

Appendix 01 Basic Specifications

1. DESCRIPTION

Base on waste wood/bagasse as fuel, the energy system will supply flue gas to the dryer directly.

Flue gas..... dryer

The designed energy plant include following system.

- 7100 fuel handling system
- 7200 combustion system
- 7300 flue gas and combustion air system
- 7600 slag and ash collection system
- 7700 control system

2. SPECIFICATIONS

2.1 Capacity designed

Heat consumption		
Flue gas	4.0 MW	15,500 Nm ³ /h@650 °C

2.2 Main specifications (preliminary)

Elevation	<500 m
Temperature range	(0~40) °C
Fuel	wet cake/bark/sanding dust
Moisture content (on step grate)	30-90%(DB)
Moisture content (dust and trimming)	<10%(DB)
Size of fuel on step grate	<200 mm (3-150)mm>90%
Dust	<1.2 mm 90%<1.0 mm
Bulk density of fuel	250 kg/m ³
Fuel average heat value on step grate max	3,200 kcal/kg
Designed fuel LHV	2,000 kcal/kg
Excess air	2.3
Refractory lining	Cast-able

Under pressure in furnace	-100-150 Pa
Combustion system	Step grate, hydraulic driven
Grate area	6 m ²
Grate heat load	850 kW/m ²
Heat efficiency	>92%
Material grate bar	ZG35Cr24Ni7SiN
Fuel feeding	Hydraulic driven
Zone number	2
Load adjustable rate	1:4
Density of insulation material for piping/ducting	90-110 kg/m ³
Working temperature	580 °C
Steel shell for fan/ cyclone/ piping	0.5mm aluminizing steel plate

3. Electrical power supply

For normal AC motor:	3~AC 415 V
	240 V
Voltage variation	±10 %
Frequency	50 ±1 Hz

4. Compressed air and water

4.1 compressed air

Consumption (for pneumatic system)	0.5 m ³ /min@6.0 bar
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4.2 Water

Circulation cooling water	<30 °C@3.0 bar
Fire water	15.0 m ³ /h@5.0 bar

Appendix 02 Equipment List

1. LIST OF EQUIPMENT

The offered scope of supply comprises the specified equipment in order to guarantee the reach the heat for 4MW.

2. TECHNICAL MODIFICATION

The Seller reserves the right to deviate from the technical specification in Appendix 2, if necessary, during the detailed engineering or to follow the latest technical improvements. However any change has to be mutually agreed upon between the Buyer and the Seller.

3. SELLER'S SCOPE OF SUPPLY

The proposed hot gas system comprised mainly of the following items:

- 7100 Fuel handling system
- 7200 Combustion system
- 7300 Flue gas and combustion air
- 7600 De-ash system
- 7700 Control system

The suppliers for all the equipment are specified as below.

SELLER(S):

The item is supplied by the SELLER.

BUYER(B):

The equipment/parts will be supplied by the Buyer. But both parties are responsible for its supplies in respect of functionality, technical performance and scope.

SELLER/BUYER(S/B):

The key components and workshop drawings of auxiliary equipment of the item are supplied by the SELLER. The remaining parts will be supplied by the buyer.

SELLER – DWG.(SD):

The SELLER supplies workshop drawings and technical specifications or reference drawings or dimension drawings for mechanical equipment. The BUYER supplies the mechanical equipment according to the said drawings.

The SELLER is responsible for the technical correctness and completeness of the drawings and specifications. The BUYER is responsible for its supplies in respect of functionality, technical performance and scope.

SELLER - ENG.(SE):

The SELLER supplies technical specifications for mechanical equipment. The BUYER supplies the mechanical equipment according to the seller's technical specification. The SELLER is responsible for the technical correctness and completeness of the specifications. The BUYER is responsible for its supplies in respect of functionality, technical performance and scope.

