



TAMOIL RAFFINAZIONE S.p.A.
Raffineria di Cremona

CLIENT: TAMOIL Raffinazione S.p.A.
PROJECT: MINIMUM INVESTMENT PROJECT
UNIT: UNIT 300 - CDU

CONTRACT: 1-BD-0381A

Equipment List

Drawing no.: BD0381A-01-300-101
TAMOIL doc no.:

Revision: C01

Date: 21/10/2007

Issued by: A. Dolfini

Checked by: R. Grigoletto

Approved by: F. Croce



TAMOIL RAFFINAZIONE S.p.A.
Raffineria di Cremona

FWI job N°: 1-BD-0381A
Client: TAMOIL Raffinazione S.p.A.
Project: Minimum Investment Project
Unit: 300 - CDU

Number: BD0381A-01-300-101
Revision: C01



EQUIPMENT LIST

General Notes

(A): P&ID Number 300-0-50-xxx

(B): Requisition BD0381A-xxx

(C): Insulation Type

HC = Heat Conservation
NI = Not Insulated
PP = Personnel Protection
ST = Steam Tracing
ET = Electrical Tracing
WW = Winterized
AI = Acoustic Insulation

(D): PED Category

Category from SEP to IV (to be defined by Vendors) |

"Type Of Service" field is indicating the service: continous, stand-by, intermittend, spare...



TAMOI RAFFINAZIONE S.p.A.
 Refinazione di Grepone

FWI job N°: 1-8D-0381A
 Client: TAMOI Raffinazione S.p.A.
 Project: Mininum Investment Project
 Unit: 300 - CDU

Number: BD0381A-01-300-101
 Revision: C01



EQUIPMENT LIST

Equipment Number	Equipment Name	Equipment Type	P&ID N° BD0381A-300-50-XX (A)	Requisition (B)	Weight	Size		Electrical Power	Voltage	Material	Duty	Design		Insulation		PED Cat (D)	TCS	Type Of Service	Remarks	Revision
						DIAMETER	LENGTH					Press	Temp	Type (C)	Thick					
						kg	mm					mm	kW	V	MW					
C-301	ATMOSPHERIC TOWER	VERTICAL	36	HOLD	HOLD	TOP SECTION 4880 STRIPPING SECTION 3050	30000	N.A.	-	INTERNAL: 6 trays MONEL 6 trays CS + 4 mm ca 16 trays AISI 410	HOLD	HOLD	HOLD	HOLD	HOLD	HOLD	HOLD	HOLD	Existing column. Replacement of existing trays (diameter 4880 mm) with 28 high capacity trays (Ultrafrac type). Some nozzles shall be modified.	C01
C-302 A	KERO STRIPPER	VERTICAL	36	HOLD	HOLD	1680	4900	N.A.	-	INTERNAL: 6 trays CS + 4mm ca	HOLD	HOLD	HOLD	HOLD	HOLD	HOLD	HOLD	HOLD	Existing column. Replacement of existing trays (diameter 1680 mm) with 6 two pass tray.	C01
C-302 C	GAS STRIPPER	VERTICAL	36	HOLD	HOLD	1680	4420	N.A.	-	INTERNALS: 4 trays AISI 410	HOLD	HOLD	HOLD	HOLD	HOLD	HOLD	HOLD	HOLD	Existing column. Replacement of existing trays (diameter 1680 mm) with 4 one pass trays (partialized area).	C01



FWI job N° 1-BD-0381A
 Client TAMCOIL, Raffinazione S.p.A.
 Project Mininum Investment Project
 Unit: 300 - CDU

