

MULTI-FUEL · OIL-FREE

BluenPower V70

70 kW recuperated microturbine generator

A 70 kW single-shaft microturbine on air bearings with a factory-fitted ACTE recuperator: 35% LHV at full load and one clean exhaust stream at ~190 °C.


70_{kW}

NET ELECTRICAL
OUTPUT

35% LHV

ELECTRICAL
EFFICIENCY, FULL
LOAD

~190 °C

EXHAUST
TEMPERATURE

0.7 kg/s

EXHAUST MASS FLOW

8,000_h

INSPECTION INTERVAL

Manufacturer data (BluenPower, October 2026); ISO conditions, natural gas, LHV. Rating conditions and footnotes on page 2.

STRENGTHS

Manufacturer data; see technical data and footnotes

- ✓ **Oil-free, one rotating part.** Air bearings carry the single shaft of compressor, turbine and generator: no oil, oil pump or liquid coolant.
- ✓ **ACTE recuperator inside.** A factory-fitted ACTE COMPACT primary-surface core takes the V70 to 35% LHV at full load (manufacturer data).
- ✓ **Heat you can use.** One clean, oil-free exhaust stream at ~190 °C and 0.7 kg/s: ≈ 67 kWth recoverable to a ~100 °C stack.
- ✓ **Multi-fuel.** Natural gas, biogas, syngas, biomethane, LPG and propane.
- ✓ **Cooling from exhaust heat.** In the ID units a dry cooler carries the rack (45 → 55 °C water) up to ~36 °C; above that an exhaust-driven NH₃-H₂O trim chiller trims it. The exhaust is never diverted.
- ✓ **Low emissions by design.** NO_x below 9 ppm at 15% O₂ without after-treatment.
- ✓ **Sized for AI racks.** Four V70 (3 + 1) and a 250 kW / 70 kWh battery carry one NVL72-class rack (~140 kW; 170 kW unit load) in the ID-70; N+1 at 35 °C only with intake cooling.
- ✓ **Low maintenance.** One inspection every 8,000 h and a service every 5 years; remote monitoring over 4G / Wi-Fi.

OUTPUT

380–480 VAC · 50/60 Hz

FUELS

Natural gas, biogas, syngas,
biomethane, LPG, propane

L × W × H (MAX) · WEIGHT

2.30 × 1.45 × 2.25 m · 1,500 kg

RECOVERABLE HEAT

≈ 67 kWth to a ~100 °C stack

ELECTRICAL PERFORMANCE ¹		MANUFACTURER DATA
Net electrical output	70 kW	
Efficiency, net (LHV) ⁵	35% at full load, with the ACTE recuperator	
Net heat rate (LHV)	10,286 kJ/kWh (9,749 Btu/kWh)	
Net heat rate (HHV)	≈ 10,800 Btu/kWh (HHV)	
Voltage	380–480 VAC	
Frequency	50/60 Hz	
Electrical service	3-phase, 4-wire	
Operating modes	Grid-parallel; DC bus with battery in the ID units	
Load-step response	Turbine ramp 10–20 s (class); battery covers fast steps	

FUEL AND ENGINE ¹	
Fuels	Natural gas, biogas, syngas, biomethane, LPG, propane
Fuel input	200 kW LHV (≈ 221 kW HHV)
Heat input	0.68 MMBtu/h LHV (≈ 0.75 MMBtu/h HHV)
Fuel flow, natural gas	≈ 20 Nm ³ /h (0 °C, 1.013 bar) · ≈ 760 scfh
Fuel gas supply pressure	≥ 5 psig at the main, with a gas booster (~5% of output)
Thermodynamic cycle	Recuperated Brayton cycle: radial compressor, can combustor, radial turbine
Rotor	Single shaft
Bearings	Air bearings: no lubricating oil, oil pump or coolant
Generator	High-speed permanent-magnet generator (SmCo), air-cooled
Recuperator	ACTE COMPACT primary-surface, counter-flow, all-stainless welded; factory-fitted
Power electronics	Start inverter, high-voltage rectifier and grid-tie inverter with automatic synchronization

