

Photo Report

MAN ENGINE | POWER GENERATION PLANT

We present a thermal power plant located in the Northern Region of Brazil, in an advanced stage of implementation. It is equipped with seven MAN Energy Solutions model 18V 3240 engines, along with their corresponding power generation equipment and packing list (see slide 9,10 and 11). These engines are globally recognized for their robustness, efficiency, and reliability in power generation.

The project features an installed capacity of 51 MW, has reached 70% completion of construction works, and all materials have already been acquired, with the equipment in perfect condition. The connection to the 69 kV electrical grid has already been approved, which significantly reduces risks, additional costs, and the timeline for the start of commercial operation.

MAN ENGINE | POWER GENERATION PLANT

EQUIPMENT HIGHLIGHTS

- Manufacturer: MAN Energy Solutions – a global benchmark in engine technology
- Application: Stationary power generation
- Operation: Ideal for continuous operation or as a backup power source
- Technology: Engineered for maximum thermal efficiency and low specific fuel consumption
- Durability: Robust construction, high service life, and minimal downtime requirements
- Maintenance: Easy to maintain with wide parts availability

MAIN BENEFITS

- Reduced operating costs
- High reliability even under demanding conditions
- Stable power supply
- Internationally recognized technology
- Excellent lifecycle cost-effectiveness

