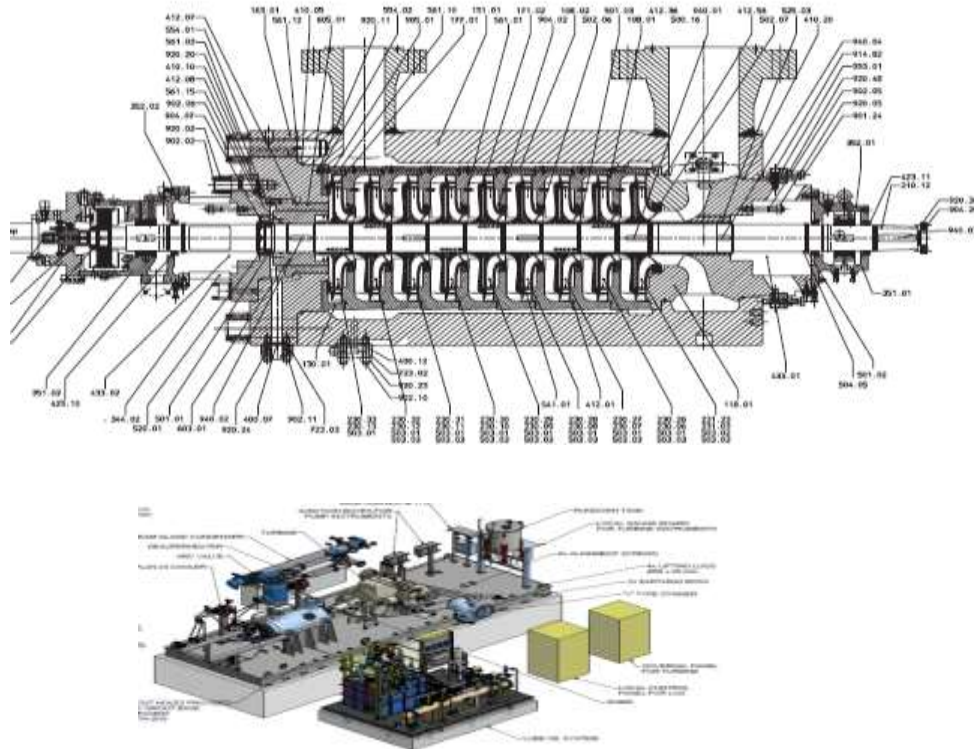


Evaluating BB5 Pump package Client: Technip Energies, Chennai

Scope Of Work: Technical Bid Tabulation (TBT) considering three (3)vendors



CENTRIFUGAL PUMP (API VS4)										
Project:	North Field East Project Onshore LNG Facilities									
Contract No.:	LTC/INF/3945/18									
Requisition No.:	K-NFE1-CTJV-ME-REQ-11311-S									
Item Tags:	61-P3212									
Service Name:	Caustic Sump Drum Pump									
Datasheet:	61-32-ME-DTS-00040									
Replication Source:	N/A									
Legend: ■ Cells with formula/drop down ■ Under clarification ■ Hold Point ■ Not complied										
Rev.: Date: Issue Status: Doc. #: Engineering Center: PIC Engineer:										
PUMP MANUFACTURER		REQUIREMENTS	UNIT	FLOWERVE			SULZER		TRILLIUM	
Quotation No. / Revision/Date	By Vendor	-	-	BRN-21-0193/	GAT.1194-SPI.21.2664-F013-Sep-21		WG-2100602/Rev.02/08 September 2021		V1.215138	
Pump Model No.	By Vendor	-	-	ECFJ 40-315-L	OCVL-2x3x10H-1					
Number of stage(s)	By Vendor	-	-	1	Confirmed	Confirmed	Confirmed	Confirmed	Confirmed	Confirmed
Total Quantity / Capital or Warehouse Spare Quantity	1	pc	Confirmed	Confirmed	Confirmed	Confirmed	Confirmed	Confirmed	Confirmed	Confirmed
Code/Standard	API 610 11th	-	Confirmed	Confirmed	Confirmed	Confirmed	Confirmed	Confirmed	Confirmed	Confirmed
Applicable Job Specification	60-00-ME-SPC-00020	-	Confirmed	Confirmed	Confirmed	Confirmed	Confirmed	Confirmed	Confirmed	Confirmed
Pump Type	VS4	-	Confirmed	Confirmed	Confirmed	Confirmed	Confirmed	Confirmed	Confirmed	Confirmed
PUMP OPERATING CONDITIONS										
Liquid	Caustic (14% wt)	-	Confirmed	Confirmed	Confirmed	Confirmed	Confirmed	Confirmed	Confirmed	Confirmed
Flow Rate @ (Normal / Rated)	15.00	15-Min Flow	m ³ /h	Confirmed	Confirmed	Confirmed	Confirmed	Confirmed	Confirmed	Confirmed
Suction Pressure @ (Rated / Max)	1.01	1.11	bars	Confirmed	Confirmed	Confirmed	Confirmed	Confirmed	Confirmed	Confirmed
Discharge Pressure at Discharge Flange	8.90	7.89	bars	Confirmed	Confirmed	Confirmed	Confirmed	Confirmed	Confirmed	Confirmed
Differential Pressure @ (Rated)	7.89	7.89	bar	Confirmed	Confirmed	Confirmed	Confirmed	Confirmed	Confirmed	Confirmed
