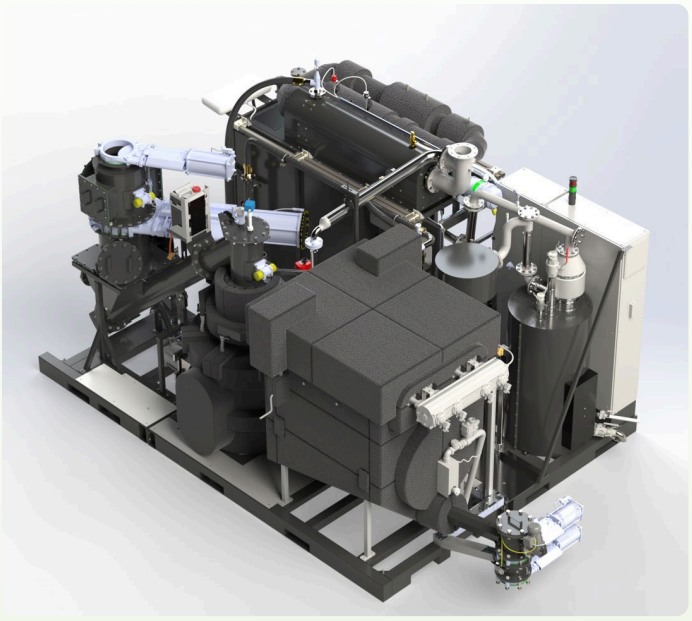
Datasheet and product information

Wood Gas CHP Plant · FLOYD CHP F60 TC

FLOYD BioEnergy FlexCo · Bengerstraße 1, 9112 Griffen · Austria · office@floyd-bioenergy.at



80 kW
ELECTRICAL OUTPUT (NET)

158 kW
THERMAL OUTPUT

28 %
ELECTRICAL EFFICIENCY

~91 %
FUEL EFFICIENCY (EL + HEAT + BIOCHAR)

1 PERFORMANCE DATA

Electrical Output (net)	80 kW[1]
Thermal Output	158 kW[1]
Electrical Efficiency	28 ± 1 %[2]
Thermal Efficiency	~55 %[2]
Biochar Efficiency	~8 %[3]
Fuel Thermal Input	Approx. 288 kW[2]
Fuel Efficiency (Electricity + Heat)	~83 %[4]
Fuel Efficiency (El. + Heat + Biochar)	~91 %[4]
Annual Electricity Production	Approx. 656 MWh/a[4]
Annual Heat Production	Approx. 1,296 MWh/a[4]
Annual Biochar Production	Approx. 189 MWh/a (~20.5–25.4 t/a)[4]

Power reduction (on customer request): electrical output can be reduced to approx. 45–50 kW.

Power modulation & reactive power compensation: via ABB four-quadrant frequency converter (CHP power control, power-factor control, reactive power compensation, fault-ride-through).

Altitude (reference only): power reduction with altitude is partially compensable via flexible engine speed — site-specific details per project.

[1] Net electrical and thermal output, dependent on wood chip quality and mode of operation.

[2] Projected turbo-operation values. Efficiencies calculated on a fuel thermal input of approx. 288 kW (62.5 kg/h at the wood chip standard's as-received net calorific value of approx. 4.60 kWh/kg / 16.6 MJ/kg). Electrical efficiency referenced to 25 °C charge-air-cooling return temperature; thermal and fuel efficiency pending final R&D validation.

[3] Biochar on an energy basis, consistent with ~4–5 % mass yield; may vary with the wood chips used.

[4] Referenced to 8,200 h/a at rated load (fuel thermal input approx. 2,358 MWh/a, approx. 512 t/a of wood chips). Fuel efficiency at rated load is independent of operating hours; annual quantities scale with them. Heat production is the recoverable thermal energy — the share actually used depends on the site's heat demand profile.

