



نگهداشت و افزایش تولید میدان نفتی بینک
سطح الارض
احداث ردیف تراکم گاز در ایستگاه جمع آوری بینک



شماره پیمان:

۰۵۳ - ۰۷۳ - ۹۱۸۴

DATA SHEETS FOR POWER TRANSFORMERS

نسخه	سریال	نوع مدرک	رشته	تسهیلات	صادرکننده	بسته کاری	پروژه
D03	0011	DT	EL	120	PEDCO	GCS	BK

شماره صفحه: ۱ از ۱۲

طرح نگهداشت و افزایش تولید ۲۷ مخزن

DATA SHEETS FOR POWER TRANSFORMERS

نگهداشت و افزایش تولید میدان نفتی بینک

D03	Apr. 2023	AFC	H.Shakiba	M.Fakharian	A.M.Mohseni	
D02	Jul. 2022	IFA	H.Shakiba	M.Fakharian	M.Mehrshad	
D01	May. 2022	IFA	H.Shakiba	M.Fakharian	M.Mehrshad	
D00	Feb. 2022	IFC	H.Shakiba	M.Fakharian	M.Mehrshad	
Rev.	Date	Purpose of Issue/Status	Prepared by:	Checked by:	Approved by:	Client Approval

Class:1

Client Doc. Number: F0Z-709028

Status:

IDC: Inter-Discipline Check
IFC: Issued For Comment
IFA: Issued For Approval
AFD: Approved For Design
AFC: Approved For Construction
AFP: Approved For Purchase
AFQ: Approved For Quotation
IFI: Issued For Information
AB-R: As-Built for CLIENT Review
AB-A: As-Built –Approved



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DATA SHEETS FOR POWER TRANSFORMERS



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D03	0011	DT	EL	120	PEDCO	GCS	BK

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REVISION RECORD SHEET



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D03	0011	DT	EL	120	PEDCO	GCS	BK																			



Technical Data Sheet for 1250 KVA Power Transformers

Item	Description	Purchaser Requirement	Manufacturer Data
1. General			
1.1	Manufacturer's Name	By Vendor	
1.2	Transformer Tag Number	GCS-TR-001 & GCS-TR-002	
1.3	Quantity	2	
1.4	Standard	IPS-M-EL-152 (3) BK-GNRAL-PEDCO-000-EL-SP-0004	
1.5	Kind/Construction of Transformer	Oil Immersed, Hermitically Sealed With Pillow Nitrogen Separate High & Low Windings Two Winding	
1.6	Rated Power in Service Condition	1250 kVA	
1.7	Supply Frequency	50 Hz \pm 5 %	
1.8	Winding Connection/Vector Group	Dyn11	
1.9	Location	Outdoor Under Shelter, Safe Area	
1.10	Primary Winding Rated Voltage	11kV	
1.11	Secondary Winding Rated Voltage	0.42 KV	
1.12	Tapping Range	\pm 5%, \pm 2.5% & 0 , Off Load	
1.13	Tapping Place	On HV Winding	
2. Environmental Conditions (Process Basis Of Design, BK-GNRAL-PEDCO-000-PR-DB-0001)			
2.1	Ambient Temperature Range	0 ~ 52°C	
2.2	Installation Elevation	12m (Above Sea Level)	
2.3	Area Pollution Class	Class 4 (Very High)	
2.4	Seismic Loads	Zone 3 UBC	
2.5	Relative Humidity	100%	
2.6	Cooling System	ONAN	
2.7	Primary Cooling Media	Mineral Oil	
3. Primary Winding Voltage Rating			
3.1	Highest System Voltage	12kV	
3.2	Rated Lightning Impulse Withstand Voltage	75kV	
3.3	Rated Short Duration Power Frequency Withstand Voltage(rms)	28kV	

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Technical Data Sheet for 1250 KVA Power Transformers