Differential Head @ (Rated)	73.09	73.09	m	Confirmed	Confirmed	Confirmed	Confirmed	Confirmed	Confirmed	Confirmed
Vendor impeller CL height from GL / Installation Level	By Vendor	3.73	m	Confirmed	Confirmed	Confirmed	Confirmed	Confirmed	Confirmed	Confirmed
Corrected NPSHA @ impeller CL height (Rated Point)	9.6	from LLLL	0.1	m	3.70	3.70	3.70	3.70	3.70	3.70
Corrected NPSHA @ impeller CL height (EOC)	See calculation method as per data sheet	3.70	m	3.70	3.70	3.70	3.70	3.70	3.70	3.70
Pumping Temperature @ (Min / Rated / Max)	40.00	40.00	83.00	°C	Confirmed	Confirmed	Confirmed	Confirmed	Confirmed	Confirmed
Vapor Pressure @ (Min / Rated / Max)	0.076	0.076	bars	Confirmed	Confirmed	Confirmed	Confirmed	Confirmed	Confirmed	Confirmed
Specific Gravity @ (Min / Rated / Max)	1.10	1.10	-	Confirmed	Confirmed	Confirmed	Confirmed	Confirmed	Confirmed	Confirmed
Viscosity @ (Min / Rated / Max)	1.00	1.00	mPa.s	Confirmed	Confirmed	Confirmed	Confirmed	Confirmed	Confirmed	Confirmed
Service (Continuous or Intermittent)	Intermittent	-	-	Confirmed	Confirmed	Confirmed	Confirmed	Confirmed	Confirmed	Confirmed
Starting Method (Open Valve / Auto Start)	N/A	N/A	N/A	-	N/A	N/A	N/A	N/A	N/A	N/A
Pump Operating Conditions (Parallel / Series / N/A)	N/A	N/A	N/A	-	N/A	N/A	N/A	N/A	N/A	N/A
H2S / Chloride / CO2 Concentration	-	-	-	ppm or wt	Confirmed	Confirmed	Confirmed	Confirmed	Confirmed	Confirmed
PUMP PERFORMANCE (VENDOR DATA)										
Pump speed	By Vendor	rpm	2920	2910	2950					
Efficiency @ (Rated, BEP)	By Vendor	%	23.5	33.22	11.07					
Efficiency @ (Normal, BEP)	By Vendor		23.80	40.00	12.00					
Efficiency @ (EOC, BEP)	By Vendor									
Power @ (Rated flow)	By Vendor	kW	17.20	12.58	13.32					
Maximum Power @ (End of Curve - EOC or max/before)	By Vendor	kW	17.3	12.57	16					
End of Curve Flow	By Vendor	m ³ /h	21.00	23.00	21.00					
BEP Flow	By Vendor	m ³ /h	16.40	23.18	23.00					
Minimum Continuous Flow (MCF)	By Vendor	m ³ /h	2.6	7.1	3.0					
Required flows added to Rated (MCF and/or Warm-up)	By Vendor	m ³ /h	0	0	0					
End of Curve Flow / BEP Flow	> 120%	%	128.05%	39.22%	117.33%					