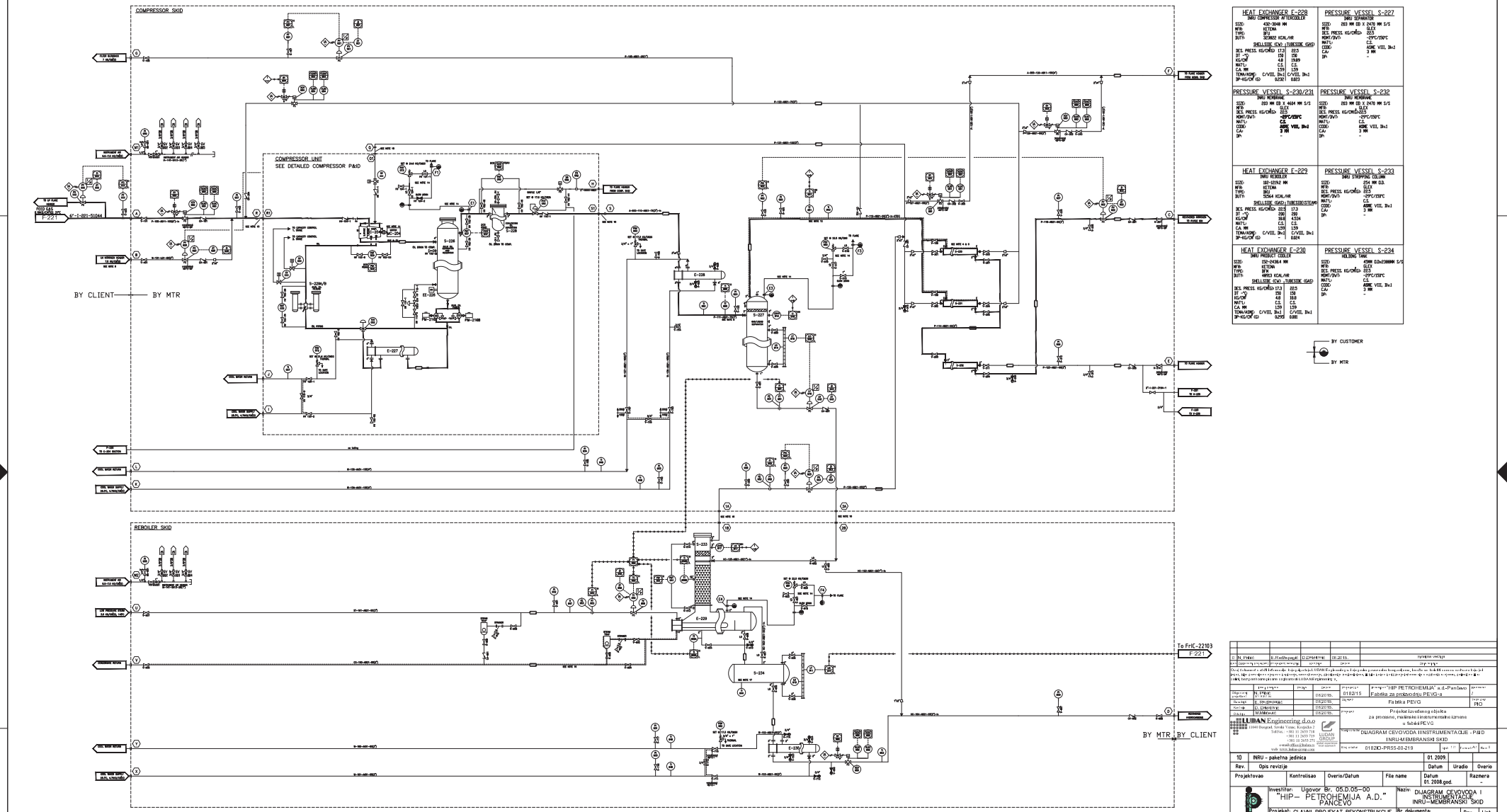

HEAT EXCHANGER E-228		PRESSURE VESSEL S-227	
INRU COMPRESSOR AFTERCOOLER		INRU SEPARATOR	
SIZE:	450-3048 MM	SIZE:	250 MM OD X 2470 MM S/S
MFR:	KETTEN	MFR:	GLCX
TYPE:	BFU	DES. PRESS. KG/CM2G:	22.5
DUTY:	300900 KCAL/HR	HDMT/DVT:	-29°C/150°C
SHELLSIDE (CW) / TUBESIDE (GAS)		MATL:	C.S.
DES. PRESS. KG/CM2G:	17.3 / 22.5	CODE:	ASME VIII, Div.1
DT: °C	150 / 150	CA:	3 MM
KG/CM²	4.8 / 19.89	IN:	-
MATL:	C.S. / C.S.		
CA: MM	1.59 / 1.59		
TEMA/ASME:	C/VIII, Div.1 C/VIII, Div.1		
DP-KG/CM SQ	0.2521 / 0.823		

PRESSURE VESSEL S-230/231		PRESSURE VESSEL S-232	
INRU MEMBRANE		INRU MEMBRANE	
SIZE:	203 MM OD X 4604 MM S/S	SIZE:	203 MM OD X 2470 MM S/S
MFR:	GLCX	MFR:	GLCX
DES. PRESS. KG/CM2G:	22.5	DES. PRESS. KG/CM2G:	22.5
HDMT/DVT:	-29°C/150°C	HDMT/DVT:	-29°C/150°C
MATL:	C.S.	MATL:	C.S.
CODE:	ASME VIII, Div.1	CODE:	ASME VIII, Div.1
CA:	3 MM	CA:	3 MM
IN:	-	IN:	-

HEAT EXCHANGER E-229		PRESSURE VESSEL S-233	