Item	Description	Purchaser Requirement	Manufacturer Data
4. Secondary Winding Voltage Ratings			
4.1	Highest System Voltage	1 kV	
4.2	Rated Lightning Impulse Withstand Voltage	3 kV	
4.3	Rated Short Duration Power Frequency Withstand Voltage(rms)	1 kV	
4.4	Primary Winding	Delta Winding	
4.5	Secondary Winding	Star, (Solidly Grounded)	
4.6	Insulation Type	By Vendor	
4.7	Insulation Class	Class A (Shall Be Suggested By Vendor)	
4.8	Average Winding Temperature Rise (55°C Ambient)	65°C, Acc. to IEC 60076-2, Clause 4.2	
4.9	Top Oil Temperature Rise (55°C ambient)	60°C, Acc. to IEC 60076-2, Clause 4.2	
4.10	Oil Preservation System	Not Applicable (Sealed Type)	
4.11	Short Circuit Level of HV System	Primary: 25 kA	
4.12	Short Circuit Withstand Duration	Primary: 1 S	
4.13	Required Short Circuit Impedance @75°C	5%	
4.14	Zero Sequence Impedance	By Vendor	
4.15	X/R Ratio at Principal Tap	By Vendor	
4.16	Efficiency at Full Load & PF=0.8 Lag (100% Load)	By Vendor	
4.17	Efficiency at Full Load & PF=0.8 Lag (75% Load)	By Vendor	
4.18	Efficiency at Full Load & PF=0.8 Lag (50% Load)	By Vendor	
5. Primary Winding Characteristics			
5.1	Reactance [Ω]	By Vendor	
5.2	Resistance [Ω] @ 75°C	By Vendor.	
6. Secondary Winding Characteristics			
6.1	Reactance [Ω]	By Vendor	
6.2	Resistance [Ω] @ 75°C	By Vendor	
7.Tolerances			
7.1	Voltage Ratio at Principal Tap & No-Load	± 0.5 %	

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Technical Data Sheet for 1250 KVA Power Transformers

Item	Description	Purchaser Requirement	Manufacturer Data
7.2	Voltage Ratio at Other Tapping	±0.5 %	
7.3	Voltage	±10 %	
7.4	Frequency	±5 %	
7.5	Short Circuit Impedance at Principal Tap	±10% of Declared Value	
7.6	Short Circuit Impedance at Other Tapping	±15% of Declared Value	
7.7	Anticipated Unbalance Loading in Percent of Rated Power	10 %	
7.8	Core Construction	Laminated Silicon Steel	
7.9	Flux Density in the Magnetic Circuit @Nominal Frequency & Voltage	By Vendor	
7.10	No-Load Loss [W]	By Vendor	
7.11	Full Load Total Loss [W]	By Vendor	
7.12	Inrush Current	By Vendor	
7.13	Short Circuit Loss	By Vendor	
7.14	I ² R Loss at Rated Current & Principal Tap	By Vendor	
7.15	Stray Load Loss at Rated Current & Principal Tap	By Vendor	
7.16	11 kV Cables Size & Number	Note 1	
7.17	External Terminations, Primary Side (Exposed Bushings/Cable Box)	Cable Box	
7.18	0.42 kV Cable Size & Number	Note 1	
7.19	Type & Size of Cable Glands (Power Cable)	By Vendor	
7.20	Type & Size of Cable Glands (Control Cable)	By Vendor	
7.21	Bushing Type	Acc. to IPS 152	
7.22	Dimension (W X D X H) [mm]	By Vendor	
7.23	Weight [kg]	By Vendor	
7.24	Weight of Transformer Without Oil	By Vendor	
7.25	Noise Level (at 1m From Transformer) [db]	Less Than 85 dB(A)	
7.26	Oil Volume [liter]	By Vendor	
7.27	Oil Weight [kg]	By Vendor	
7.28	Oil Characteristics (Name/ Type/ Flash Point)	Acc. to IEC 60296	

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Technical Data Sheet for 1250 KVA Power Transformers