4. THE SELLER'S EQUIPMENT LIST

4.1 Energy plant

POS. NO	ITEM	TYPE	QTY	S	B	S/B	SD	SE	REMARK
7000	Energy Plant								
7100	Fuel handling system								
7121	Fuel bin with moving floor	2x1.2 mx6.0 m	1	X	X		X	X	
7141	Fuel belt conveyor	30.0 m ³ /h,5.5 kW	1	X	X		X		
7142	Flap gate	30.0 m ³ /h	1	X					
7144	Fuel metering bin with feeder	20.0 m ³ /h	1	X					
7145	Fuel feeding channel	W=1,400 mm	1	X					
7160	Sanding dust combustion system		1set						
7161	Casing of metering bin	1.0 m ³	1	X					
7262	Dosing screw	500 kg/h, 2.2 kW	1	X					VFD
7263	Rotary valve	10.0 m ³ /h	1	X					
7264	Blower	DN80	1	X					
7265	Dust nozzles	500.0 kg/h	1	X					
7200	Combustion system								
7211	Step grate	QS-WLP-6	1	X					
7220	Combustion chamber								
7221	Combustion chamber casing		1		X			X	
7222	Refractory material and anchor	Cast-able	1set		X				
7231	Platform, ladder, handrail, hopper		1set		X		X		
7232	Emergency chimney	1.0 mx1.0 m	1	X	X		X		
7241	Hydraulic station	15.0 kW	1	X					
7300	Flue gas and combustion air								
7311	Primary air fan	5,500 m ³ /h 2,000 Pa, 5.5kW	1	X					VFD

POS. NO	ITEM	TYPE	QTY	S	B	S/B	SD	SE	REMARK
7312	Secondary air fan	6,500 m ³ /h 3,600Pa, 11.0 kW	1	X					VFD
7313	Combustion air fan for dust	6,000 m ³ /h 2,000 Pa, 5.5kW	2	X					VFD
7319	Blend air fan	5,000 m ³ /h 1,500 Pa, 4.0kW	1	X					VFD
7321	Flue gas and air duct		1set		X		X		
7322	Expansion joint		1set	X					
7600	De-ash system								
7640	Mixing chamber		1		X		X		
7641	Casing, supporting		1		X		X		
7642	Airlock	8.0 l/r	1	X					
7680	Slag and fly ash collection								
7681	Slag ash conveyor	1.5kW	1	X					
7700	Control system								
7710	MCC cabinets		1set	X					
7720	PLC cabinets	S7-200	1set	X					
7730	Software(without license)	Step 7/Wincc	1set	X					
7740	Sensor and transmitter		1set	X					
7750	Driven component		1set	X					
7760	Monitoring system		2	X					
7770	Wire, cable and cable tray		1set		X			X	

5, Spare parts listed follow will be delivered with the equipment

Item	Description	Quantity
1	Reversing valve for hydraulic station of step grate	1
2	Sealing of the cylinder	2
3	Pressure gauge	1
4	Thermocouple	1
5	Grate bar (left, right, middle and half)	6
6	DN25 DC24V solenoid valve	1

3 months after the contract, one detail list of spare parts and wearing parts will be provided by seller. Spare parts should get ready before start up and commissioning. In the lists following information will be supplied in detail;

Description	Type	Manufacturer	Quality	Unit price

Appendix 03 Equipment Specifications

7100 Fuel handling system

POS. No. 7121

ITEM Fuel bin

TYPE 2x1.2 mx6.0 m

SELLER Qingshan

MANUFACTURER Qingshan

QTY 1

FUNCTION Storage and mixing for all kinds of fuel keeping out of raining and clean for the fuel bin area. Automatically discharge the fuel to fuel conveyor according to the load of the system by the Interactive movement of the moving floor.

SPECIFICATION

Volume	50.0 m ³
Length	6.0 m
Width	2x1.2 m
Height	3.5 m
Working pressure	15.0 MPa
Cylinder diameter	180.0 mm
Power installed	22.0 kW
Weight	5.0 t

SELLER'S SUPPLY

Moving floor with all necessary clips;
Hydraulic station;
Flexible hose, pipe, valves and clips;

BUYER'S SUPPLY

Civil works and all necessary embedded part such as H beam;
Hydraulic oil;

POS.No. 7141
ITEM Fuel belt conveyor
SELLER Qingshan
MANUFACTURER Qingshan/Huanlin
QTY 1
FUNCTION Transport the fuel from moving floor to fuel metering bin in front of the furnace.