INRU REBOILER		INRU STRIPPING COLUMN	
SIZE:	168-12192 MM	SIZE:	254 MM O.D.
MFR:	KETTEN	MFR:	GLCX
TYPE:	BFU	DES. PRESS. KG/CM2G:	22.5
DUTY:	5064 KCAL/HR	HDMT/DVT:	-29°C/150°C
SHELLSIDE (GAS) / TUBESIDE (STEAM)		MATL:	C.S.
DES. PRESS. KG/CM2G:	22.5 / 17.3	CODE:	ASME VIII, Div.1
DT: °C	200 / 200	CA:	3 MM
KG/CM²	18.8 / 4.534	IN:	-
MATL:	C.S. / C.S.		
CA: MM	1.59 / 1.59		
TEMA/ASME:	C/VIII, Div.1 C/VIII, Div.1		
DP-KG/CM SQ	- / 0.824		

HEAT EXCHANGER E-230		PRESSURE VESSEL S-234	
INRU PRODUCT COOLER		HOLDING TANK	
SIZE:	152-24384 MM	SIZE:	4398 ID x 5588MM S/S
MFR:	KETTEN	MFR:	GLCX
TYPE:	BFM	DES. PRESS. KG/CM2G:	22.5
DUTY:	46953 KCAL/HR	HDMT/DVT:	-29°C/150°C
SHELLSIDE (CW) / TUBESIDE (GAS)		MATL:	C.S.
DES. PRESS. KG/CM2G:	17.3 / 22.5	CODE:	ASME VIII, Div.1
DT: °C	150 / 150	CA:	3 MM
KG/CM²	4.8 / 18.8	IN:	-
MATL:	C.S. / C.S.		
CA: MM	1.59 / 1.59		
TEMA/ASME:	C/VIII, Div.1 C/VIII, Div.1		
DP-KG/CM SQ	0.295 / 0.881		

