

 NISOC	نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض و ابنیه تحت الارض خرید پکیج کولرهای هوایی ایستگاه تقویت فشار گاز بینک (قرارداد BK-HD-GCS-CO-0015_02)							
شماره پیمان: 053 – 073 – 9184	Process Data Sheet for AE-2102 (A/B/C)							شماره صفحه : 1 از 6
	پروژه	بسته کاری	صادر کننده	تسهیلات	رشته	نوع مدرک	سریال	
	BK	GCS	AA	120	PR	DS	0002	
								V02

طرح نگهداشت و افزایش تولید 27 مخزن

Process Data Sheet for AE-2102 (A/B/C)
نگهداشت و افزایش تولید میدان نفتی بینک

V02	Aug.2024	IFA	AAC	M.FAKHARIAN	M.SADEGHIAN	
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Status:

IFA: Issued For Approval
IFI: Issued For Information
AFC: Approved For Construction

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	BK	GCS	AA	120	PR	DS	0002		V02

REVISION RECORD SHEET

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شماره پیمان: 053 – 073 – 9184	Process Data Sheet for AE-2102 (A/B/C)							شماره صفحه : 3 از 6	
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شماره پیمان: 053 – 073 – 9184	Process Data Sheet for AE-2102 (A/B/C)							شماره صفحه : 4 از 6	
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1. INTRODUCTION

Binak oilfield in Bushehr province is a part of the southern oilfields of Iran, is located 20 km northwest of Genaveh city.

With the aim of increasing production of oil from Binak oilfield, an EPC/EPD Project has been defined by NIOC/NISOC and awarded to Petro Iran Development Company (PEDCO). Also PEDCO (as General Contractor) has assigned the EPC-packages of the Project to "Hirgan Energy - Design and Inspection" JV.

GENERAL DEFINITION

The following terms shall be used in this document.

CLIENT:	National Iranian South Oilfields Company (NISOC)
PROJECT:	Binak Oilfield Development – Manufacturing (w/Engineering & Material Supply) of Air Coolers
EPD/EPC CONTRACTOR (GC):	Petro Iran Development Company (PEDCO)
OWNER:	OWNER is collectively refer to National Iranian South Oil Company (NISOC) and Petro Iran Development Company (PEDCO)
EPC CONTRACTOR:	Joint Venture of : Hirgan Energy – Design & Inspection(D&I) Companies
VENDOR:	Aban Air Cooler (AAC)
EXECUTOR:	Executor is the party which carries out all or part of construction and/or commissioning for the project.
THIRD PARTY INSPECTOR (TPI):	Third Party Inspector
SHALL:	Is used where a provision is mandatory.
SHOULD:	Is used where a provision is advisory only.
WILL:	Is normally used in connection with the action by CLIENT rather than by an EPC/EPD CONTRACTOR, supplier or VENDOR.
MAY:	Is used where a provision is completely discretionary.

 NISOC	نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض و ابنیه تحت الارض خرید پکیج کولرهای هوایی ایستگاه تقویت فشار گاز بینک (قرارداد /BK-HD-GCS-CO-0015_02)								
شماره پیمان: 053 – 073 – 9184	Process Data Sheet for AE-2102 (A/B/C)							شماره صفحه : 5 از 6	
	پروژه	بسته کاری	صادر کننده	تسهیلات	رشته	نوع مدرک	سریال		نسخه
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2. PROCESS DATA SHEET FOR AE-2102 (A/B/C)

