox ties the machine to a grid frequency, so voltage and frequency become configuration rather than construction, and the 1500 V DC link is externally accessible for direct-DC loads and storage. The turbine, the cooling systems, and the power electronics are independent modules. Any one can be serviced or swapped without disturbing the others, and the whole package ships in a standard intermodal container.

Applications

- Defense & expeditionary
- Data centers
- Emergency response
- Remote & off-grid power
- Oil & gas
- Marine

Features & Benefits

- 3 MW continuous electrical output per unit
- Turbine power density: megawatts from a machine a fraction of the mass of reciprocating plant
- Configurable output voltage and frequency; 1500 V DC link available directly
- Multi-fuel: Jet-A, Diesel, or Natural gas
- Modular by design, with independent subsystems for quick and easy service
- Containerized package for transport and fast siting
- Fleet visibility and documentation through a secured client portal

SYSTEM SPECIFICATIONS

Preliminary engineering data; production specifications may refine these figures.

Rated electrical output	3 MW	Per unit, continuous
Prime mover	MAGNA-502 gas turbine	Aeroderivative, mechanically driving high-speed generators
Conversion	EPCU, AC → DC → AC	1500 V DC link, silicon-carbide switching throughout
Conversion capacity	400 kW – 3.2 MW	Scales by paralleling EPCU modules
Output voltage & frequency	Configurable	Set at commissioning; ranges on request
DC output	1,500 V · 215 A	Direct from the DC link; storage and DC-bus ready
Fuel	Jet-A · Diesel · Natural gas	Multi-fuel gas turbine
Package	Containerized	Standard intermodal container; dimensions on page 5
Cooling	Liquid	Independent loops for the AC-DC and DC-AC stages
Control & monitoring	Ethernet, CAN	Hardware E-stop input
Serviceability	Modular	Independent cooling, conversion, and turbine-generator subsystems
EPCU module mass	67 kg (148 lb)	Per module
EPCU module dimensions	1356 x 445 x 131 mm	53.4 x 17.5 x 5.2 in · per module

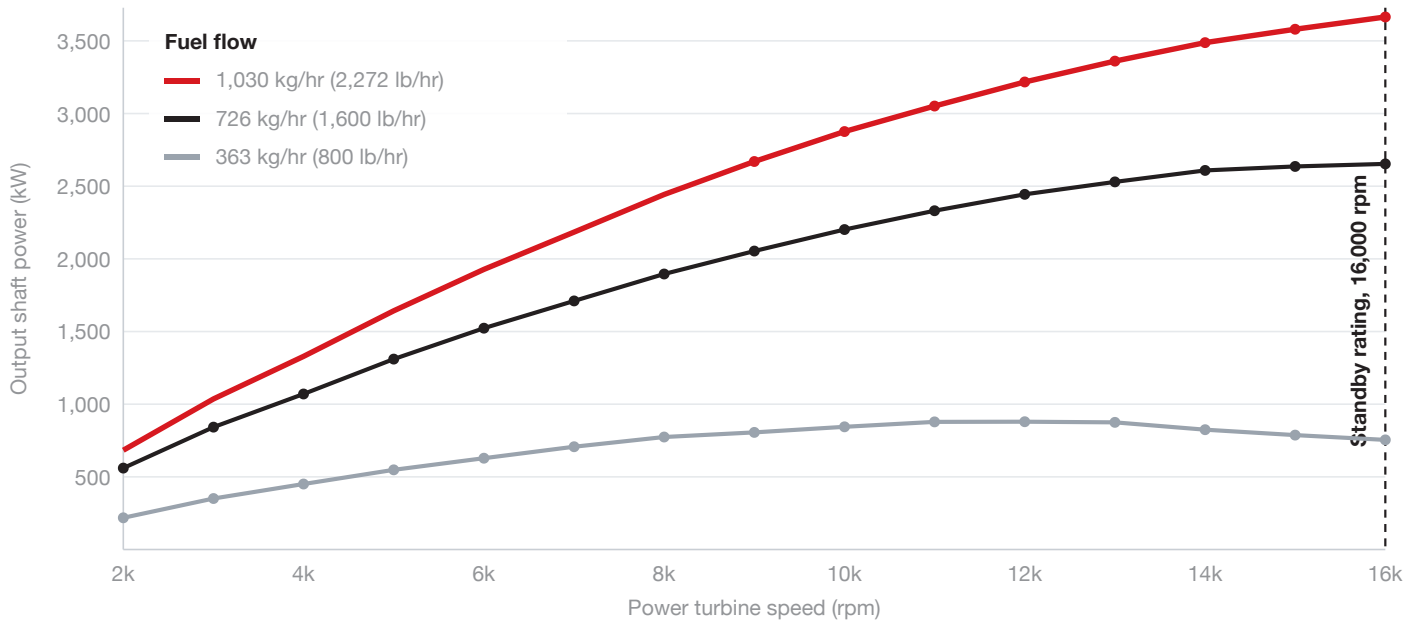
MAGNA-502 TURBINE

Aeroderivative of the Lycoming T55. Shaft figures are turbine output before generator and conversion losses.

