

Equipment's

Lists

SOIL REMEDIATION OF CONTAMINATED FEATURRES  
IN SEL FIELDS

REQUISITION FOR OIL SLUDGE SEPARATION PACKAGE

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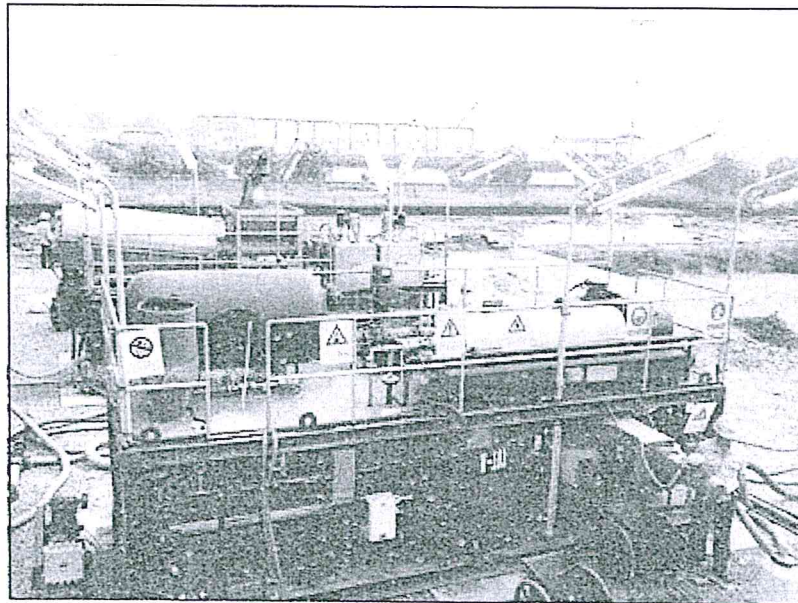
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EQUIPMENT LISTS  
OF  
CRUDE OIL RECOVERY PACKAGE



June 2011

## 1. Equipment lists

### 1.1 Main equipment lists

**Main equipment lists**

No.	Descriptions	Unit	Qty
	<b>Proposed sludge separation package, include,</b>		
1	Floating pump skid (Q=20~30m <sup>3</sup> /h; power:20kW)	set	1
2	Sludge modification skid (HBP-TZG60) (Q=10~20m <sup>3</sup> /h; power: 30kW)	set	3
3	Centrifugal treatment skid (Q=10~20m <sup>3</sup> /h; power: ~40kW)	set	1
4	Recovery oil separator skid (HBP-FLQ80)	set	1
5	Process recycle water skid (HBP-HSG80)	set	1
6	Chemical dosing skid (HBP-JYQ)	set	1
7	Boost pump skid (power:30kW)	set	1
8	Steam boiler skid (rated evaporation capacity 2t/h)	set	1
9	Diesel generator set (300 kW)	set	1
10	Oil tank skid (8*2.5*2.5m)	set	1
11	Water tank skids (12*2.5*2.5m)	set	4
12	Diesel tank skid (Φ2.0*8m)	set	1
13	Lab container (6*2.5*2.5m)	set	1
14	Wheeled cart	set	3
	<b>Option</b>		
10	Crude dehydration treatment device	set	1