Item	Description	Purchaser Requirement	Manufacturer Data
8.Auxiliary Equipment			
8.1	Top Oil Thermometer (in Thermometer Pocket)	Required (Can Be Measured at Low Oil Level)	
8.2	Thermostat for Oil Temperature	Dial Type / with Alarm & Trip Switches	
8.3	Oil Level Gauge	Magnetic Dial or Glass Type	
8.4	Oil Filling Plug, Drain Valve, Isolating Valve	Required	
8.5	Oil Level Indicator With Contacts (Low & High)	Required (Magnetic Type)	
8.6	Winding Temperature Indicator with Alarm & Trip Contacts	Required (Shall be Located Close to Low Voltage Windings)	
8.7	Oil Drain / Sampling Device	Required	
8.8	Air Dehydrating Breather	Not Required	
8.9	Neutral Current Transformer	Core 1: 2000/1A, 5P10 ,10VA	
8.10	CT to be Supplied by (Transformer Manufacturer/Purchaser)	Transformer Manufacturer	
8.11	Earth Terminal	Two Terminals on The Bottom of Tank	
8.12	Upper Filter Connection With Standard Seal Valve & a Plug Serving	Required	
8.13	Pressure Relief Valve with Contact (Shall be Operated by Internal Pressure of Nitrogen)	Required	
8.14	Gas Pressure & Vacuum Indicator for Internal Pressure of Nitrogen Gas	Required	
8.15	Terminal Box With Gland Plate	Required	
8.16	Instrument and CT Secondary Terminal Box	Required (Min IP55)	
8.17	Arching Horn	Not Required	
8.18	Drain Valve	Required	
8.19	Lifting and Pulling Eyes	Required	
8.20	Lugs	Fixed to Tanks for Lifting the Complete Transformer	
8.21	HV Terminal Box with Gland Plate	Required (Min IP55)	
8.22	LV Terminal Box with Gland Plate	Required (Min IP55)	
8.23	Wheels, Bidirectional (Turnable by 90°)	Required	
8.24	Transformer Radiator	By Vendor (Welded/Bolted)	
8.25	Transformer Cover	To be Welded to Tank With a Continuous Weld	



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Technical Data Sheet for 1250 KVA Power Transformers



Item	Description	Purchaser Requirement	Manufacturer Data
8.26	Thickness of Radiator Plate	By Vendor	
8.27	Thickness of Tank Wall, Base & Cover	By Vendor	
8.28	Tank Painting Specification	By Vendor	
8.29	Radiator Painting Specification	By Vendor	
8.30	Tank and Radiator Color	By Vendor	
8.31	Radiator Connection	Detachable & Shall be Bolted to Tank	
8.32	Rating Plate	Stainless Steel	
8.33	Accessory Equipment Contacts Current / Voltage Rating	5A / 250VAC	
8.34	Accessory Equipment Contacts Type	Dry Type –DPDT/ 230VAC	
8.35	Routine Tests Including	IEC60076	
8.36	a) Measurement of Winding Resistance	Witness & Report	
8.37	b) Measurement of Voltage Ratio & Check of Voltage Vector Relationship	Witness & Report	
8.38	c) Measurement of Impedance Voltage (Principal Tapping) Short-Circuit Impedance & Load Loss	Witness & Report	
8.39	d) Measurement of No-Load Loss & Current	Witness & Report	
8.40	e) Impedance & Load Losses at Rated Current on Principal Tap	Witness & Report	
8.41	f) Applied Potential & Induced Potential Tests	Witness & Report	
8.42	g) Dielectric tests	Witness & Report	
8.43	Type Test	Test Report on the Same Design Transformer is Required	
8.44	Painting & Finish	Manufacture Standard	
8.45	Test Report on CTs	- turns ratio error - Excitation Characteristics - Secondary resistance - Verification of low leakage flux	-
8.46	Special Tools if Any	By Vendor	-
8.47	Deviation from This Specification if Any	By Vendor	-

Note 1: Cable size shall be according to “BK-GCS-PEDCO-120-EL-LI-0002”.



Note 2: All required accessories shall be considered by vendor.