EXHAUST AND HEAT RECOVERY ¹	
Exhaust gas temperature	~190 °C (374 °F)
Exhaust mass flow ³	0.7 kg/s (1.54 lb/s)
Recoverable heat ⁴	≈ 67 kWth (exhaust ~190 °C → ~100 °C stack)
Total CHP efficiency (LHV) ⁴	≈ 68% = (70 + 67) ÷ 200 kW, heat to a ~100 °C stack
Stack	~100 °C (single stack); exhaust never diverted
Cooling ⁶	ID units: dry cooler + exhaust-driven NH ₃ -H ₂ O trim chiller

EMISSIONS	
NOx, ppmvd at 15% O ₂	< 9 ppmvd at 15% O ₂
NOx at 0.07 lb/MWh ⁷	0.0049 lb/h · 0.021 short tons/yr (0.019 t/yr) at 8,760 h
Heat input, NSPS	≈ 0.75 MMBtu/h HHV, 13.2× below the 10 MMBtu/h KKKKa trigger
Oil	None (air bearings)

AMBIENT CONDITIONS	
Output at 35 / 40 °C	≈ 57 / 54 kW (class derate ~18% / ~22.5%); ≈ 55 / 52 kW net of the gas booster
Hot day, N+1 case	Intake air cooled to 15 °C: ISO rating restored (≈ 66 kW net of the booster)

PHYSICAL ²	
Length × width × height	2.30 × 1.45 × 2.25 m (91 × 57 × 89 in), max
Weight, dry	1,500 kg (3,307 lb)
Enclosure	Steel on rails; side door; top flange; all connections behind a closed end panel

MAINTENANCE AND CONTROLS	
Service intervals	Inspection every 8,000 h; service every 5 years (manufacturer)
Controls and monitoring	PLC-based controls; remote monitoring and HMI over 4G / Wi-Fi

(1) Nominal full-load performance at ISO 3977-2 reference conditions: 15 °C (59 °F) ambient, 101.325 kPa (14.696 psia, sea level), 60% relative humidity; natural gas fuel; LHV basis; no inlet or exhaust pressure losses; net of internal parasitic loads; no fuel-gas compressor.

(2) Approximate dimensions and weight, dry, without fuel-gas booster or heat-recovery unit. Dimensions: maximum enclosure envelope, height incl. the exhaust flange. (3) Manufacturer data (BluenPower, October 2026) at full load. (4) Exhaust heat between ~190 °C and a ~100 °C stack, from the exhaust flow and the heat per kg/s of the Bluen unit balance (200 kWth for 2.1 kg/s).

(5) Manufacturer data (BluenPower, Oct 2026): full load, ISO, LHV, factory-fitted ACTE recuperator. In the ID units the turbines run at part load: 29.2% LHV (ID-200) and 31.2% (ID-70) in normal mode. (6) ID units: the rack loop (45 → 55 °C) rejects its heat through a dry cooler (~6 kW of fans and pumps) up to ~36 °C ambient; the exhaust-driven NH₃-H₂O trim chiller (COP 0.55–0.70) covers hotter hours, the container air and, with one turbine down, the intake air. Single-effect absorption COP ≈ 0.65–0.7 [3, 4]; ammonia-water machines reject heat to air, no tower or water [5]. (7) Calculated at the CARB DG certified-microturbine rate of 0.07 lb/MWh, full load, 8,760 h/yr.

Ratings are manufacturer data (BluenPower, October 2026) at the rating conditions above. Specifications subject to change without notice.

FUEL FLEXIBILITY

STANDARD ON REQUEST

 Natural gas STANDARD	 Biomethane (RNG) STANDARD	 Biogas, $\geq 50\% \text{ CH}_4$ ($\geq 18 \text{ MJ/Nm}^3$) STANDARD
 LPG / propane STANDARD	 Syngas STANDARD	 Wellhead / flare gas ON REQUEST

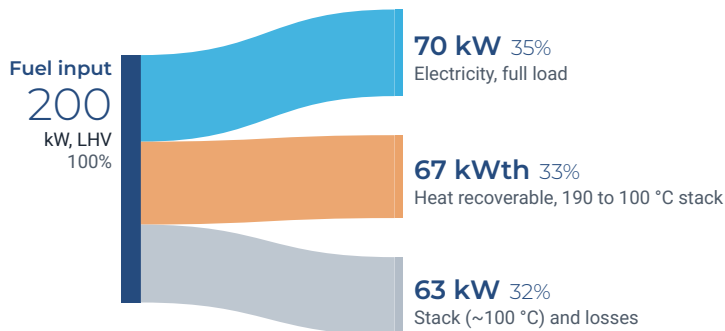
Fuel treatment for biogas and landfill gas (H_2S , siloxanes, moisture) depends on the site. "On request" fuels are assessed per application.

