



Document Name :	Equipment List	Revision history :	R3
Document number :	ED002_ENG_BOQ_001	Originator :	Darius Boshoff
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Section:	All		

#Type	#	Name	Size	PFD No	Type
Waste receiving and processing					
C	01	Feed hopper conveyour	30m3/hr, 2,2 m3	1	Double or Single Screw - angled Stainless Steel
C	02	Picking conveyour	30m3/hr, 0.5 m/s	1	Elevated (4 chutes)
C	03	Magnet and conveyour	for pieces >0.01 kg	1	Perpendicular
P	01	Main Feed pump	30m3/hr @ 10m	1	Positive displacement beneath T01
T	01	Pump surge hopper	2 -4m3	1	Stainless steel with level control
X	01	Pulper	30 m3/hr	1	Hammermill type with screen
X	03	In-line macerator	30 m3/hr	1	Rotocut or double shaft with metal dropout, Stainless Steel
B	01	Conveyour waste bin	3m3	1	Rocker bin, movable by forklift
B	02	Residual waste bin	30m3	1	Roro
B	03	Residual waste bin	3m3	1	Rocker bin, movable by forklift
B	04	Residual waste bin	3m3	1	Rocker bin, movable by forklift
B	05	Metal waste bin	3m3	1	Rocker bin, movable by forklift
		Loader		1	CNG fueled loader adequate for small spaces and loading bucket of >1m3 size

		Biogas production			
F	01A/B	Gas holder air fan		2	Suitable for digester roof gas holder
F	02A/B	Gas holder air fan		2	Suitable for digester roof gas holder
F	03	Gas mixing compressor and piping (optional)	600m3/hr	2	2 bar max rotary sliding vane with oil seal, SS316 outlets
F	04	Flare Blower (optional)	200m3/hr	2	
H	01	Heating coil (main digester)	110 kW	2	Hot water; Stainless steel
H	02	Heating coil (post figester)	35 kW	2	Hot water stainless steel
H	03	Hot water boiler	200 KW	2	Natural gas
X	02	Stirrer 1	Vendor supply	2	Submesible, removable, Stainless steel
X	04	Stirrer 2	Vendor supply	2	Submesible, removable, Stainless steel
X	06	Stirrer 3	Vendor supply	2	Submesible, removable, Stainless steel
X	07	Stirrer 4	Vendor supply	2	Submesible, removable, Stainless steel
X	08	Stirrer 5	Vendor supply	2	Submesible, removable, Stainless steel
X	09	Stirrer 6	Vendor supply	2	Submesible, removable, Stainless steel
P	02	Dosing pump	1m3/hr, 3 barg outlet	2	Can pump slurries, Metered Positive displacement
P	03	Feed pump	15 m3/hr	2	Positive displacement
P	04	Hot water pump	10 m3/hr	2	Centrifugal pump for hot water (NB circuit to Energy Systems heat exchanger)
P	05	Digestate pump	15 m3/hr	2	Positive displacement
P	18	Digestate recirculation pump	15 m3/hr	2	Positive displacement
T	02	Feed buffer tank	273 m3	2	Concrete or epoxy coated steel panels with 100 mm insulation
T	03	Dosing tank	2 m3	2	HDPE
T	04	Main digester	1092 m3	2	Concrete or epoxy coated steel panels with 100 mm insulation
T	05	Post digester	1092 m3	2	Concrete or epoxy coated steel panels with 100 mm insulation
V	01	Expansion vessel	1 m3	2	Insulated stainless steel 6 barg max
V	02	Knock out pot	0.1m3	2	Gas tight
V	03	Knockout pot	0.1m3	2	Gas tight
X	05	Emergency flare	200 m3/hr	2	For biomethane, clean and raw biogas; Ceramic internal lining. Stainless Steel
		Upgrading, compression and filling			
F	05	Biogas blower	200 m3/hr	3	Corrosion resistant and gas type
F	06	Air compressor	20m3/hr; 20 barg	3	Compressor for PSA system for oxygen production
H	05	Water heater	Vendor supply	3	Corrosion resistant, for recycle water in desulphurisation
H	06	Chiller	Vendor supply	3	For cooling upgrading recirculation water
H	07	Water cooler	Vendor supply	3	Plate frame heat eschanger or shell tube (SS316)
P	06	Water recirculation pump	Vendor supply	3	Recirculation of desulph. Water . Allow for low pH
P	07	Biogas compressor	200 m3/hr	3	Multi stage with interstage cooling (heat recovery optional)