SPECIFICATION

Capacity	30.0 m ³ /h
Length	20.0 m
Fuel density	250.0 kg/m ³
Power installed	5.5 kW
Weight	5.5 t

SELLER'S SUPPLY

Conveyor with (truss, belt, roller, driven and end part) ;
Gear motor;
Rain cover;

BUYER'S SUPPLY

Platform for maintenance and supporting which height is high than 1.5 m;

POS.No.	7142
ITEM	Flap gate
SELLER	Qingshan
MANUFACTURER	Qingshan
QTY	1
FUNCTION	Cut off the fuel conveyor with fuel bin; protect the fuel conveyor special for emergency such as backfire.
SPECIFICATION	
	Capacity 30.0 m ³ /h
	Weight 0.5 t
SELLER'S SUPPLY	
	Assembled machine;
BUYER'S SUPPLY	

POS.No. 7144
ITEM Fuel metering bin
SELLER Qingshan
MANUFACTURER Qingshan
QTY 1
FUNCTION Water jacketed designed for lower part. A certain fuel level can prevent fire back and keep under pressure in the furnace constantly.

SPECIFICATION

Feeding capacity	20.0 m ³ /h
Width	2,400 mm
Quantity of feeders	1
Weight	4.5 t

SELLER'S SUPPLY

Assembled machine;

BUYER'S SUPPLY

POS.No.	7145
ITEM	Fuel feeding channel
SELLER	Qingshan
MANUFACTURER	Qingshan
QTY	1
FUNCTION	Ensure uniform fuel feeding.
SPECIFICATION	
	Width 1,400 mm
	Weight 1.2 t
SELLER'S SUPPLY	
	Assembled machine with alloy cast steel bar inside;
BUYER'S SUPPLY	

POS.No. 7160
ITEM Sanding dust combustion system
SELLER Qingshan
MANUFACTURER Qingshan/Zhanggu/Changzhou
QTY 1 set
FUNCTION Suspension combustion of the sanding dust.
SPECIFICATION

Capacity	500 kg/h
Size of dust	<1.2 mm and 90%<1.0 mm
Number of nozzles	1
Dia. of blow line	DN80
Size of metering bin	1.0 m ³
Power installed	1x(2.2+0.75+7.5) kW
Weight	1.5 t

SELLER'S SUPPLY

1 stainless steel nozzles;
1 dust dosing screw (VFD controlled) for dust combustion;
1 hard sealing rotary valve with gear motor;
1 high pressure blower with silencer, safety valve, check valve and pressure gauge;
Casing of metering bin with view glass;

BUYER'S SUPPLY

7200 Combustion system

POS.No. 7211

ITEM Step grate

TYPE QS-WLP-6

SELLER Qingshan

MANUFACTURER Qingshan

QTY 1 set

FUNCTION Hydraulically operated reciprocating air cooling. It is separated into 2 zones for fuel dry, combustion and slag ash cooling. Combustion air goes through the labyrinth seals, solid waste wood/wet cake from wesp get fired on the step grate after dry by the push of moving grate bar.

SPECIFICATION

Size	6.0 m ²
Cooling	air
Number of zones	2
Type of connection	1 PCS
Output on step grate	4.0 MW
Turn down rate	1:4
Material of grate bar	ZG35Cr24Ni7SiN
Weight	8.0 t

SELLER'S SUPPLY

Frame with grate bar, side plate, end plate and support frame for cylinders;

BUYER'S SUPPLY

POS.No. 7220
ITEM Combustion chamber
SELLER Buyer
MANUFACTURER Buyer
QTY 1 set
FUNCTION Steel casing with refractory lining. Supply enough space for solid wood/bagasse and dust combustion.

SPECIFICATION

Material of casing	Q235
Refractory material	high Al ₂ O ₃ content, castable
Working temperature	1,600.0 °C(max)
Anchor material	SUS310/304

SELLER'S SUPPLY

Manhole and view glass;
Workshop drawings of combustion chamber;

BUYER'S SUPPLY

Fabrication according to the drawings and installation;
Construction of the refractory lining (anchor welding included);
Refractory material and stainless anchor with plastic caps;

POS.No. 7231
ITEM Platform, ladder, handrail,hoppers
SELLER Buyer
MANUFACTURER Buyer
QTY 1 set
SELLER'S SUPPLY
Workshop drawings;
BUYER'S SUPPLY
Fabrication according to the drawings and installation;