need  
spare

### 1.2 Detailed configuration of main equipment packages

## EQUIPMENT LISTS OF OIL SLUDGE SEPARATION PACKAGE

## Detailed configurations of equipment packages

S/N	Equipment name	Qty	Specification/model	Remarks
(1)	Floating pump skid	1 set		
1	Intake pump FP-101	2	Q=30m <sup>3</sup> /h, H=40m, Power ~11kW	
2	Floating platform	1		
3	Skid base and steel frame	1	4.5x2.5m	
4	Associated instrumentation system	1 set		
5	Electric system	1 set		
6	Piping and valves system	1 set	Stainless steel	
(2)	Centrifugal treatment skid	1 set	HBP-LXJ20.0	Hiller or Flottweg
1	Three phase separator S-101	1	capacity:~20m <sup>3</sup> /h, main material: duplex SS	
2	Feed double chamber filter F-1011	1	MSL50I-1.6/10CS	
3	Feed heat exchanger E-101	1	KLS0.8-8, spiral plate heat exchanger A=8m <sup>2</sup>	
4	Centrifuge buffer tank T-102	1	φ1.5x1.44, V=2.5m <sup>3</sup>	
5	Dehydrated sludge screw conveyor	1	LS320-2.95/LS320-15	
6	Modified sludge boost pump	2	BN17-6L, 8~12m <sup>3</sup> /h, 30m	SEEPEX
7	Oil-water mixture boost pump	2	BN17-6L, 10~15m <sup>3</sup> /h, 30m	SEEPEX
8	Electrical-driven gate valve and control system	1		
9	Automatic flushing system	1		
10	Flammable gas detector	2		
11	Feed flow display system	1		
12	heating medium flow control system E-10111	1		
13	Junction box and control display screen	1 set		
14	Main control cabinet	1		
15	Frequency inverter	1		
16	PLC/ touch screen	1		
17	Skid base and steel frame	2	9.5x2.5m	
18	Associated instrumentation system	1 set		
19	Electric system	1 set		
20	Piping and valves system	1 set		
(3)	Sludge modification skid A	1 set	HBP-TZG60	



## EQUIPMENT LISTS OF OIL SLUDGE SEPARATION PACKAGE

1	Sludge modified tanks (T-101A)	1	φ3.2x5.5m, V=60m <sup>3</sup> , vertical, with heating coils, materials: CS
1.1	blender	1	HQ1500-125T1/CX1400-125T1 reducer F108-22-24.2-V1, 15kW
1.2	Anti-corrossion	1 set	Heat resistant coating
1.3	Hot insulation	1 set	Silicate aluminum rock wool t=80mm
1.4	Ladder and platform	1 set	
2	Overflow double chambers filter F-103	1	MSL150I-1.6/10CS
3	Piping and valves system	1 set	
3.1	Electrical-driven butterfly valve LV-201A/B/C	1	DN80 PN1.6
	Electrical-driven butterfly valve LV-202A/B	1	DN80 PN1.6
	Electrical-driven butterfly valve FV-201A/B/C	1	DN100 PN1.6
	Electrical-driven butterfly valve FV-202A/B/C	1	DN80 PN1.6
3.2	Electrical-driven valve MOV-201(202)	2	DN150/ DN50
	Electrical-driven butterfly valve FV-203A/B/C	1	DN50
3.3	T valve TV-201A/B/C	1	DN25
3.4	Piping and valves system	1	
4	Instrumentation and control system	1	
4.1	Integrated temperature transmitter	1	SBWZKG-2460S
4.2	Floater level switch	1	UQK
4.3	Pressure gauge	1	YTN
4.4	Temperature gauge	1	WSSF-483
4.5	Differential pressure liquid level transmitter	1	IDP20LTT52S00024SSID
4.6	Flammable gas sensor	1	DF-7500
4.7	Instrument pipes and wire/cable	1 set	
(4)	<b>Sludge modification skid B</b>	<b>1 set</b>	<b>HBP-TZG60</b>
1	Sludge modified tanks (T-101B)	1	φ3.2x5.5m, V=60m <sup>3</sup> , vertical, with heating coils, materials: CS
1.1	blender	1	HQ1500-125T1/CX1400-125T1 reducer F108-22-24.2-V1, 15kW
1.2	Anti-corrossion	1 set	Heat resistant coating
1.3	Hot insulation	1 set	Silicate aluminum rock wool t=80mm