REPORT

01

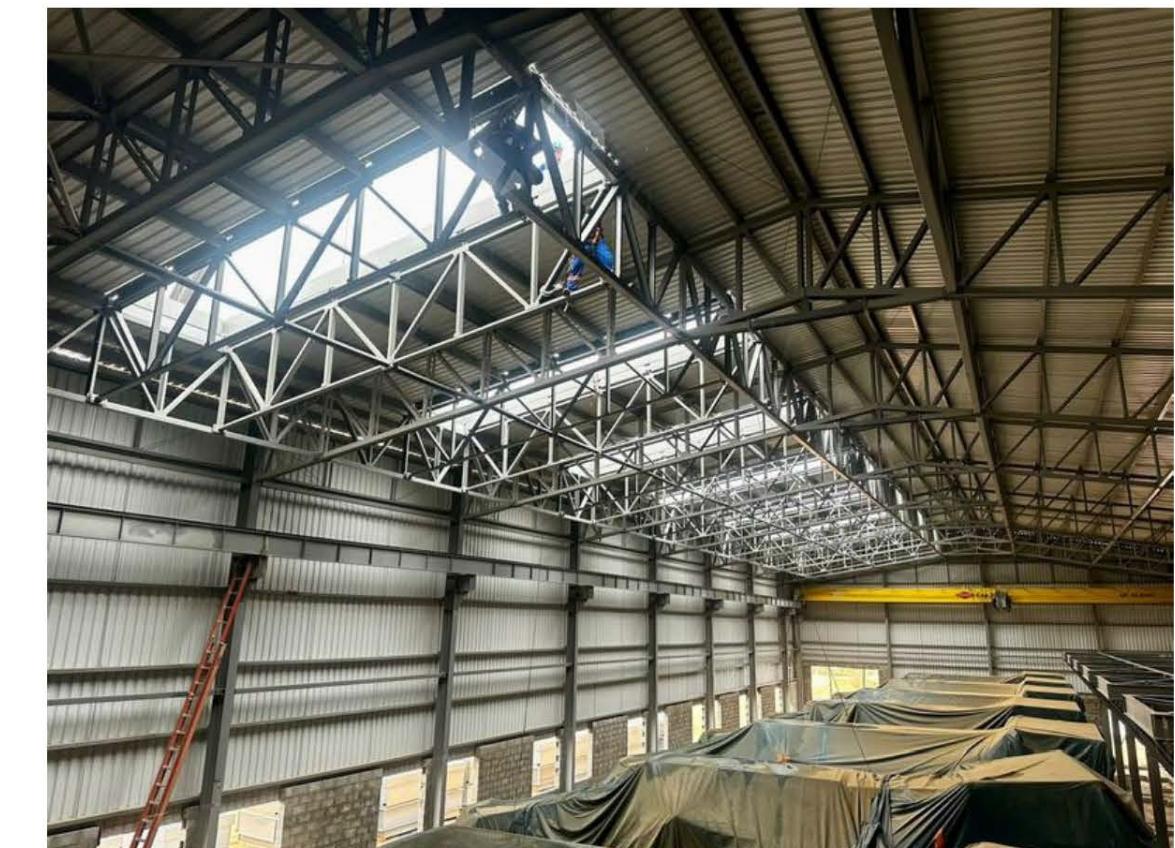
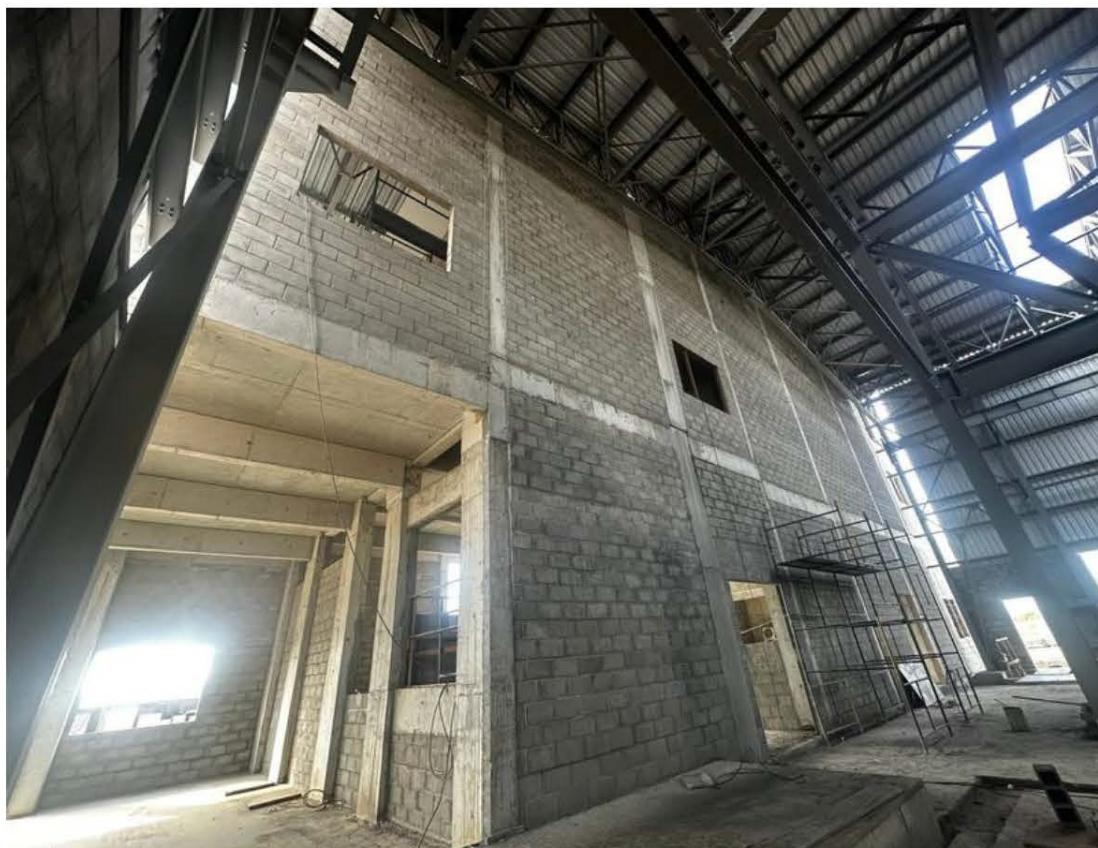
POWER PLANT OVERVIEW