rev.			DATA SHEET		Date : 2024.Aug.05	
			AIR COOLED HEAT EXCHANGER		Rev : 2-new design (Totally Revised)	
			ABAN AIR COOLER CO		CASE: 00012-AC-3991	
Customer / Purch.	(PEDCO) / (NISOC)				Item no.: AE-2102 (A/B/C)	
Plant location	Binak oilfield				Summer Case	
Service	2st Stage Gas Compression Cooler				No. Units: 3	
Plot size(W,L) [m]	2.12 x 3.90 (note2)		DRAFT	INDUCED	No.of bay: 1	
Surface / unit-Finned	1106.8	[m2]	Bare Tube		48.548	[m2]
Heat exchanged	582 (note 1)	[KW]	MTD		30.7	[C]
Transf. rate-finned	17.28	[W/m2 .k]	Bare Tube (C/D)		437.61/ 393.97	[W/m2k]
PRODUCT SIDE						
Fluid Name		Hydrocarbon		IN	OUT	
Total Fluid [kg/h]	IN 8664 x 1.1 (note 1)	OUT	Density (Liq)		981.96	[kg/m3]
Temperature [C]	148	60	Density (vap)		42.042	[kg/m3]
Vapor [kg/h]	9530.4	9489.1	Spec.Heat (Liq)		4.3096	[kJ/(kg.°C)]
Liquid [kg/h]		41.362	Spec.Heat (vap)		2.4255	[kJ/(kg.°C)]
N condensed [kg/h]			Conduct. (Liq)		0.6515	[W/Mk]
Steam [kg/h]			Conduct. (vap)		0.0473	[W/Mk]
Water [kg/h]			Viscosity (Liq)		0.4943	[cp]
Inlet pressure [barg]	54.9		Viscosity (Vap)		0.0164	[cp]
Fouling resist.[m2.k/w]	0.0002		Velocity		4.21 2.93	[m/s]
			Allo/Calc. Press.Drop		0.700 / 0.097	[bar]
AIR SIDE						
AirQuantity, Total (Per Unit)	29.468	[m3/s]	Face Velocity:		3.14	[m/s]
AirQuant./Fan	14.734	[m3/s]	Altit. / Min. Des.Amb.:		12.5 / 5	[m]/[C]
Static pressure	173.1	[Pa]	Temp.In / Out :		50.26 / 69.32	[C]
DESIGN						
Design pressure	62	[Barg]	Code Requirements	ASME VIII DIV.1 ; API 661		
Design temperature	175	[C]		TUBE		
Test pressure	80.60	[Barg]	Material	SA-213 TP316L		
BAY width [m]	2.118		Outside Diameter	25.4		[mm]
Bundle Size	2.06 x 3.900		Wall Thickness	1.651		[mm]
N .Bay	1		N ./Bundle	156		
N .Bundles / Bay	1		Length	3.9		[m]
N .Tube Rows	6		Pitch	69		[mm]
N .Passes	4			FIN		
Tube slope	1% on last pass		Type	EXTRUDED		
HEADER			Material	ALUMINIUM alloy 1060 - O		
Type	Plug		Outside Diameter	57.15		[mm]
Material	SA-240 TP316L		Stock Thick.	0.48		[mm]
Header Design / SPLIT	Shoulder/No		FPM	433.1		
Plug Mat	SA 182 F316L		MISCELLANEOUS			
Gasket Mat	Solid Metal		Structural Mounting	Ground		
Corrosion Allow.	0	[mm]	Bundle Frame	H.D.G		
Qty / Size nozzle IN	1 X4" (80S)		Louvers	Yes, (Manual)		
Qty / Size nozzle OUT	1 X4" (80S)		Vibration switches	Yes, EExd, IIB T3 (IP 65)		
Rating & Facing (in/out)	600 RF		Steam Coil	No		
TI/PI	Yes (1") / Yes (3/4")		Recirculation System	No		
Vent / Drain	Yes (2") / Yes (2")	LWN #600	Tube / Tubesheet Connection.	Expanded + Strength weld		
MECH. EQUIPMENT						
FAN			ELECTRIC MOTOR			
N ./Bay	2		N ./Bay	2		
N autovvariable/bay	50%		KW / Driver	7.5		
rev / min	658.6		rev / min	1500		
Diameter	1450	mm	Enclosure	EExd, IIB T3 (IP 55)		
N .Blades	5		Volt, Phase, Cycle	400-3-50		
Material, Blade	AL		SPEED REDUCER			
Material, Hub	Steel/Alu		Type	V-Belt		
KW / Fan, Absorb.	4.8		N .Bay	2		
SPL@ 1m beside. fan	<85	[dB(A)]	Service Factor	1.8		
			Ratio	2.28		
NOTES:						
1- 10% over design on duty and flow has been considered.						
2- Plot size is without considering side walkways.						
3- Air side fouling factor has been considered equal to 0.00035 m2.K/w.						
4- Thechnical Bid is in compliance with NACE MR 0175/ISO 15156 and Technical Specification for Material Requirements in Sour service						
Doc. No. BK-GNRAL-PEDCO-000-PI-SP-0008						
5- Maximum allowable nozzle load = 3 x API.						
6-MDMT is considered 5 C						

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شماره پیمان: 053 – 073 – 9184	Process Data Sheet for AE-2102 (A/B/C)							شماره صفحه : 6 از 6	
	پروژه	بسته کاری	صادر کننده	تسهیلات	رشته	نوع مدرک	سریال		نسخه
	BK	GCS	AA	120	PR	DS	0002		V02