P	08	Water recirculation pump	Vendor supply	3	Recirculation water for upgrading
P	09	Air compressor	100 NM3/hr	3	External air compresor for valves and utility air
P	10	Biomethane compressor	100 Nm3/hr	3	For purified biomethane to compress from 6 bar to 250 barg
P	11	Hydraulic booster	600 Nm3/hr	3	Filling busses during fast fill from High pressure storage
P	12	Chilled water pump	vendor supply	3	For cooling water recycle for upgrading
R	01	Desulphurisation reactor	20m3/hr; 2500 pm H2S max	3	For reducing H2S to 50 ppm biologically
S	01	PSA vessel 1	vendor supply	3	For enriching oxygen to 92-99% from air for desulph
S	02	PSA vessel2	Vendor supply	3	For enriching oxygen to 92-99% from air for desulph
S	03	Absorption Column	Vendor supply	3	For water scrubbing upgrading, with packing, SS
S	04	Stripping column	Vendor supply	3	For stripping CO2 from water, with packing, SS
T	06	Water makup tank	2m3	3	HDPE
V	04	Knockout pot	0.1 m3	3	Stainless steel, 6 to 8 barg air tight
V	05	Flash vessel	Vendor supply	3	Stainles steel
V	06	Compressed air tank	200L 8 barg max	3	Vendor supply package
V	07	Drying unit 1	Vendor supply	3	Switching units with Zeolite, regeneration required
V	08	Drying unit 2	Vendor supply	3	Switching units with Zeolite, regeneration required
V	09	Odourising THT dosing unit	Vendor supply	3	50L odourisation at 18 mg/Nm3
V	10	High pressure gas storage	1958L WC, max 300 barg	3	SM22, skid mounted
V	11	High pressure gas storage	1958L WC, max 300 barg	3	SM22, skid mounted
V	12	High pressure gas storage	1958L WC, max 300 barg	3	SM22, skid mounted
V	13	High pressure gas storage	1958L WC, max 300 barg	3	SM22, skid mounted
X	10	CNG dispenser	300 Nm3/hr; Dispense at 250 barg	3	with card reader,breakaway couplings and NGV1 connectors
X	11	CNG dispenser	300 Nm3/hr; Dispense at 250 barg	3	with card reader,breakaway couplings and NGV1 connectors
		Digestate management			
C	04	Sludge conveyour	1 m3/hr max	4	Stainless screw conveyour; adjustable for even bin filling
P	15	Polymer dosing pump	1m3/hr at 3 barg	4	Metered diaphragm or PD
P	16	Centrate pump	10 m3/hr at 3 barg	4	excentric lobe
S	05	Decanter centrifuge	100m3/day 5-8 % input solids	4	Recover 70-90% of solids into cake at 22-27% solids
T	07	Polymer make up tank	2m3	4	HDPE, auto polymer feeder, Water recycle for mixing
T	08	Centrate tank	270m3	4	Insulated Epoxy coated Steel or concrete, Gas tight
X	14	Centrate stirrer 1	Vendor supply	4	Submesible, removable, Stainless steel
X	15	Centrate stirrer 2	Vendor supply	4	Submesible, removable, Stainless steel
		Compost centrate water tank	20 kL		
		Compost water pump	3m3/hr		For keeping compost piles wet
		Digestate liquid bowser	20 kL		Either truck drawn trailer or integrated with truck (CNG fueled)
		Mobile chipper	3m3/hr		For additional green waste (bulking material as needed)
		Compost Loader			min 1 m3 bucket size
		Compost screening and packaging plant	2 tons per hour		LDPE bag packaging weightng and sealing.
		Hot water supply			
H	08A/B	Plate frame heat exchanger	max 400 kW	5	10 m3/hr, 3- 6 barg
		Additional feed processing			
P	17	Submersible sludge pump	10 m3/hr	6	submersible and retrieveable with seivefor >10mm particles; 3 bar discharge
		In ground tank with lid	30m3		For sludge disposal from skips or tankers
		Buildings and systems			
		Main processing building(repurposed building)			
		Management Offices (repurposed building)			Infermary, Manager office, spare office, boardroom, kitchenette, reception
		Operator offices			Including control room, laboratory, mess room, ablutions, change rooms (M/F)
		Pump building in between digesters			
		Boiler and pump building (repurposed building)			
		Weighbridge building			Including ablutions
		Workshop (repurposed building)			
		Chemical store and spare storage area (repurposed building)			
		Digestate solids receiving shed (repurposed building)			
		Weighbridge			
		Lighting protection			

		Waste receiving hall building ventilation			
		De-Odourisation system			
		PLC and SCADA system			
		Fire detection and protection system			
		Roof mounted PV			
		Roller shutter doors			
		Traffic control system and lights			
		Natural gas backup generator	200 kWe		Outdoor type with automatic changeover switch
		Security fences and gates			
		Roads, curbs, walkways and pavement			
		CCTV and alarm systems			
		Vermin control system			
		Rain water harvesting tanks			
		Fully furnished biogas laboratory			pH analyser, ammonia analyser, FOS/TAC kit, furnace for VS + TS analysis, fridge for sample storage, washbasin and adequate ventillatior
		Upgraded electrical connection			Allowing for backup generator and embedded electrical generation from Energy Systems
		Adequate day and night lighting for the facility inside and out			
		RFID card system for busses			