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MACHINE HOUSE INTERIOR VIEW



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POWER HOUSE VIEW



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04

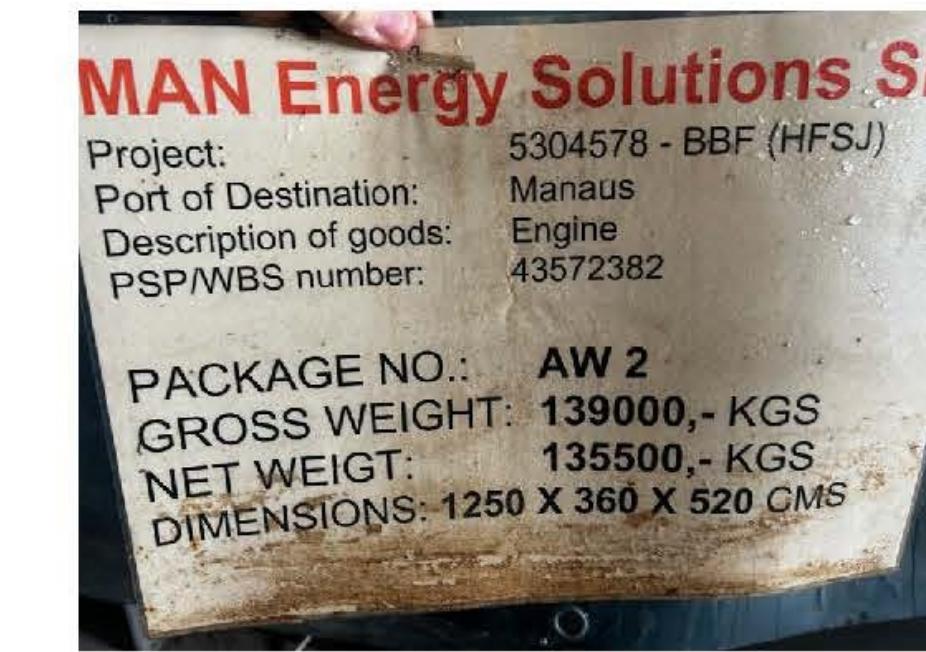
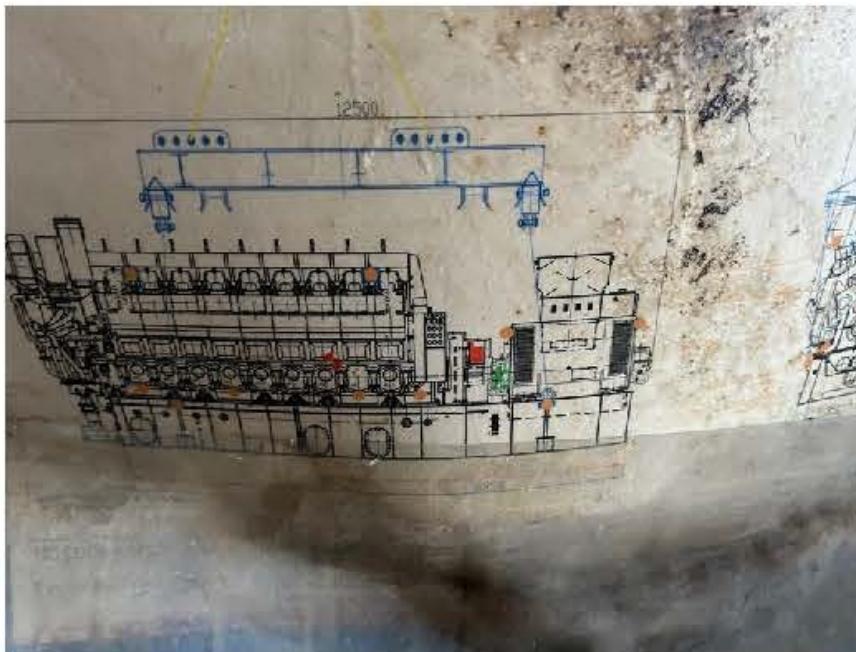
ENGINES VIEW