APPLICATIONS

 AI and edge compute Power plus exhaust-driven cooling for GPU racks	 CHP / CCHP buildings Hotels, commercial buildings	 Critical facilities Hospitals, data centers, backup	 Industry Process heat and power, agribusiness
 Oil and gas Wellhead and associated gas	 Biogas and landfill Farms, wastewater, landfill sites	 Remote and telecom Off-grid sites and towers	 Microgrids Grid backup, stability, islanding

COMBINED HEAT AND POWER, AND COOLING

Energy balance at full load, ISO, natural gas, LHV



Every kilowatt of fuel is accounted for. At full load the V70 turns 35% of its fuel into electricity (manufacturer data). The rest leaves in one clean exhaust stream at ~190 °C; $\approx 67 \text{ kWth}$ of it can be recovered down to a ~100 °C stack, for total CHP efficiency $\approx 68\%$.

In the Bluen units for AI racks the rack is cooled by a dry cooler on 45 $\rightarrow$ 55 °C water, which carries it on its own up to ~36 °C ambient with ~6 kW of fans and pumps. The exhaust drives an ammonia-water trim chiller (~126 kW in the ID-70) that trims the rack loop on hotter days, cools the container air and, with one turbine down, cools the intake air of the other.

The exhaust always passes through the chiller generator to a single stack at ~100 °C; it is never diverted, so cooling costs no electrical efficiency. No cooling tower, no water.