2 CONSUMPTION / OPERATING REQUIREMENTS

Fuel	Wood chips per the "FLOYD BioEnergy Wood Chip Standard"
Wood Chip Consumption	Approx. 62.5 ± 2 kg/h at 80 kW (η_{el} turbo 28 ± 1 %)
Biochar Production	~4–5 % of wood chip input by weight; ~2.5–3.1 kg/h at 62.5 kg/h
Engine Oil	< 3 l/day (6-cylinder engine)
Oil Volume	30 l storage tank with automatic refill + 30 l reserve tank

3 EMISSIONS

Noise Emissions	<71 dB(A) at 1 m from the unit (inside plant room)
Exhaust Gas Temperature	<150 °C (302 °F) after heat exchanger (AGWT)
NO_x	<250 mg/Nm³ (at 5 % O_2, standard TWC)
CO	<650 mg/Nm³ (at 5 % O_2, standard TWC)
Dust	<10 mg/Nm³
Exhaust After-Treatment	Standard: three-way catalyst (TWC) · Option A: TWC + oxidation catalyst (OC) · Option B: exhaust gas recirculation (EGR, derating)

4 GASIFIER UNIT

Type	Fixed-bed downdraft wood-gas gasifier
Ignition	Automatic
Biochar Discharge	Automatic
Gas Filter Unit	Two-stage filter system

5 INTERNAL COMBUSTION ENGINE

Design Type	6-cylinder in-line engine, turbocharged
Engine Speed	Flexible (power modulation & altitude compensation)
Charge-Air Cooling	Cooler cooling required; each unit connected to a central external recooler

6 GENERATOR

Design Type	Asynchronous (induction) generator, grid feed-in via ABB four-quadrant frequency converter
Function	Reduced starting power, CHP power control, power-factor control, reactive power compensation, fault-ride-through
Electrical Connection (IEC)	400 V, 3-phase, 3-wire + PE, 50–60 Hz · Protection 200 A (aR)
Electrical Connection (UL/CSA)	380–500 V, 3-phase, 3-wire + PE, 50–60 Hz · Protection 200 A (Class T)
Cos φ	Controllable via frequency converter (power-factor control)

7 CONTROL

CHP Control	Beckhoff industrial control system
Plant Control Cabinet	Controls and supplies conveying and drying systems, provides auxiliary power to the CHP units and manages plant energy. Size depends on the number of CHP units.
Electrical Connection – Plant Control	3-phase, 4-wire + PE · IEC 230/400 V 50 Hz, UL/CSA 480Y/277 V 60 Hz · Protection 32 A auxiliary supply plus additional current for external conveyors/dryers (main distribution and grid connection on-site)
Connectivity	4G internet connection integrated in the plant control cabinet; eSIM available from FLOYD

8 EXHAUST SYSTEM

Exhaust Connection	DN150 (NPS 6) at 3.0 m
Flow Rate	approx. 424 Nm³/h (wet)
Outlet Temperature, max.	<150 °C (302 °F)
After-treatment	Standard TWC · Option A TWC+OC · Option B EGR
Heat Exchanger	Shell/tube heat exchanger (AGWT)
Muffler	Multi-chamber muffler
Duct	Length and design project-specific

9 HEATING OUTLET

Supply (Flow) Temperature	Max. +95 °C (200 °F)
Return Flow Temperature	Min. +45 °C (110 °F) – Max. +65 °C (150 °F)
Flow Rate	4.5 m³/h (1,190 US-gal/h)
Connection	DN50, 2" (NPS 2) threaded or DN50/PN16 flange, at 2.25 m
Pressure	Max. 7 bar (100 psi)

10 INTERFACES / CONNECTIONS

Wood Chip Inlet	DN300 (NPS 12), slide gate at 2.58 m
Biochar Outlet	DN200 (NPS 8), slide gate at 0.35 m
Compressed Air – Dehumidified	Min. 80 l/min at 8 bar, connection G½" (with OC: min. 200 l/min at 8 bar)
Charge-Air Cooling / Recooler	Connection to a central external recooler (project-specific)
Exhaust Connection	DN150 (NPS 6)