PROCESS/UTILITY CONNECTIONS

TAG	DESCRIPTION	SIZE/TYPE	TAG	DESCRIPTION	SIZE/TYPE	TAG	DESCRIPTION	SIZE/TYPE
A	FEED TO SYSTEM	6" 1500# RF FL.	U	STEAM TO REBOILER E-229	2" 300# RF FL.	1A-B	CONT. OF A-800-155-AB21-50(2")	2" 300# RF FL.
B	NITROGEN TO SYSTEM	2" 1500# RF FL.	V	CONDESATE FROM REBOILER E-229	2" 300# RF FL.	2A-B	CONT. OF A-800-120-AB21-25(1")	1" 300# RF FL.
C	RECOVERED NITROGEN TO PURGE BIN	2" 1500# RF FL.	Q	PERMEATE TO COMPRESSOR	3" 300# RF FL.			
D	RECOVERED HYDROCARBONS	2" 300# RF FL.	R	PROCESS GAS TO COMPRESSOR	6" 300# RF FL.			
E	PERMEATE TO FLARE	2" 1500# RF FL.	S	PROCESS GAS FROM COMPRESSOR	3" 300# RF FL.			
F	TO FLARE FROM MEMBRANE SKID	4" 1500# RF FL.	X	COOLING WATER TO COOLER E-230	2" 150# RF FL.			
G	FILTER BLOWBACK	1" 300# RF FL.	Y	COOLING WATER FROM COOLER E-230	2" 150# RF FL.			
H	TO FLARE FROM COMPRESSOR SKID	3" 1500# RF FL.						
I	COOLING WATER TO OIL COOLER E-227	4" 1500# RF FL.	E1	TO PSV-073 FROM COMPRESSOR SKID	1.5" 300# RF FL.			
J	COOLING WATER FROM OIL COOLERE-227	4" 1500# RF FL.	F1	FROM PSV-073 TO FLARE	3" 150# RF FL.			
K	COOLING WATER TO CONDENSER E-228	4" 1500# RF FL.	E3	TO PSV-960 FROM MEMBRANE SKID	X" 300# RF FL.			
L	COOLING WATER FROM CONDENSER E-228	4" 1500# RF FL.	F3	FROM PSV-960 TO FLARE	X" 150# RF FL.			
M1	INSTRUMENT AIR ON MEMBRANE SKID	1" 1500# RF FL.	E4	TO PSV-961 FROM REBOILER SKID	X" 300# RF FL.			
M2	INSTRUMENT AIR ON REBOILER SKID	1" 1500# RF FL.	F4	FROM PSV-961 TO FLARE	X" 150# RF FL.			

ESTIMATED WEIGHTS

DESCRIPTION	SHIPPING METHOD	WEIGHT-KG
MEMBRANE SKID	TBD	10,000
COMPRESSOR SKID	TBD	25,000
REBOILER SKID	TBD	6,000

OVERALL DIMENSIONS

DESCRIPTION	DIMENSION CRITERIA	ACTUAL DIMENSION
MEMBRANE SKID	LxWxH (M)	6.10x2.59x4.12
COMPRESSOR SKID	LxWxH (M)	9.75x3.5x3.6
REBOILER SKID	LxWxH (M)	3.85x2.18x9.04