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Technical Data Sheet for 800 KVA Power Transformer			
Item	Description	Purchaser Requirement	Manufacturer Data
1. General			
1.1	Manufacturer's Name	By Vendor	
1.2	Transformer Tag Number	GCS-TR-003 (Fire Water Transformer)	
1.3	Quantity	1	
1.4	Standard	IPS-M-EL-152 (3) BK-GNRAL-PEDCO-000-EL-SP-0004	
1.5	Kind/Construction of Transformer	Oil Immersed, Hermitically Sealed With Pillow Nitrogen Separate High & Low Windings Two Winding	
1.6	Rated Power in Service Condition	800 kVA	
1.7	Supply Frequency	50 Hz \pm 5 %	
1.8	Winding Connection/Vector Group	Dyn11	
1.9	Location	Outdoor Under Shelter, Safe Area	
1.10	Primary Winding Rated Voltage	11kV	
1.11	Secondary Winding Rated Voltage	3.3 KV	
1.12	Tapping Range	$\pm 5\%$, $\pm 2.5\%$ & 0 , Off Load	
1.13	Tapping Place	On HV Winding	
2. Environmental Conditions (Process Basis Of Design, BK-GNRAL-PEDCO-000-PR-DB-0001)			
2.1	Ambient Temperature Range	0 ~ 52°C	
2.2	Installation Elevation	12m (Above Sea Level)	
2.3	Area Pollution Class	Class 4 (Very High)	
2.4	Seismic Loads	Zone 3 UBC	
2.5	Relative Humidity	100%	
2.6	Cooling System	ONAN	
2.7	Primary Cooling Media	Mineral Oil	
3. Primary Winding Voltage Rating			
3.1	Highest System Voltage	12kV	
3.2	Rated Lightning Impulse Withstand Voltage	75kV	
3.3	Rated Short Duration Power Frequency Withstand Voltage (rms)	28kV	



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BK	GCS	PEDCO	120	EL	DT	0011	D03																			

Technical Data Sheet for 800 KVA Power Transformer			
Item	Description	Purchaser Requirement	Manufacturer Data
4. Secondary Winding Voltage Ratings			
4.1	Highest System Voltage	3.6 kV	
4.2	Rated Lightning Impulse Withstand Voltage	20 kV	
4.3	Rated Short Duration Power Frequency Withstand Voltage(rms)	10 kV	
4.4	Primary Winding	Delta Winding	
4.5	Secondary Winding	Star, (Solidly Grounded)	
4.6	Insulation Type	By Vendor	
4.7	Insulation Class	Class A (Shall Be Suggested By Vendor)	
4.8	Average Winding Temperature Rise (55°C Ambient)	65°C, Acc. to IEC 60076-2, Clause 4.2	
4.9	Top Oil Temperature Rise (55°C ambient)	60°C, Acc. to IEC 60076-2, Clause 4.2	
4.10	Oil Preservation System	Not Applicable (Sealed Type)	
4.11	Short Circuit Level of HV System	Primary: 25 kA	
4.12	Short Circuit Withstand Duration	Primary: 1S	
4.13	Required Short Circuit Impedance @75°C	5%	
4.14	Zero Sequence Impedance	By Vendor	
4.15	X/R Ratio at Principal Tap	By Vendor	
4.16	Efficiency at Full Load & PF=0.8 lag (100% Load)	By Vendor	
4.17	Efficiency at Full Load & PF=0.8 lag (75% Load)	By Vendor	
4.18	Efficiency at Full Load & PF=0.8 lag (50% Load)	By Vendor	
5. Primary Winding Characteristics			
5.1	Reactance [Ω]	By Vendor	
5.2	Resistance [Ω] @ 75°C	By Vendor.	
6. Secondary Winding Characteristics			
6.1	Reactance [Ω]	By Vendor	
6.2	Resistance [Ω] @ 75°C	By Vendor	
7. Tolerances			
7.1	Voltage Ratio at Principal Tap & No-Load	$\pm 0.5\%$	

 NISOC	نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض احداث ردیف تراکم گاز در ایستگاه جمع آوری بینک																									
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Technical Data Sheet for 800 KVA Power Transformer