## EQUIPMENT LISTS OF OIL SLUDGE SEPARATION PACKAGE

1.4	Ladder and platform	1 set		
2	Overflow double chambers filter F-103	1	MSL150I-1.6/10CS	
3	Piping and valves system	1 set		
3.1	Electrical-driven butterfly valve LV-201A/B/C	1	DN80 PN1.6	
	Electrical-driven butterfly valve LV-202A/B	1	DN80 PN1.6	
	Electrical-driven butterfly valve FV-201A/B/C	1	DN100 PN1.6	
	Electrical-driven butterfly valve FV-202A/B/C	1	DN80 PN1.6	
3.2	Electrical-driven valve MOV-201(202)	2	DN150/ DN50	
	Electrical-driven butterfly valve FV-203A/B/C	1	DN50	
3.3	T valve TV-201A/B/C	1	DN25	
3.4	Piping and valves system	1		
4	Instrumentation and control system	1		
4.1	Integrated temperature transmitter	1	SBWZKG-2460S	
4.2	Floater level switch	1	UQK	
4.3	Pressure gauge	1	YTN	
4.4	Temperature gauge	1	WSSF-483	
4.5	Differential pressure liquid level transmitter	1	IDP20LTT52S00024SSID	
4.6	Instrument pipes and wire/cable	1 set		
<b>(5)</b>	<b>Sludge modification skid C</b>	<b>1 set</b>	<b>HBP-TZG60</b>	
1	Sludge modified tanks (T-101C)	1	φ3.2x5.5m, V=60m <sup>3</sup> , vertical, with heating coils, materials: CS	
1.1	blender	1	HQ1500-125T1/CX1400-125T1 reducer F108-22-24.2-V1, 15kW	
1.2	Anti-corrossion	1 set	Heat resistant coating	
1.3	Hot insulation	1 set	Silicate aluminum rock wool t=80mm	
1.4	Ladder and platform	1 set		
2	Overflow double chambers filter F-103	1	MSL150I-1.6/10CS	
3	Piping and valves system	1 set		
3.1	Electrical-driven butterfly valve LV-201A/B/C	1	DN80 PN1.6	
	Electrical-driven butterfly valve LV-202A/B	1	DN80 PN1.6	
	Electrical-driven butterfly	1	DN100 PN1.6	



## EQUIPMENT LISTS OF OIL SLUDGE SEPARATION PACKAGE

	valve FV-201A/B/C			
	Electrical-driven butterfly valve FV-202A/B/C	1	DN80 PN1.6	
3.2	Electrical-driven valve MOV-201(202)	2	DN150/ DN50	
	Electrical-driven butterfly valve FV-203A/B/C	1	DN50	
3.3	T valve TV-201A/B/C	1	DN25	
3.4	Piping and valves system	1		
4	Instrumentation and control system	1		
4.1	Integrated temperature transmitter	1	SBWZKG-2460S	
4.2	Floater level switch	1	UQK	
4.3	Pressure gauge	1	YTN	
4.4	Temperature gauge	1	WSSF-483	
4.5	Differential pressure liquid level transmitter	1	IDP20LTT52S00024SSID	
4.6	Instrument pipes and wire/cable	1 set		
(6)	<b>Process recycle water skid</b>	<b>1 set</b>	<b>HBP-HSG80</b>	
1	Recycle water tank (V-102)	1	φ2.6x13.8, V=80m <sup>3</sup> , horizontal type, with heating coil, materials: CS	
1.1	Anti-corrosion	1 set	Anti-rust paint	
1.2	Hot insulation	1 set	Silicate aluminum rock wool t=50mm	
1.3	Ladder and platform	1 set		
2	Piping and valves system	1 set		
3	Instrumentation and control system	1 set		
3.1	Differential pressure liquid level transmitter	1	IDP20LTT52S00024SSID	
3.2	Integrated temperature transmitter	1	SBWZKG-2460S	
3.3	Floater liquid level meter	1	UQK	
3.4	Bi-metal temperature meter	2	WSSF-483	
3.5	Pressure gauge	2	YTN	
3.6	Pressure transmitter	1	3051	
(7)	<b>Recovery oil separator skid</b>	<b>1set</b>	<b>HBP-FLQ80</b>	
1	Oil tank (V-101)	1	φ2.6x13.8, V=80m <sup>3</sup> , horizontal type, with heating coils and SS padding, main materials: CS	
1.1	Anti-corrosion	1 set	Oil resistant painting	