GENERAL NOTES

1. ELECTRICAL AREA CLASSIFICATION IS ZONE 1, GROUP IIA, T3, IEC-CODE
2. SYSTEM CONTROL BY CUSTOMER DCS; COMPRESSOR RUNNING PANEL AND JUNCTION BOXES ARE INSTALLED ON COMPRESSOR AND MEMBRANE SKID
3. NORMAL OPERATING PRESSURE IS 20.4 KG/CM2(A)
4. EACH FIRST STAGE MEMBRANE MODULE CONTAINS FOUR 8-INCH INSERTS AND SECOND STAGE MEMBRANE MODULE CONTAINS ONE 8-INCH INSERTS
5. PERMEATE OVER-PRESSURE PROTECTION CHECK VALVE INSTALLED IN MODULES
6. FREE DRAINING, NO POCKETS
7. ALL INSTRUMENTS ARE SMART TYPE, WITH LOCAL LCD
8. FOR START-UP, SHUT-DOWN, AND OPERATION WITH NITROGEN ONLY
9. INSULATION AND ELEC. HEAT TRACING BY CUSTOMER
10. INTERCONNECTING PIPING (DESIGN AND MATERIAL) BY CUSTOMER
11. ELEC. CONNECTIONS OUTSIDE OF SKID BOUNDARIES BY CUSTOMER
12. PIPE FROM SEPARATOR TO MODULES IS ELC. HEAT TRACED AND INSULATED (BY CUSTOMER)
13. ALL PRESSURE VESSEL AND HEAT EXCHANGER ARE DESIGNED AND FABRICATED TO ASME
14. PSV ASSEMBLIES BY MTR; INSTALLATION AND INTERCONNECTING PIPING BY CUSTOMER
15. CONDENSATE LINE STEAM-HEATRACED BY CUSTOMER
16. ALL TAG NO'S ON THIS FLOW DIAGRAM ARE PRECED BY 21
17. FIVE (5) MINUTE RETENTION TIME

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STAMP

CERTIFIED BY MTR, INC.
SIGNATURE:.....DATE:.....

REVISION

Rev	Description	Des	Eng	Date
10	AS BUILT, CHANGED SOLENOID VALVES TAGS FROM XY TO SY	JHK	MRK	06/12/08
9	CHANGED REBOILER COLUMN FEED NOZZLE AND STEAM TRAP	JHK	MRK	01/29/08
6	CHANGED TAG#S AND FEED TEMPERATURE	JHK	MRK	01/09/08
5	REMOVED LT NOZZLES	JHK	MRK	12/11/07
4	MEMBRANE AND REBOILER SKID LAYOUT	JHK	MRK	10/25/07
3a	REVISED LINE NUMBERS AS PER MTR SPECS. & INSTR. SYMBOLS	JHK	MRK	10/22/07
2	CHANGED NOZZLE SIZES	JHK	MRK	08/13/07
1	WITH INSTRUMENT AND VALVE TAG NUMBERS	JHK	MRK	08/08/07
0	FOR APPROVAL	JHK	MRK	07/06/07

Membrane Technology & Research, Inc.
1360 Willow Road, Menlo Park, CA 94025 (650) 328-2228

P&ID

Unit: INRU
System Type: VAPORSEP
No. of Membrane Inserts: 9
Customer/Consultant:
HIP PETROHEMIJA

SERBIA

UBO/W.O. No.: 1
DWG. No.: VS1658P01
Sheet: 1 of 1

Scale: NTS | P.S. No.: 05.D.05
Name | Initial | Date
Project Engineer: -- | JHK | 07/06/07

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Investitor: Ugovor Br. 05.D.05-00
"HIP- PETROHEMIJA A.D." PANČEVO

Naziv: DIJAGRAM CEVOVODA I INSTRUMENTACIJE INRU-MEMBRANSKI SKID

Projekat: GLAVNI PROJEKAT REKONSTRUKCIJE PF SEKCIJE FABRIKE PEVG DO 90 000T PRAHA/GOD

Br. dokumenta: XB-05 F-219

Rev 10 | List 1/1

Projektovao | Kontrolisao | Overio/Datum | File name | Datum 01.2008.god. | Razmera

Rev. | Opis revizije | Datum | Uradio | Overio

10 | INRU - pakehna jedinica | 01. 2009.

Naziv projekta: "HIP PETROHEMIJA" a.d.-Pančevo
Fabrika PEVG-a
Projekat izvođenog objekta za procesne, mašinsko-instrumentalne izmene u fabrici PEVG
Naziv dokum.: DIJAGRAM CEVOVODA I INSTRUMENTACIJE - P&ID INRU-MEMBRANSKI SKID
Broj dokum.: 0182KO-PRS-00-219
Tip: III | Format: A1 | Rev.: 0