11 DIMENSIONS

CHP Length	6.1 m (20 ft) – excl. service area
CHP Width	3.6 m (11.8 ft) – excl. service area
CHP Height	2.9 m (9.5 ft)
Weight	Approx. 8.6 t (9.48 short tons)
Footprint	Approx. 55 m² (592 ft²) – single unit
Recommended Service Area	1.5 m (5 ft) around the unit

12 PLANT LAYOUT EXAMPLES

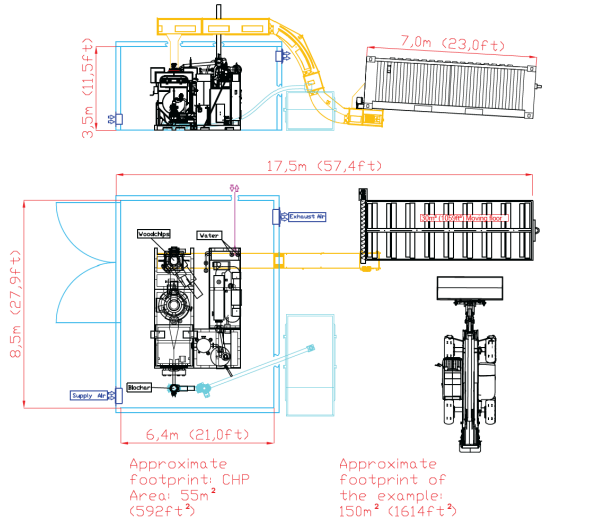


Fig. 1 — Single-unit layout example: CHP footprint approx. 55 m² (592 ft²), example plant approx. 150 m² (1,614 ft²).

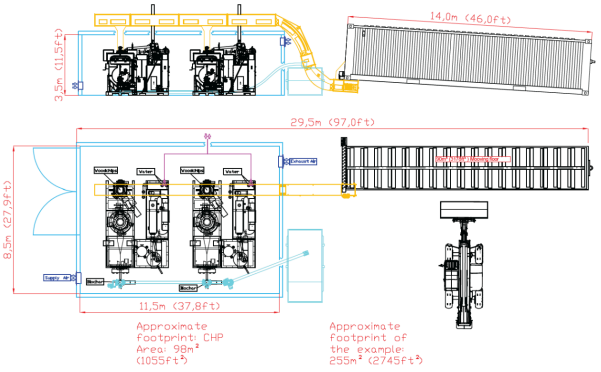


Fig. 2 — Two-unit layout example: CHP footprint approx. 98 m² (1,055 ft²), example plant approx. 255 m² (2,745 ft²).

Note on the drawings: original labels — Woodchips, Water, Supply Air, Exhaust Air, Biochar, Moving floor. Dimensional drawings available upon request.

13 INSTALLATION REQUIREMENTS

Air Change (Ventilation)	5,000 m³/h at an average outdoor temperature of 25 °C – project-specific
Ambient Temperature at the CHP	Min. 5 °C (40 °F) – Max. 40 °C (100 °F)
Floor	Level, reinforced concrete / foundation slab
Electric Connection	200 A generator protection · 32 A auxiliary supply protection
Connectivity	4G internet connection integrated (eSIM available from FLOYD)
On-site Equipment	Forklift and auxiliary tools must be available

14 LOGISTICS

Lead Time	Approx. 6 months after order confirmation
Shipping Costs	Depending on project location

15 COMMISSIONING / INSTALLATION

Performed by	FLOYD BioEnergy
Time Required	Approx. 6–12 man-days depending on site conditions

16 SAFETY

Negative Pressure System	Operates under negative pressure; in case of a leak air is drawn in, preventing wood gas from escaping
CO Monitoring	Pre-installed and calibrated CO detector
Fire Suppression	Feed system with quench tank that floods the feed line on flashback/backfire

17 SUPPORT

Support System	Ticket-based support in various optional packages
Pricing	See price list

This printout is not subject to revision/change control. © FLOYD BioEnergy FlexCo.