## EQUIPMENT LISTS OF OIL SLUDGE SEPARATION PACKAGE

1.2	Hot insulation	1 set	Silicate aluminum rock wool t=50mm	
1.3	Ladder and platform	1 set		
2	Piping and valves system	1 set		
3	Instrumentation and control system	1 set		
3.1	Differential pressure liquid level transmitter	1	IDP20LTT52S00024SSID	
3.2	Integrated temperature transmitter	1	SBWZKG-2460S	
3.3	Floater liquid level meter	1	UQK	
3.4	Bi-metal temperature meter	2	WSSF-483	
3.5	Pressure gauge	2	YTN	
3.6	Instrument piping and wire/cable	1 set		
<b>(8)</b>	<b>Boost pump skid</b>	<b>1 set</b>		
1	Hot water pump P-102	2	Q=50m <sup>3</sup> /h, H=60m	
2	Oil export pump P-101	2	Q=20m <sup>3</sup> /h, H=60m	
3	Piping and valves system	1 set		
3.1	Clamp plate valve	5	Z73-16 DN100	
	Clamp plate valve	3	Z73-16 DN80	
	Clamp plate valve	8	Z73-16 DN50	
3.2	Swing check valve	2	H44H-16C DN100	
	Swing check valve	1	H44H-16C DN80	
	Swing check valve	2	H11H-16P DN50	
3.3	Global valve	3	J41H(R)-16C DN25	
3.4	Gate valve	14	Z11H(R)-16C NPT DN25	
3.5	Y type filter	3	SBY-II DN100-1.6	
	Y type filter	2	SBY-II DN80-1.6	
3.6	Seamless pipe (m)	12	φ114x4 20# GB/T8163-1999	
	Seamless pipe (m)	9	φ89x3.5 20# GB/T8163-1999	
	Seamless pipe (m)	20	φ60x3 20# GB/T8163-1999	
	Seamless pipe (m)	9	φ34x3 20# GB/T8163-1999	
3.7	Piping anticorrosion	1 set	Anti rust painting	
3.8	Piping insulation	1 set	Silicate aluminum	
4	Instrumentation and control system	1 set		
4.1	Magnetic level meter	1	UHZ-517C10AL-2000	
4.2	Target type flow meter	3	SBL-AY**CCIXN	
4.3	Pressure gauge	6	Y-150 0-1MPa	
4.4	Bi-metal temperature gauge	1	WSSF-483	
4.5	Oil outlet regulator	1	ZDLJP-16B	
4.6	Instrument piping and wire/cable	1		



## EQUIPMENT LISTS OF OIL SLUDGE SEPARATION PACKAGE

5	Electric system	1		
6	Skid base	1	9000x2500x200m	
<b>(9)</b>	<b>Steam boiler skid</b>	<b>1 set</b>	<b>HBP-JRL1200</b>	
1	heater <i>H 101</i>	1	WNS2-1.0-Y(Q)	
2	Fuel gas ratio-adjusting burner	1	TBG120PN	
3	Water feed pump	1	40LG12-15×8 Flow rate:9m3/h H:128m 7.5kW	
4	Automatic sodium ion exchanger	1	Rated treat capacity: 2 m3/h	
5	Control panel	1	GKT-Q4T	
6	Piping and valves system	1 set		
7	Instrumentation and control system	1 set		
8	Electric system	1 set		
9	Condensation recovery Systems	1		
<b>(10)</b>	<b>Diesel generator set skid</b>	<b>1 set</b>		
	Commins water cool diesel engine			
	24V DC motor and charging generator		NTA855-G1B	
	Electron speed regulator			
	Single bearing generator, level H		BFWS300-4	
	Exciter/voltage adjust torque match			
	Three stages circuit breaker			
	Fuel filter and engine oil filter, oil water separator			
	Engine oil drain valve			
	Air filter			
	Muffle ( 9db )			
	Automatic digital control system			
<b>(11)</b>	<b>Chemical dosing skid</b>	<b>1 set</b>	<b>HBP-JYQ</b>	
A	Liquid dosing device	3		
1	Dilution box	3	1.0m3, 304ss	
2	Diaphragm metering pump	3	JZM-300/0.6	