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ENGINES VIEW



ATTACHED I

NCM	Qty	Unit	Technical Description (English)
84137090	2PCS		FD-4022 – Multistage centrifugal pump, model MP11/2 NR, 1 HP, 3500 RPM
84136011	2PCS		FD-5000 – Gear pump, model MKCB-960, 4 in, with mechanical seal and valve, 25 HP, 1150 RPM
84136011	2PCS		FD-5024 – Gear pump, model MKCB-960, 4 in, with mechanical seal and valve, 25 HP, 1150 RPM
84136011	1PCS		FD-5043 – Gear pump, model MKCB, 3 in, with mechanical seal and valve, 15 HP, 1750 RPM
84137010	1PCS		ET-8000-A – Submersible centrifugal pump, model MTSB-120, 0.5 HP, 3500 RPM, 220 V
84137010	1PCS		ET-8000-A – Submersible centrifugal pump, model AMB-S 80WQ40-15-3, 3 kW, 3500 RPM, 440 V
***	7SET		MAN 18V32/40 generating set with Hyundai alternator HAR7 189-1028, 13.8 kV, 720 RPM, 60 Hz, 10.9 MVA, including electrical and mechanical auxiliaries
84212100	1PCS		Simplex strainer, nodular castiron, DN 6 in, 150 lb RF, mesh M150, Viton seals
84212100	1PCS		Simplex strainer, nodular castiron, DN 8 in, 150 lb RF, mesh M60, Viton seals
84212100	1PCS		Simplex strainer, nodular castiron, DN 4 in, 150 lb RF, mesh M100, Viton seals
20020020			
-1	7UNIT		Engine support
02002005			
0-1	7UNIT		Engine support
20030025	7UNIT		Anti-vibration mounts for engine with conical elements, including supports, rubber elements, lower parts, stud bolts and foundation bolts
20030080	14UNIT		Engine alignment bolts
20030090	7UNIT		Piping adapters
02502001			Three-phase synchronous alternator with welded steel stator frame, electrical steel laminated core, forged steel shaft rotor, self-ventilated, IP23 protection, 10,935 kVA, 13.8 kV, 60 Hz, power factor
0-1	7UNIT		0.8
02502005			
0-1	7UNIT		Digital automatic voltage regulator (AVR) Basler DECS-200, accuracy <0.25%, PID control, frequency limiter, paralleling compensation, MODBUS TCP interface
02503001			
0-1	7UNIT		Common base frame for engine and alternator, used as lubricating oil tank
02503004			
0-1	7SET		Alternator foundation bolt set
25030050	7UNIT		Foundation seating structure with stops, leveling bolts, grouting material and soft rubber
02503501			
0-1	7UNIT		Accessories and base frame assembly including turning gear, terminal boxes, piping and cabling assembled in workshop
02503506			
0-1	7UNIT		Lubricating oil tank level monitoring system
03002001			
0-1	7UNIT		Lubricating oil module with heat exchanger, automatic filter, priming pump, temperature control and terminal box, fully piped and wired
30020050	7UNIT		Lubricating oil pressure control valve
30020150	7UNIT		Lubricating oil replenishment module with screw-type flowmeter and solenoid valve
30020160	7UNIT		Self-cleaning lubricating oil separator module with control cabinet, temperature control, electric heater, sludge collector, pump and oil recovery unit
30030015	7SET		Cooling water preheater assembly, continuous flow, temperature limiter and control cabinet
30030035	7UNIT		Free-standing cooling water pump, capacity 30 m ³ /h, electric motor
30030040	7UNIT		HT cooling water temperature control valve with electric actuator and Pt100 resistance thermometer

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30030060	7UNIT	Cooling water expansion tank with dual compartments for HT and LT circuits, 500 L / 250 L, mechanical level indicator
30040063	7UNIT	Charge air temperature control valve (CHATCO)
030050010		
-1	7UNIT	Dual-circuit radiator system with electrically driven induced draft fans, galvanized steel structure, copper tubes, aluminum/GRP fins
30110140	7UNIT	Fuel oil booster module with mixing tank, booster pumps, cooler, duplex filter, pressure compensation tank, flowmeter and control cabinet
030120010		
-1	7UNIT	Intake air filter unit with weather protection, droplet separator, dry filters, 40 dB(A) noise attenuation and differential pressure transmitter
30130020	7UNIT	Expansion joint downstream of turbocharger, assembly with two joints per engine
40010030	2UNIT	Lubricating oil transfer pump, capacity 3 m ³ /h, electric motor, for transfer from storage tank to service tank
40040010	1UNIT	Cooling water collection tank, capacity 3000 L, mechanical level indicator
40040020	1UNIT	Make-up water pump module with one pump, capacity 3 m ³ /h, electric motor and expansion vessel
40050160	3UNIT	Leak oil module with 250 L tank, level indicator, two discharge pumps and terminal box for engine and fuel oil module leakage collection
40060050	1UNIT	Diesel fuel filling pump module with two pumps (duty + standby), capacity 22 m ³ /h each, electric motor, dirt filter and safety valve
40060080	1UNIT	Duplex diesel fuel filter, 0.025 mm mesh, with differential pressure contact indicator
40060095	1UNIT	Diesel fuel pressure limiting valve for fuel supply line installation
40070010	2UNIT	Starting air receiver, 2500 L capacity, 30 bar working pressure, with valves, supports and restraints, capacity for four engine starts
40070030	2UNIT	Automatic condensate drain system for starting air receiver
40070040	1UNIT	Air compressor module with two compressors (one standby), 30 bar, 100 m ³ /h each, intake filter, coolers, oil/water drains and electromagnetic drain
040073005		
-2	1UNIT	Control air module with screw compressor, pressure reducer 30/10 bar, oil/water separator, desiccant air dryer, filter bypass, reservoir and two reducers 10/8 bar
40073020	1UNIT	Control air buffer tank, 150 L capacity, maximum pressure 11 bar, vertical galvanized tank, safety valve, pressure gauge and condensate drain valve
040083010		
-1	7UNIT	Powerhouse inlet ventilation module with two units, high-efficiency fans, 20 dB noise attenuation, G3 bag filters, rainproof housing and gravity louvers
40086030	7UNIT	Powerhouse exhaust ventilation unit, roof-mounted, weather-protected
40087010	1UNIT	Compressor room inlet ventilation unit
060005010		
-1	7UNIT	Exhaust gas silencer with vertical tailpipe for outdoor installation, 25 dB(A) attenuation, pressure loss <10 mbar, S235JR material, supports and base plate
070010-1	7UNIT	Engine Control Panel (ECP), interface between generating set and GCP, floor-mounted with plinth, 2000 x 2200 x 600 mm, air-conditioned, UPS 230 V, IP54
070020-1	7UNIT	Generator Control Panel (GCP), generator control, protection and supervision, floor-mounted, 800 x 2100 x 600 mm, ventilation fans, digital protection relay, PLC S7-400
070030-1	1UNIT	Common Control Panel (CCP), plant equipment control and supervision, transformer protection and synchronization, 2400 x 2100 x 600 mm, ventilation fans, PLC S7-400H
070039010		
-1	1UNIT	Remote Access Unit (RAU), Internet communication, wall-mounted, 300 x 300 x 210 mm, IP54, remote access selector switch, 24 VDC supply from CCP
070040010		
-1	1UNIT	SCADA system, HMI interface with servers, two UPS, four servers, GPS, KVM console, network, RAID 6 x 600 GB, three operator stations with two 27 in monitors each
70090010	1UNIT	CoCoS-EDS engine diagnostic system with two PCs, monitors, keyboards, printers, data logging software, trending and diagnostic functions
70090015	1UNIT	Connection cables between EDS Databox and CoCoS-EDS hardware
080050010		
-1	7UNIT	Engine Auxiliary Panel (EAP), LV sub-distribution, MCC for generator auxiliaries, 2400 x 2200 x 600 mm, air-conditioned, IP54, ET200M peripherals