POS.No.	7232
ITEM	Emergency chimney
SELLER	Seller/Buyer
MANUFACTURER	Buyer
QTY	1
FUNCTION	Placed on the top of the furnace. For emergency, it can open automatically by weights when power failure, over heated or lose under pressure in furnace.
SPECIFICATION	
	Connection size 1.0 mx1.0 m
	Weight 0.6 t
SELLER'S SUPPLY	
	Damper with V-anchor, weights and cylinder;
BUYER'S SUPPLY	
	Casing;

POS.No.	7241
ITEM	Hydraulic station
SELLER	Qingshan
MANUFACTURER	ETYN
QTY	1
FUNCTION	Supply the power to operate step grate and fuel feeder.
SPECIFICATION	
	Design pressure 18.0 MPa
	Power installed 22.0 kW
	Weight 1.5 t
SELLER'S SUPPLY	
	Hydraulic unit, cylinders and all necessary connecting piping, flexible hose and tube clips;
BUYER'S SUPPLY	
	Hydraulic oil

7300 Flue gas and combustion air

POS.No. 7311

ITEM Primary air fan

SELLER Qingshan

MANUFACTURER Ningbo/Xieli

QTY 1

FUNCTION Supply air for combustion on step grate and cool the step grate in the mean time. Frequency controlled motor.

SPECIFICATION

Flow 5,500 m³/h

Pressure 2,000 Pa

Power installed 5.5 kW

Weight 0.4 t

SELLER'S SUPPLY

Fan with VFD controlled motor, base frame, anchor bolts, expansion joint, dampers;

BUYER'S SUPPLY

POS.No.	7312
ITEM	Secondary air fan
SELLER	Qingshan
MANUFACTURER	Ningbo/Xieli
QTY	1
FUNCTION	Supply the rest part of combustion air special for volatile combustion from the fuel.
SPECIFICATION	
	Flow 6,500 m ³ /h
	Pressure 3,600 Pa
	Power installed 11.0 kW
	Weight 0.5 t
SELLER'S SUPPLY	
	Fan with VFD controlled motor, base frame, anchor bolts, expansion joint, damper;
BUYER'S SUPPLY	

POS.No. 7313

ITEM Combustion air fan for dust

SELLER Qingshan

MANUFACTURER Ningbo/Xieli

QTY 1

FUNCTION Supply the combustion air to dust nozzles for dust and cool the nozzles in the same time;

SPECIFICATION

Flow 6,000 m³/h

Pressure 2,000 Pa

Power installed 5.5 kW

Weight 0.4 t

SELLER'S SUPPLY

Fan with VFD controlled motor, base frame, anchor bolts, expansion joint, damper;

BUYER'S SUPPLY

POS.No. 7319
ITEM Blend air fan
SELLER Qingshan
MANUFACTURER Ningbo/Xieli
QTY 1
FUNCTION Cool down the flue gas according to design temperature.
SPECIFICATION

Flow	5,000 m ³ /h
Pressure	1,500 Pa
Power installed	4.0 kW
Weight	0.3t

SELLER'S SUPPLY

Fan with VFD controlled motor, base frame, anchor bolts, expansion joint, damper;

BUYER'S SUPPLY

POS.No. 7321
ITEM Flue gas and combustion air duct
SELLER Buyer
MANUFACTURER Buyer
QTY 1
SPECIFICATION
Material Q235
SELLER'S SUPPLY
Workshop drawings;
BUYER'S SUPPLY
Fabrication and installation;

POS.No. 7322
ITEM Expansion joint
SELLER Qingshan
MANUFACTURER Zhuji
QTY 1set
FUNCTION Vibration insulation; absorb expansion of flue gas duct.
SPECIFICATION
Material Nonmetallic material
Weight 0.5 t
SELLER'S SUPPLY
Complete sets with connecting flange;
BUYER'S SUPPLY

7600 De-ash system

POS.No.	7640
ITEM	Mixing chamber
SELLER	Buyer
MANUFACTURER	Buyer
QTY	1
FUNCTION	Burn out chamber, drop out the fly ash and mixing the flue gas to setting temperature.
SPECIFICATION	
	Velocity <10.0 m/s
SELLER'S SUPPLY	
	1 Inspection door; Workshop drawing;
BUYER'S SUPPLY	
	Refractory material and anchor as option; Casing, steel structure;