Configuration	Two-shaft aeroderivative	Free power turbine
Compressor	7 axial + 1 radial stage	-
Gas producer turbine	2 stages	-
Power turbine	2 stages	Standby rating at 16,000 rpm
Pressure ratio	8.8 : 1	-
Shaft power at 100 % load	3,356 kW (4,500 shp)	Turbine shaft output
Shaft power, maximum	3,450 kW (4,627 shp)	103 % load
Heat rate	12,626 kJ/kWh	11,967 Btu/kWh at maximum rating, per shaft kWh
Thermal efficiency	29.0 %	At maximum rating
Fuel flow	920 kg/hr (2,028 lb/hr)	At maximum rating
Exhaust flow	12.8 kg/s (28.3 lbm/sec)	-
Exhaust temperature	643 °C (1,190 °F)	Suitable for heat recovery

TURBINE OUTPUT

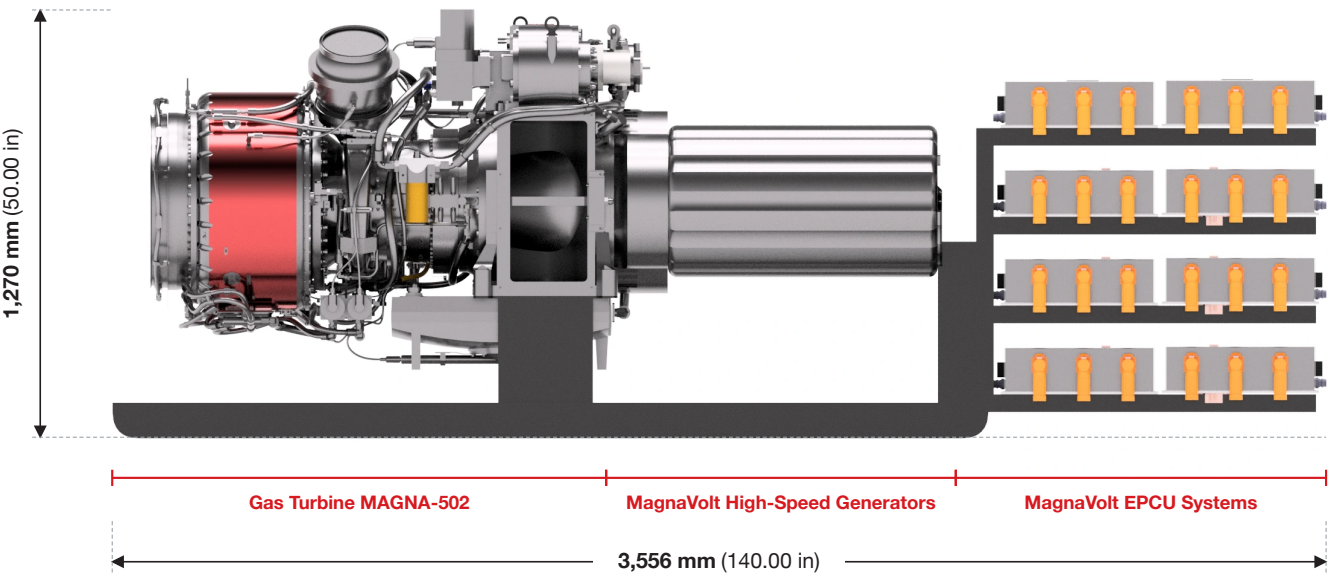
Shaft power against power turbine speed at three fuel flows, from MAGNA-502 engineering data. The 1,030 kg/hr (2,272 lb/hr) curve is interpolated below 9,000 rpm, where source data was not available.



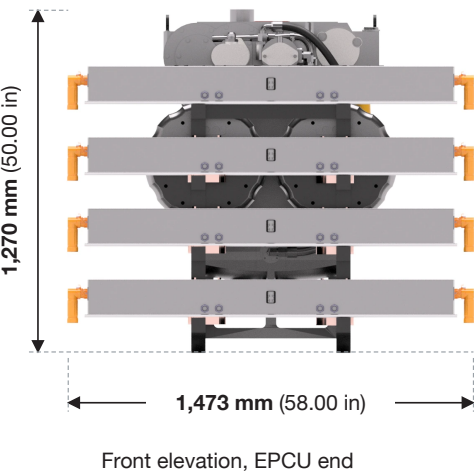
Output climbs with speed at every fuel flow, and the curves converge at low speed where shaft speed rather than fuel sets the limit. At the 16,000 rpm standby rating the machine reaches roughly 3,650 kW (4,900 shp) on maximum fuel.

DIMENSIONS

Complete unit on its skid, drawn to scale. Dimensions are in millimeters, with inches in parentheses.



Side elevation. The three subsystems are independent modules; any one is serviced or swapped without disturbing the others.



Overall length	3,556 mm	140.00 in
Overall width	1,473 mm	58.00 in
Overall height	1,270 mm	50.00 in
Footprint	3,556 x 1,473 mm	140.00 x 58.00 in
EPCU module dimensions	1356 x 445 x 131 mm	53.4 x 17.5 x 5.2 in · per module
EPCU module mass	67 kg (148 lb)	Per module
EPCU modules fitted	8	Four rows, paralleled

Dimensions are for the skid-mounted unit and exclude the intermodal container. Complete-unit mass is still with engineering.