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08005002			
0-1	1UNIT	Common Auxiliary Panel (CAP), LV sub-distribution for plant auxiliaries not related to generating set, 2400 x 2200 x 600 mm, air-conditioned, IP54, ET200M	
08005005			
0-1	7UNIT	Radiator Panel (ERP), LV sub-distribution for radiator auxiliaries, radiator area installation, 2400 x 2200 x 600 mm, ventilation fans, IP54	
08005013			
0-1	1UNIT	AC Distribution Panel (ACDP), supply for internal lighting, HVAC and socket outlets for all electrical panels, 800 x 2100 x 600 mm, ventilation fans, IP42	
13002101			
0	7UNIT	Free-standing engine service platform with floor plates, guardrails, ladder and fasteners	
17001001			
0-1	3SET	Three complete sets of basic technical documentation for generating set and equipment, hard copy: operation manuals, instructions, spare parts catalog, acceptance certificates and drawings	
15010010	1SET	Standard and special tool set for engine, including basic, hydraulic, measuring, injection, governor tools and component assembly/disassembly devices	
15010020	1UNIT	Crankshaft web deflection measuring device	
15010080	1UNIT	Electric valve cone grinding tool for exhaust valves, HUNGER brand	
15010090	1UNIT	Electric valve seat grinding tool for intake and exhaust valves, 115 VAC	
01501011			
0-1	1UNIT	Electronic ignition pressure gauge HLV-2000	
15010130	1UNIT	Manual programming unit for speed governor	
15010182	1UNIT	Cylinder head assembly and turning device	
15010370	1SET	Turbocharger tool set, including two locking and closing device sets	
15020010	2SET	Turbocharger spare parts set NR34/S, including seals, sealing rings, sealing disc, bolts, nuts and washers	
15020020	1UNIT	Standard engine spare parts box, type 32/40, including piston rings, valve seats, valve guides, valves, solenoids, pump elements, injection nozzles and pipes	
15020070	1UNIT	Spare parts for engine operation and monitoring	
15020150	1UNIT	MAN spare parts for external monitoring system	
15020170	1UNIT	Spare parts for oil mist detector	
15030010	1SET	Special alternator tool set, including torque multiplier and socket wrench	
15030090	1UNIT	Mobile automatic lubricating oil filter cleaning unit, including tank, high-pressure pump, protection filter, microfilter, cleaning gun and cleaning fluid	
01504002			
0-1	1SET	Alternator spare parts set, including diodes and varistors, air filter assembly and Pt100 sensors for each bearing type	