POS.No.	7642
ITEM	Air lock
SELLER	Qingshan
MANUFACTURER	Guozhen
QTY	1
FUNCTION	Take ash out from mixing chamber.
SPECIFICATION	
	Capacity 8.0 l/r
	Power installed 1x0.75 kW
	Weight 0.1 t
SELLER'S SUPPLY	
	1 Rotary valve;
BUYER'S SUPPLY	

POS.No.	7681
ITEM	Slag / ash conveyor
SELLER	Qingshan
MANUFACTURER	Huanlin
QTY	1
FUNCTION	Chain conveyor with wear resistance bottom plate; collect ash and slag from the grate.
SPECIFICATION	
	Velocity 0.03 m/s
	Power installed 1.5 kW
	Weight 2.5 t
SELLER'S SUPPLY	
	Including casing of conveyor, chain with carriers and driven motor;
BUYER'S SUPPLY	

7700 Control system

POS.No.	7700
ITEM	Control system
SELLER	Qingshan
MANUFACTURER	Qingshan
QTY	1set
FUNCTION	As one of the most important parts in the energy system. It can control the energy system quickly and accurately at any different operating conditions. All the factors such as fuel feeding, combustion, thermal medium output etc can work automatically based on the parameter of under pressure in the furnace.

SPECIFICATION

AC motors voltage	3 ~415/11,000 V
DC	24 V
Frequency	50±1 Hz
UPS	10 kVA

SELLER'S SUPPLY

MCC cabinets;
 -Cabinets and low-voltage electric appliances;
 -Soft starter/VFD;
 PLC & PC;
 -Cabinets and low-voltage electric appliances;
 -PLC (SIEMENS S7-200)/PC;
 Software;
 Sensor and transmitter;
 -Temperature/Pressure/Limit switch;
 Driven component;
 -Actuator/Control Valve (water)/Pneumatic cylinder;
 Monitoring system;

BUYER'S SUPPLY

All kinds of cable, wire, cable tray and support;

Appendix 04 By the Buyer

The scope and delivery limits of Seller's are defined in Appendix A2 & A3. Following equipment, supply and service are not included;

- 1, All the non-standard equipment fabricated in the job site. Casing, chute and hopper, ducting and piping, tank, support and platform, piping, cable and cable tray, refractory lining, insulation and metal sheet work;
- 2, Cost for auxiliary material, labor, forklift, crane, lifters, scaffolding, tools, lighting, water, electric power, fuel, compressed air during the installation and start up commissioning;
- 3, Installation for the equipment supplied by the seller;
- 4, Fire protection, water supply and drainage equipment;
- 5, Low voltage distribution system such as switch cabinets, transformers, power-factor compensation systems, cable to MCC cabinets, UPS and air-condition;
- 6, Utilities such as water to soft water system;
- 7, All the required permanent lighting for the equipment inside or outside the building;
- 8, Building, flooring, cabinets base supporting, fire walls and lightning protection system (including design);
- 9, Foundation including treatment, sewage draining pool, embedded parts and all the parts related to the civil works (including design);
- 10, Requirements of hydraulic oil, thermal oil, lubrication oil/grease;
- 11, All the costs for required permit related to environmental, operation, building, noise protection, boiler, pressure vessel, pressure pipe and the inspection from buy's side;
- 12, Cable trench, earthing system for foundation, lightning protection systems;
- 13, Water treatment system, equipment and materials for chemical and physical tests;
- 14, Any customs or duty fees related to machine imported;
- 15, All the cost for the transportation from the contracted delivery port;