		DATA SHEET			Date :	2024.Aug.05
		AIR COOLED HEAT EXCHANGER			Rev :	2-new design (Totally Revised)
		ABAN AIR COOLER CO			CASE:	00012-AC-3991
Customer / Purch.	(PEDCO) / (NISOC)				Item no.:	AE-2102 (A/B/C)
Plant location	Binak oilfield					Winter case
Service	2st Stage Gas Compression Cooler				No. Units:	3
Plot size(W,L) [m]	2.12 x 3.90 (note2)			DRAFT INDUCED	No.of bay:	1
Surface / unit-Finned	1106.8	[m2]	Bare Tube		48.548	[m2]
Heat exchanged	495.6 (note 1)	[KW]	MTD		33.7	[C]
Transf. rate-finned	15.92	[W/m2 .k]	Bare Tube (C/D)		399.72/ 362.98	[W/m2k]
PRODUCT SIDE						
Fluid Name	Hydrocarbon				IN	OUT
	IN	OUT	Density (Liq)			[kg/m3]
Total Fluid [kg/h]	7585 x 1.1 (note 1)			Density (vap)	36.099	50.026 [kg/m3]
Temperature [C]	149	60	Spec.Heat (Liq)			[kJ/(kg.°C)]
Vapor [kg/h]	8643.5	8643.5	Spec.Heat (vap)	2.4628	2.385	[kJ/(kg.°C)]
Liquid [kg/h]			Conduct. (Liq)			[W/Mk]
N condensed [kg/h]			Conduct. (vap)	0.05	0.0387	[W/Mk]
Steam [kg/h]			Viscosity (Liq)			[cp]
Water [kg/h]			Viscosity (Vap)	0.0163	0.0139	[cp]
Inlet pressure [barg]	54.9			Velocity	4.29	3.1 [m/s]
Fouling resist.[m2.k/w]	0.0002			Allo/Calc. Press.Drop	0.700 / 0.081	[bar]
AIR SIDE						
AirQuantity, Total (Per Unit)	29.226	[m3/s]	Face Velocity:	3.14 [m/s]		
AirQuant./Fan	14.613	[m3/s]	Altit. / Min. Des.Amb.:	12.5 / 5 [m]/[C]		
Static pressure	172.09	[Pa]	Temp.In / Out :	50.26 / 66.5 [C]		
DESIGN						
Design pressure	62	[Barg]	Code Requirements	ASME VIII DIV.1 ; API 661		
Design temperature	175	[C]		TUBE		
Test pressure	80.60	[Barg]	Material	SA-213 TP316L		
BAY width [m]	2.118		Outside Diameter	25.4		[mm]
Bundle Size	2.06 x 3.900		Wall Thickness	1.651		[mm]
N .Bay	1		N .Bundle	156		
N .Bundles / Bay	1		Length	3.9		[m]
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N .Passes	4			FIN		
Tube slope	1% on last pass		Type	EXTRUDED		
HEADER			Material	ALUMINIUM alloy 1060 - O		
Type	Plug		Outside Diameter	57.15		[mm]
Material	SA-240 TP316L		Stock Thick.	0.48		[mm]
Header Design / SPLIT	Shoulder/No		FPM	433.1		
Plug Mat	SA 182 F316L		MISCELLANEOUS			
Gasket Mat	Solid Metal		Structural Mounting	Ground		
Corrosion Allow.	0	[mm]	Bundle Frame	H.D.G		
Qty / Size nozzle IN	1 X4" (80S)		Louvers	Yes, (Manual)		
Qty / Size nozzle OUT	1 X4" (80S)		Vibration switches	Yes, EExd, IIB T3 (IP 65)		
Rating & Facing (in/out)	600 RF		Steam Coil	No		
TI/PI	Yes (1") / Yes (3/4")		Recirculation System	No		
Vent / Drain	Yes (2") / Yes (2") LWN #600		Tube / Tubesheet Connection.	Expanded + Strength weld		
MECH. EQUIPMENT						
FAN			ELECTRIC MOTOR			
N ./Bay	2		N ./Bay	2		
N .autovvariable/bay	50%		KW / Driver	7.5		
rev/ min	658.6		rev/ min	1500		
Diameter	1450	mm	Enclosure	EExd, IIB T3 (IP 55)		
N . Blades	5		Volt, Phase, Cycle	400-3-50		
Material, Blade	AL		SPEED REDUCER			
Material, Hub	Steel/Alu		Type	V-Belt		
KW / Fan, Absorb.	4.8		N .Bay	2		
			Service Factor	1.8		
SPL@ 1m beside. fan	≤85	[dB(A)]	Ratio	2.28		
NOTES:						
1- 10% over design on duty / flow has been considered.						
2- Plot size is without considering side walkways.						
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