## EQUIPMENT LISTS OF OIL SLUDGE SEPARATION PACKAGE

3	Mixer	3	FJB-0.75KW	
4	Drainage valve	2	DN50 304	
5	Ball valve	9	DN25 304	
6	Filter for valve	3	DN20 304	
7	Liquid level meter	3	304ss	
8	Safety valve	3	DN15-1.6 304	
9	Pressure gauge	3	DN15-1.6 304	
10	Piping and fitting	1		
11	Ladder and platform	1		
12	Skid base	1		
13	Frequency inverter	3		
B	Flocculent dosing system	1		
1	Chemical mixing box		Effective volume: 2.2.m3	
	Mixing chamber:800L			
	Curing chamber:800L			
	Injection chamber: 600L			
	Dry powder box:60L			
2	Flocculent dosing pump	3	1.0m3/h, 2.0MPa, vertical screw pump	
3	Mixer motor	2	RF37-0.55Y90L,0.55kW	
4	Feed reducer	1		
5	Automatic dehumidifier	1		
6	Automatic level detector	1		
7	Flow induction detector	1		
8	Flocculent flow control system	3		
9	SS piping and valve system	1		
10	Electric and instrumentation control system	1		
11	Skid base	1		
(12)	<b>Water storage skid A</b>	<b>1</b>	<b>12*2.5*2.5m</b>	<b>58.8 m<sup>3</sup></b>
1.1	Anti-corrosion	1 set		
1.2	Hot insulation	1 set	Silicate aluminum rock wool t=50mm	
1.3	Ladder and platform	1 set		
2	Piping and valves system	1 set		
(13)	<b>Water storage skid B</b>	<b>1</b>	<b>12*2.5*2.5m</b>	<b>58.8 m<sup>3</sup></b>
1.1	Anti-corrosion	1 set		
1.2	Hot insulation	1 set	Silicate aluminum rock wool t=50mm	
1.3	Ladder and platform	1 set		
2	Piping and valves system	1 set		

EQUIPMENT LISTS OF OIL SLUDGE SEPARATION PACKAGE

(14)	<b>Water storage skid C</b>	1	12*2.5*2.5m	
1.1	Anti-corrosion	1		
1.2	Hot insulation	1	Silicate aluminum rock wool t=50mm	
1.3	Ladder and platform	1		
2	Piping and valves system	1		
(15)	<b>Water storage skid D</b>	1	12*2.5*2.5m	
1.1	Anti-corrosion	1		
1.2	Hot insulation	1	Silicate aluminum rock wool t=50mm	
1.3	Ladder and platform	1		
2	Piping and valves system	1		
(16)	<b>Diesel tank skid</b>	1		
A	diesel tank	1	Φ2*8m	
1.1	Anti-corrosion	1 set	Oil resistant painting	
1.2	Hot insulation	1 set	Silicate aluminum rock wool t=50mm	
1.3	Ladder and platform	1 set		
2	Piping and valves system	1 set		
3	Instrumentation and control system	1 set		
B	diesel pump	2	Q=20m <sup>3</sup> /h, H=60m	
(17)	<b>Lab container</b>	1	6m*2.5m*2.5m	
1	BS&W test kit	1 set		
2	air-conditioner	1 set		
3	Table and chair	1 set		
4	Lighting and vent fan	1set		
	+ Salt test kit	1set	+ Oil in water test kit	1set
(18)	Wheeled cart	3 sets		
(19)	<b>interconnecting materials (pipeline and cables etc.)</b>	1 batch	Oil resistant hose	

Notes:

1. All valves will conform to API standards, and conform to KOC specification, 015-LH-1001;
2. Electrical design, installation and testing will as per 015-PH-1901;
3. No individual F&G control system for above proposed solution, but flammable gas sensors are provided for equipment skids where applicable. All instrument will source from international



EQUIPMENT LISTS OF OIL SLUDGE SEPARATION PACKAGE

well-known manufacturer, and the approved suppliers specified in KOC-I-001 are preferred, KOC-I-001 is applicable for this project;

4. Wetted parts of valves and instruments shall be SS as minimum;
5. Vessels and pipings will be made ASME materials;.
6. The above configurations for equipment package will subject to the changes which for better performance and design optimization.

### 1.3 Capital spare parts

#### Capital Spare Parts

No	Name	Descriptions	Unit	Qty	Remrks
1	bowl belt drive	E 355.400X03	pie	1	centrifuge
2	V-belts	SPAX-2120 LW	pie	4	centrifuge
3	conveyer belt drive	E 325.4016.04	pie	1	centrifuge
4	V-belts	XPA-1900 LW	pie	1	centrifuge
5	Fuel filter		pie	1	generator
6	Engine oil filter		pie	1	generator
7	Air filter		pie	1	generator
8	Pressure gauge		set	2	
9	Temperature gauge		set	2	
10	Differential pressure liquid level transmitter		set	2	
11	Spare valves		batch	1	
12	Spare tubing & fittings		batch	1	
13	Cable and wire		batch	1	
14	Electrical items		batch	1	
15	Automation items		batch	1	