Appendix 05 Seller's Guarantee

1, Mechanical Warranty

- 1.1 The seller warrants all equipment supplied as per under this contract to be free from defects in material and workmanship;
- 1.2 Within 12 months after the acceptance, the seller agrees to correct by repair or replacement any defects in material or workmanship on site. Anyway all the responsibilities expired 18 months after the last delivery if the delay of the project is not caused by the seller;
- 1.3 Stated warranty of the seller does not apply to consumable pieces of equipment, replacements or repair of wear parts. It also does not apply to improper storage, improper operation, deficient maintenance, faults or defects resulting from materials provided by the buyer, any modifications carried out without the permission of the seller or repairs disobedient the instrumentation from the seller;
- 1.4 In any case, the seller's liability shall be limited in the direct cost of repair or replacement of ineffective parts. The buyer should advise the seller in the written forms when the defects of machine occurs.
- 1.5 Guarantees are made on the assumption that all the maintenance and operating conditions from the user's side should strictly follow the recommendations of operating and maintenance instructions supplied by the seller;
- 1.6 The limited warranty will be unconditionally voided by failure to remit progress payments in accordance with the mutually agreed payment terms and conditions included in the formal contract;

2, Warranted Functions

The Seller warrants the functions stated below for the scope of supply;

Capacity of flue gas

2.0-4.0 MW@650 °C

3, Requirements

Subject to Buyer's compliance with the following requirements, Seller shall warrant the functions specified in clause 2.0 for his scope of supply. All these requirements shall be deemed indispensable for the proper functioning of the machinery as well as other warranted properties during start-up or subsequent production.

- 3.1 Specifications of fuel such as waste wood, bark, dust, trimming and saw mill are described in appendix A1;
- 3.2 Buyer will keep the most important spare and wear parts on stock;
- 3.3 All necessary fuel materials will be available in sufficient and consistent quantity and quality. No straw and bamboo will be used as fuel;

3.4 Basic technical and technological knowledge of energy system from the side of buyer's operators, maintenance and managerial staff;

3.5 Under Seller's supervision, the seller will determine the steps of commissioning, as well as the adjustments and process parameters during the test runs;

4, Proof of warranted functions

4.1 Two hours test running within a production of 24 hr;

4.2 The test run shall commence within an already running, continuous, regulated and undisturbed operation with unchanging production parameters;

Appendix 06 Standards and Regulations

1. Basic rules

The following will be according to China standard:

- Fixed steel industrial platform
- Safety of Machinery
- Safety Clearances

2. Boiler and pressure vessel

For thermal oil heater

- GB3087-1997-Seamless steel tubes for low medium pressure boiler
- GB/T17410-2008 Organic heat transfer fluid heaters
- Regulations for safety technology of organic heat fluid heater
- TSG G0001-2012 Boiler safety technical supervision administration regulation

3. Piping work

Principle drawings for pipework of thermal oil and steam should designed in accordance with GB standard.

4. Modification rights reserved

The seller reserve the right to undertake technical modifications with the permission from the buyer. However, such modifications shall not impair the performance, reliable working or safety of the plant.

5. Motors / Drives / Mechanics / Electrics / Hydraulics

The brands of components for energy plant are listed below. The other brands are described in A3.x of each sub-suppliers.

5.1 Mechanical Components

Bearing for fan and other key parts SKF

Key parts means bearings for screw, driven and back roller of belt conveyer, driven wheel wheel of chain conveyer.

Standard low voltage AC motors for fan Wannan

High voltage motor Wannan

Gear motor Boneng/Guomao

5.2 Pneumatic Components

Pneumatic components Airtac

5.3 Hydraulic Components

Pump	Rexroth/Vickers
Pressure transmitter	SICC YOKOGAWA/E+H
Valves	Rexroth/Yuken

5.4 Thermal-oil, steam and hot water heating

Thermal oil pumps	KSB
Control valve (steam/thermal oil)	KSB/RTK
Safety valve	YOY

5.5 Electrical Components

VFD/Soft starter	Schneider
MCC equipment	Schneider /Siemens
Relay and terminal	Schneider/Weidmuller/Phoenix
Sensors and transmitters	
Temperature	SICC YOKOGAWA/SAIC
Flow	SICC YOKOGAWA/SAIC
Vibration type (level)	IFM
Speed switches	Schneider/ P+F/IFM
Limit switches	Schneider/ P+F/IFM
Proximity switches	Schneider/ P+F/IFM
Safety relays	Pilz
Electrical actuator	Bell
PLC-system	Siemens S7-200
Profibus	Siemens
HMI system	Intouch
Control centers (MCC, PLC)	RAL7035
Ingress Protection	IP54
Height	2,200 mm
Depth	600 mm
Splint	100 mm

6. Colors and Protective Coatings

Mechanical Equipment

All machines and devices are delivered including finishing coat. The ground coat is to be applied on sand blasting.