Number: BD0381A-01-300-101
 Revision: C01



EQUIPMENT LIST

Equipment Number	Equipment Name	Equipment Type	P&ID N° BD0381A-300-90-XX (A)	Regulation (B)	Weight (kg)	Size		Electrical Power (kW)	Voltage (V)	Material	Design			Insulation		TOS	Type Of Service	Remarks	Revision		
						DIAMETER (mm)	LENGTH (mm)				Duty (MMKcal/h)	Press (Kg/cm2g)	Temp (°C)	Type (C)	Thick					PED Cat (D)	
E-301 A-D	CRUDE/ATM TOWER OVHD VAPOR																				
E-302 A/B	CRUDE/ATMOSPHERIC RESIDUE																				TO BE DISMANTED, REPLACED BY E-381A/B
E-304 A/D	CRUDE/ATM BOTTOM																				TO BE DISMANTED, REPLACED BY E-387A/B
E-305A	CRUDE/LGO																				TO BE DISMANTED, REPLACED BY E-388A-C
E-307 A/D	CRUDE/HVGO PA	S&T	33	HOLD	HOLD	HOLD	HOLD	HOLD	-	HOLD	4.55	HOLD	HOLD	HOLD	HOLD	HOLD	HOLD	HOLD			EXISTING EXCHANGER IN NEW SERVICE (SHELL SIDE)
E-308 A-D	CRUDE/HVGO PA	S&T	34	HOLD	HOLD	HOLD	HOLD	HOLD	-	HOLD	5.55	HOLD	HOLD	HOLD	HOLD	HOLD	HOLD	HOLD			EXISTING EXCHANGERS IN NEW SERVICE (SHELL SIDE)
E-310A/B	CRUDE/ATM TOWER OVHD CONDENSER																				TO BE DISMANTED, REPLACED BY E-384
E-351 A/B	CRUDE	S&T	33	HOLD	HOLD	HOLD	HOLD	HOLD	-	HOLD	4.14	HOLD	HOLD	HOLD	HOLD	HOLD	HOLD	HOLD			EXISTING EXCHANGERS IN NEW SERVICE (SHELL SIDE)
E-354	CRUDE/KERO	S&T	31	HOLD	HOLD	HOLD	HOLD	HOLD	-	HOLD	0.87	HOLD	HOLD	HOLD	HOLD	HOLD	HOLD	HOLD			EXISTING EXCHANGERS IN NEW SERVICE (SHELL SIDE)
E-357	CRUDE/LGO																				TO BE DISMANTED, REPLACED BY E-389A/B
E-381 A/B	CRUDE/ATM TOWER OVHD VAPOR	COMPABLOC	31								16.3	CRUDE: 25.3 OVHD: 19.5+FV	CRUDE: 130 OVHD: 180								New exchangers to be installed in place of existing E-301 A-D. To be installed a new structure close to V-301, 2 in parallel. Each exchangers to be designed for 100% of specified duty without any margin.
E-383 A/B	CRUDE/TPA	S&T	33	HOLD	HOLD	AREA: 2 x 310 m ² Tube L=4880 mm Shell ID=1100 mm					0.53	SHELL: CS TUBES: CS 14 BWG	SHELL: 35 TUBES: 27	HOLD	HOLD	HOLD	HOLD				New exchangers, to be installed downstream existing E-303B/E-356
E-384	ATM TOWER TRIM COOLER	S&T	37	HOLD	HOLD	AREA: 300 m ² Tube L=4880 mm					1.73	SHELL: CS TUBES: CS 16 BWG	SHELL: 5 • FV TUBES: 5	HOLD	HOLD	HOLD	HOLD				New exchanger to be installed in place of existing E-310.
E-385 A/B	CRUDE/BPA	S&T	34	HOLD	HOLD	AREA: 2 x 355 m ² Tube L=4880 mm					5.23	SHELL: CS TUBES: CS 14 BWG	SHELL: 34.5 TUBES: 30	HOLD	HOLD	HOLD	HOLD				New exchangers, 2 in parallel.
E-386 A-D	CRUDE/VACUUM RESIDUE	S&T	34	HOLD	HOLD	AREA: 4 x 435 m ² Tube L=4880 mm Shell ID=1300 mm					4.98	SHELL: CS + 3 mm SS410S TUBES: SS410S 16 BWG	SHELL: 370 TUBES: 340	HOLD	HOLD	HOLD	HOLD				New exchangers, 2 in series x 2 in parallel.
E-387 A/B	CRUDE/VACUUM (ATMOSPHERIC) RESIDUE	S&T	31	HOLD	HOLD	AREA: 2 x 460 m ² Tube L=4880 mm Shell ID=1300 mm					6.64	SHELL: CS TUBES: CS 14 BWG	SHELL: 25.5 TUBES: 30.4	HOLD	HOLD	HOLD	HOLD				New exchangers to be installed in place of existing E-302 A/B
E-388 A-D	CRUDE/HVGO PRODUCT	S&T	33	HOLD	HOLD	AREA: 4 x 200 m ² Tube L=4880 mm Shell ID=900 mm					4.66	SHELL: CS + 6mm ca TUBES: CS 12 BWG	SHELL: 34.4 TUBES: 26.5	HOLD	HOLD	HOLD	HOLD				New exchangers to be installed in place of existing E-304A D, 2 in series x 2 in parallel
E-389 A/B	CRUDE/LGO	S&T	33	HOLD	HOLD	AREA: 2 x 95 m ² Tube L=4880 mm Shell ID=650 mm						SHELL: CS TUBES: CS 14 BWG	SHELL: 34.5 TUBES: 26.5	HOLD	HOLD	HOLD					New exchangers to be installed in place of existing E-305A/E-357 2 in parallel