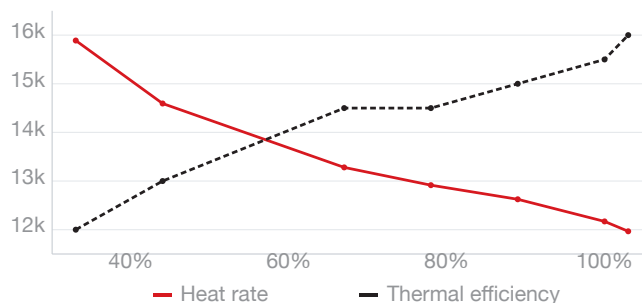
PERFORMANCE & EMISSIONS

MAGNA-502 across the load range. Power and intensity figures are per shaft kWh, before generator and conversion losses.

Load	Shaft power	Fuel flow	Thermal eff.	Heat rate	CO ₂	NO _x	CO
3 %	100 kW · 134 shp	155 kg/hr · 342 lb/hr	5 %	69,619	4.172	4.095	24.695
33 %	1,119 kW · 1,500 shp	396 kg/hr · 873 lb/hr	21 %	15,889	0.952	1.409	2.754
44 %	1,491 kW · 2,000 shp	485 kg/hr · 1,069 lb/hr	23 %	14,595	0.875	1.405	1.311
67 %	2,237 kW · 3,000 shp	662 kg/hr · 1,459 lb/hr	26 %	13,281	0.796	1.542	0.604
78 %	2,610 kW · 3,500 shp	751 kg/hr · 1,656 lb/hr	26 %	12,914	0.774	1.678	0.486
89 %	2,983 kW · 4,000 shp	839 kg/hr · 1,850 lb/hr	27 %	12,624	0.757	1.735	0.433
100 %	3,356 kW · 4,500 shp	910 kg/hr · 2,006 lb/hr	28 %	12,171	0.729	1.695	0.431
103 %	3,450 kW · 4,627 shp	920 kg/hr · 2,028 lb/hr	29 %	11,967	0.717	1.698	0.419

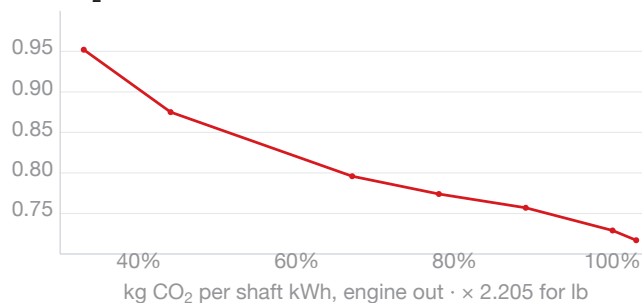
Heat rate in Btu/kWh, × 1.055 for kJ/kWh · CO₂ in kg/kWh, × 2.205 for lb/kWh · NO_x and CO in g/kWh. Emissions are engine-out, without aftertreatment.

EFFICIENCY IMPROVES WITH LOAD



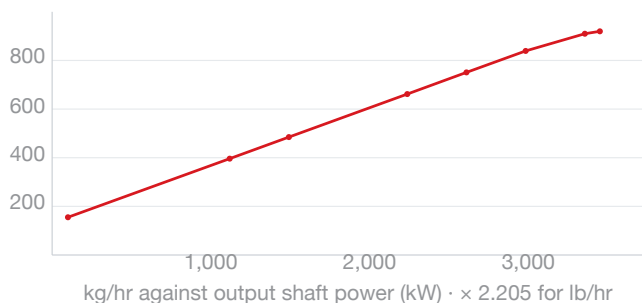
Heat rate falls from 15,889 to 11,967 Btu/kWh between 33 % and full load.

CO₂ INTENSITY FALLS WITH LOAD



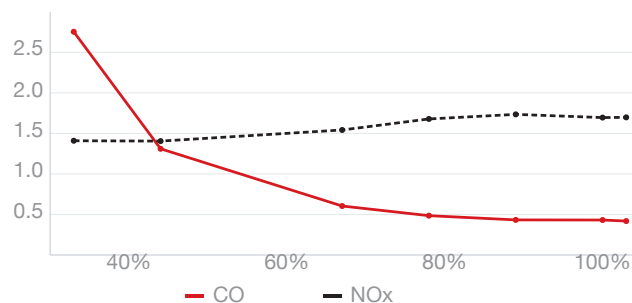
Carbon intensity improves 25 % from part load to the full rating.

FUEL FLOW AGAINST SHAFT POWER



Fuel flow flattens as the rating is approached: the last 95 kW (127 shp) costs only 10 kg/hr (22 lb/hr).

CO AND NO_x AGAINST LOAD



Engine-out g/kWh. CO falls 85 % from part load; NO_x varies little across the band.

Full engineering data package, covering ranges, ratings, site requirements and test data, is available under NDA.