Design

For machines placed outdoors:

- 2 x ground coat, dry thickness each 40 - 60 µm
- 1 x finishing coat, dry thickness each 30 - 50 µm

For machines placed indoors:

- 2 x ground coat, dry thickness each 40 - 60 µm
- 1 x finishing coat, dry thickness each 40 - 60 µm

Steel structure of support, platform, ladder, bolt connection,

- 2 x ground coat, dry thickness each 40 - 60 µm
- 1 x finishing coat, dry thickness each 40 - 60 µm

Main machines and nonstandard equipment	RAL9006
Cabinet	RAL7035
Safety	RAL2000
Cover sheet of radiation part	RAL1015

Colors for all equipment and components will be decided in the liaison meeting with the customer.

Appendix 07 Project Schedule

Reference time schedule

Time schedule (month)	0	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	11th	12th
Contract	★												
Down payment		★											
System design		■											
Liaison meeting		★											
Principle foundation drawings		■											
Foundation ready			■										
Delivery				■									
Installation					■								
Commissioning							■						
Dry out the concrete							■						
Heat ready								■					

Appendix 08 Technical Service

1, ENGINEERING

1.1 Mechanical Engineering by Seller

- Project parameter and technological specifications
- Machinery specification
- Machine list
- List of detailed supplies

Specifications for local service:

- Compressed air
- Water (Process and cooling) supply
- Process flow sheet
- General layout
- Detailed layout
- Detailed sections for each area
- General foundation plan
- Detailed foundation for each area
- Specifications for machine to be locally supplied
- Specification drawings for steel structure to be locally manufactured
- Specification drawings for walkway to be locally manufactured
- Spare part list

1.2 Electric Engineering by Seller

- General parameter of electrical system
- Electrical equipment plan
- Motor plan
- Sensor and junction box plan
- List of interlocks
- Motor and sensor list
- Cable ways
- Cable list including length and sizes
- Spare part list

1.3 Planning Engineering by Seller

- Planning for erection and start-up

2, DOCUMENTATION

The documents for the fulfillment of the contract and the delivery time is listed below.

No	DOCUMENT NAME	WEEKS	REFERENCE
1	Preliminary flow sheet drawing	1	Together with proposal
2	Preliminary layout drawing	1	Together with proposal
3	Final flow sheet drawing	2	After first technical meeting
4	Layout drawing of electric cabinets	3	After layout drawings confirmation
5	Electric principle drawing	3	Before first delivery
6	Suggested cable trays & channels layout	3	Before first delivery
7	Cable list	3	After first delivery
8	Final layout drawing	2	After first technical meeting
9	Electric power distribution table	3	After first technical meeting
10	Foundation plan	5	After first technical meeting
11	Sketch drawings of water system	2	After first technical meeting
12	Manufacturing drawings	4-12	After first technical meeting
13	Spare and wear parts list	8	After first delivery
14	Operation manual	12	After first delivery
15	Maintenance and lubrication manual	12	After first delivery

3, TECHNICAL SERVICE

The technical service for the supervision of installation, commissioning and start up for the following process units are included. While the international and local traveling cost at the destination country, the expenses for board and lodging, and the communication costs should be paid by buyer directly. Standard room with independent wash room is required;

3.1 Supervision of mechanical installation

The seller will provide a qualified field engineer to supervise the field installation of equipment. The seller estimates one supervisor on site for a period of up to 30 man-days;

3.2 Supervision of refractory lining installation

The seller will provide a qualified refractory installation supervisor to oversee installation of all field installed refractory if the seller supply the material. The seller estimates one supervisor on site for a period of up to 20 man-days;