TAMOIL RAFFINAZIONE S.p.A.
Raffineria di Cremona

FWI job N°: 1-BD-0381A
Client: TAMOIL Raffinazione S.p.A.
Project: Mininum Investment Project

Unit: 300 - CDU

Number: BD0381A-01-300-101
Revision: C01



EQUIPMENT LIST

Equipment Number	Equipment Name	Equipment Type	P&ID N° BD0381A-300-50-XX (A)	Requisition (B)	Weight kg	DIMENSION	FLOW RATE		HEAD m	Electrical Power kW	Voltage V	Material	Design		Insulation		PED Cat (D)	TOS	Type Of Service	Remarks	Revision
							m³/h						Press Kg/cm2g	Temp °C	Type (C)	Thick					
P-304 N	KEROSENE PUMP	CENTRIFUGAL	41	HOLD	HOLD	HOLD	170	165	82	HOLD	HOLD	IMPELLER: A 487 CA 6 NM	17,84	179	HOLD	HOLD	HOLD	HOLD	HOLD	New impellers, from F 311 mm to F 359 mm.	C01
P-305 A/B	TPA																				
P-306 A/B	GAL PRODUCT																				
P-352 A/B	FRACT OVHD PLUS REFLUX																				
P-353A/B	SOUR WATER	CENTRIFUGAL	37	HOLD	HOLD	HOLD	12	38	HOLD	HOLD	HOLD	IMPELLER: AISI 316	HOLD	HOLD	HOLD	HOLD	HOLD	HOLD	HOLD	New impellers, from F 155 mm to F 172mm.	C00
P-381A/B	TPA	CENTRIFUGAL	36	HOLD	HOLD	HOLD	875	90	250 (each motor)			CASING: SS IMPELLER: Ni Cast Iron	12,286	HOLD	HOLD	HOLD	HOLD	HOLD	HOLD	New pumps in place of existing P-305A	C00
P-382 A/B	GAL PRODUCT	CENTRIFUGAL	41	HOLD	HOLD	HOLD	180	215	100 (each motor)			CASING: CS IMPELLER: 11- 13% Cr	21,1	HOLD	HOLD	HOLD	HOLD	HOLD	HOLD	New pumps in place of existing P-306A/B (1 operating, 1 spare)	C00
P-383 A/B	FRACT OVHD PLUS REFLUX	CENTRIFUGAL	37	HOLD	HOLD	HOLD	440	120	165 (each motor)	HOLD		CASING: SS IMPELLER: Cast Iron	15,288	HOLD	HOLD	HOLD	HOLD	HOLD	HOLD	New pumps (1 operating, 1 spare) in place of existing P-352 A/B	C00