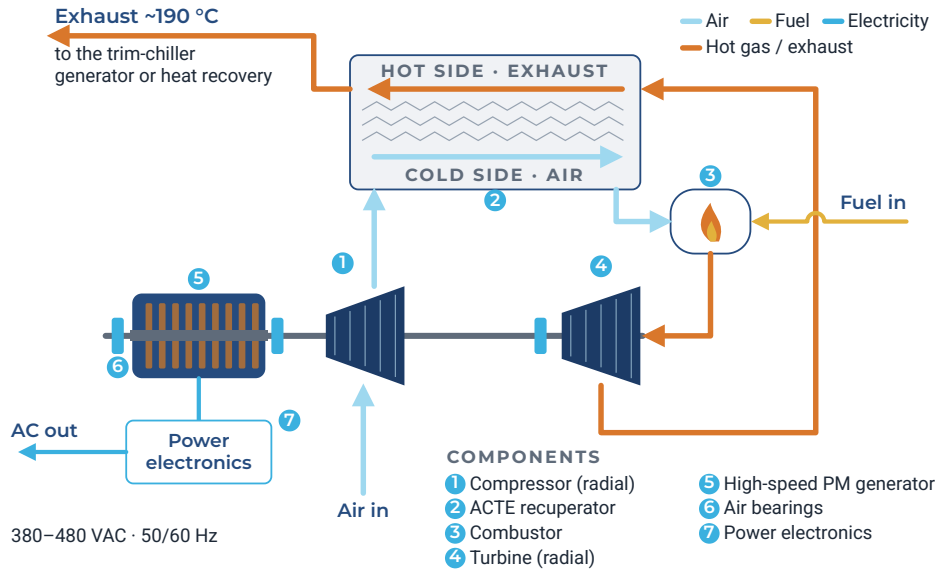
WHY MICROTURBINES FOR DISTRIBUTED POWER

Technology-class facts, sources on page 4

- ✓ **One moving part.** Compressor, turbine and generator share a single high-speed shaft, which reduces maintenance needs [1].
- ✓ **Low emissions without after-treatment.** Microturbines typically emit below 9 ppm NO_x at 15% O_2 , and all attainment and most non-attainment areas present no air-siting challenge [2].
- ✓ **All recoverable heat in one stream.** One clean exhaust makes hot water, steam or chilled water [2].
- ✓ **Modular by nature.** Units run in parallel for capacity and N+1 reliability [1, 2].
- ✓ **Fast start, wide fuel range.** Typically full capacity in under 2 minutes; natural gas, propane, landfill and digester gas [2].
- ✓ **The honest trade-off.** Microturbines have lower electric efficiency than reciprocating engines, but less noise and vibration and a compact footprint [2]. Bluen's answer is to use the exhaust heat.

HOW IT WORKS

Recuperated single-shaft Brayton cycle (schematic)



Air is compressed and pre-heated in the ACTE recuperator by the turbine exhaust, burned with fuel, and expanded through the turbine, which drives the compressor and the high-speed generator on one shaft carried by air bearings. Power electronics convert the high-frequency output for the AC grid or a DC bus. The exhaust leaves the recuperator at ~190 °C, ready for heat recovery or the generator of an absorption trim chiller.

HOW BLUEN MAKES IT HAPPEN

The recuperator is the efficiency lever. Recuperators can more than double a microturbine's electrical efficiency [1]; the factory-fitted ACTE recuperator takes the V70 and V200 to 35% LHV at full load. ACTE (Belgium, 1998) makes COMPACT recuperators for 25 kWe–1.5 MWe microturbines.

Heritage. ACTE recuperators are used on several hundred microturbines worldwide.

Engineering and manufacturing. Bluen has designed microturbines since 2017, with the main components made in-house in Ciudad del Este, Paraguay.

Two power classes. The V70 serves loads of tens of kW; the V200, the evolution of the V70, serves loads of hundreds of kW, such as data centers.

INTEGRATION OPTIONS

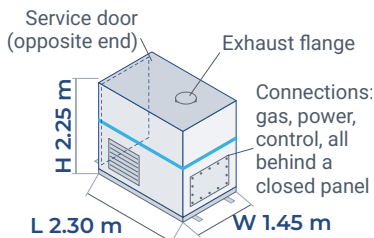
- ACTE exhaust-to-water heat-recovery unit
- Exhaust-driven NH₃-H₂O trim chiller with dry cooler (Bluen ID units)
- Battery on a DC bus for fast load steps and ride-through
- Remote monitoring and HMI over 4G / Wi-Fi (standard)
- Multi-unit N+1 controls
- Fuel-gas booster for low-pressure mains (~5% of output)

Scope and availability per project. Options other than remote monitoring are engineered to order.

DIMENSIONS

V70 max envelope, L × W × H

Weight 1,500 kg (3,307 lb)
H includes the flange



SOURCES

1. US EPA, *Catalog of CHP Technologies*, Section 5: Microturbines, 2015 (rev. 2017). epa.gov/sites/default/files/2015-07/documents/catalog_of_chp_technologies_section_5_characterization_-_microturbines.pdf
2. US DOE, *CHP Technology Fact Sheet: Microturbines*, DOE/EE-2882, Jun 2024. betterbuildingssolutioncenter.energy.gov/sites/default/files/attachments/CHP_Microturbines.pdf
3. CIBSE CHP Group, *Datasheet 07: Absorption cooling*, Feb 2012. cibse.org/media/e3kbrabr/datasheet-7-absorption-cooling.pdf
4. US DOE, *CHP Technology Fact Sheet: Absorption Chillers*. betterbuildingssolutioncenter.energy.gov/sites/default/files/attachments/CHP_Absorption_Chillers.pdf
5. Review of small-capacity absorption technology, including microturbine-driven, air-cooled ammonia-water chillers. scispace.com/pdf/review-on-absorption-technology-with-emphasis-on-small-3kt6kxgk65.pdf



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Ruta PY02 Km 11.5, Zona Franca Global, Ciudad del Este, Paraguay

For distributed AI inference units, see the brochure BP-BR-INF-EN.

Ratings are manufacturer data (BluenPower, October 2026) at the rating conditions on page 2. Specifications subject to change without notice.

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