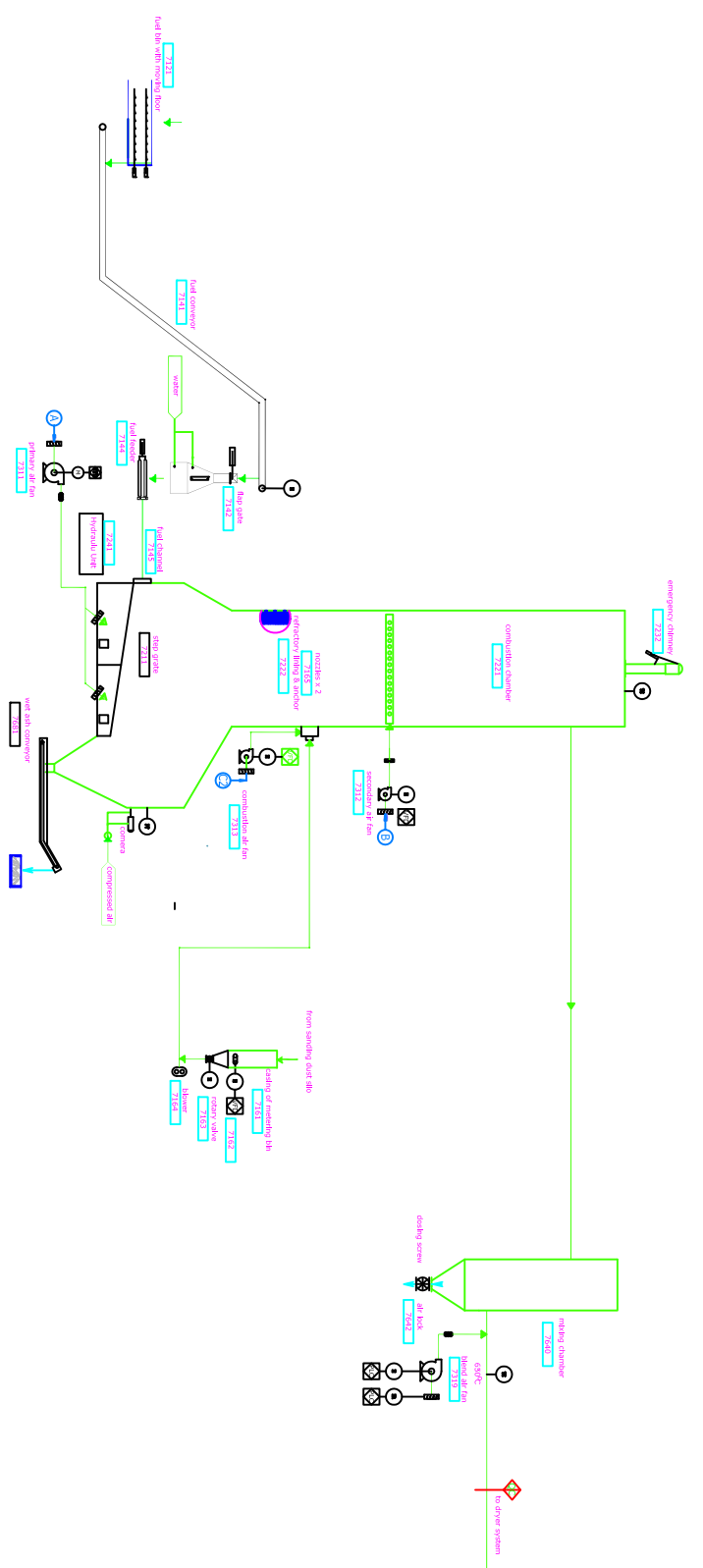
3.3 Supervision of electric installation and commissioning

The seller will provide a qualified start-up field engineer to supervise the commissioning and start up. The seller estimates one supervisor on site for a period of up to 45 man-days;

Appendix 09 Preliminary drawings

Drawings list

1, A9.07 Flow sheet for energy plant-V1;



Buyer
Job site installation by the buyer
Qingshan

preliminary

SYSTEM CAPACITY	FLUE GAS	STEAM	THERMAL OIL	FUEL	THERMAL ENERGY DISTRIBUTION
2.0-4.0MW	2.0-4.0MW	0.0MW	0.0MW	WASTE WOOD(BARK & DUST)/wet cake	SUSPENSION 1.5MW STEP GRATE 4.0MW

FLOW SHEET 4.0MW FLUE GAS BOILER

CHANGSHOU QINGSHAN ENERGY EQUIPMENT

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CUSTOMER: Australia

PROJECT NO.: 2110P-10A

DATE: 20181108

SIZE: 7/11

DESIGNER: JJJ

CHECKER: JJJ

PAGE: 1

VERSION: A

TOTAL SHEET: 1