Item	Description	Purchaser Requirement	Manufacturer Data
7.2	Voltage Ratio at Other Tapping	±0.5 %	
7.3	Voltage	±10 %	
7.4	Frequency	±5 %	
7.5	Short Circuit Impedance at Principal Tap	±10% of Declared Value	
7.6	Short Circuit Impedance at Other Tapping	±15% of Declared Value	
7.7	Anticipated Unbalance Loading in Percent of Rated Power	10 %	
7.8	Core Construction	Laminated Silicon Steel	
7.9	Flux Density in the Magnetic Circuit @Nominal Frequency & Voltage	By Vendor	
7.10	No-Load Loss [W]	By Vendor	
7.11	Full Load Total Loss [W]	By Vendor	
7.12	Inrush Current	By Vendor	
7.13	Short Circuit Loss	By Vendor	
7.14	I ² R Loss at Rated Current & Principal Tap	By Vendor	
7.15	Stray Load Loss at Rated Current & Principal Tap	By Vendor	
7.16	11 kV Cables Size & Number	Note 1	
7.17	External Terminations, Primary Side (Exposed Bushings/Cable Box)	Cable Box	
7.18	3.3 kV Cable Size & Number	Note 1	
7.19	Type & Size of Cable Glands (Power Cable)	By Vendor	
7.20	Type & Size of Cable Glands (Control Cable)	By Vendor	
7.21	Bushing Type	Acc. to IPS 152	
7.22	Dimension (W X D X H) [mm]	By Vendor	
7.23	Weight [kg]	By Vendor	
7.24	Weight of Transformer Without Oil	By Vendor	
7.25	Noise Level (at 1m from Transformer) [db]	Less Than 85 dB(A)	
7.26	Oil Volume [liter]	By Vendor	
7.27	Oil Weight [kg]	By Vendor	
7.28	Oil Characteristics (Name/ Type/ Flash Point)	Acc. to IEC 60296	

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Technical Data Sheet for 800 KVA Power Transformer

Item	Description	Purchaser Requirement	Manufacturer Data
8.Auxiliary Equipment			
8.1	Top Oil Thermometer (in Thermometer Pocket)	Required (Can Be Measured at Low Oil Level)	
8.2	Thermostat for Oil Temperature	Dial Type / with Alarm & Trip Switches	
8.3	Oil Level Gauge	Magnetic Dial or Glass Type	
8.4	Oil Filling Plug, Drain Valve, Isolating Valve	Required	
8.5	Oil Level Indicator With Contacts (Low & High)	Required (Magnetic Type)	
8.6	Winding Temperature Indicator with Alarm & Trip Contacts	Required (Shall be Located Close to Low Voltage Windings)	
8.7	Oil Drain / Sampling Device	Required	
8.8	Air Dehydrating Breather	Not Required	
8.9	Neutral Current Transformer	Core 1: 630/1A, 5P10 ,10VA Core 2: 630/5A, Class X	
8.10	CT to be Supplied by (Transformer Manufacturer/Purchaser)	Transformer Manufacturer	
8.11	Earth Terminal	Two Terminals on The Bottom of Tank	
8.12	Upper Filter Connection With Standard Seal Valve & a Plug Serving	Required	
8.13	Pressure Relief Valve with Contact (Shall be Operated by Internal Pressure of Nitrogen)	Required	
8.14	Gas Pressure & Vacuum Indicator for Internal Pressure of Nitrogen Gas	Required	
8.15	Terminal Box With Gland Plate	Required	
8.16	Instrument and CT Secondary Terminal Box	Required (Min IP55)	
8.17	Arching Horn	Not Required	
8.18	Drain Valve	Required	
8.19	Lifting and Pulling Eyes	Required	
8.20	Lugs	Fixed to Tanks for Lifting the Complete Transformer	
8.21	HV Terminal Box with Gland Plate	Required (Min IP55)	
8.22	MV Terminal Box with Gland Plate	Required (Min IP55)	
8.23	Wheels, Bidirectional (Turnable by 90°)	Required	
8.24	Transformer Radiator	By Vendor (Welded/Bolted)	
8.25	Transformer Cover	To be Welded to Tank With a Continuous Weld	

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Technical Data Sheet for 800 KVA Power Transformer			
Item	Description	Purchaser Requirement	Manufacturer Data
8.26	Thickness of Radiator Plate	By Vendor	
8.27	Thickness of Tank Wall, Base & Cover	By Vendor	
8.28	Tank Painting Specification	By Vendor	
8.29	Radiator Painting Specification	By Vendor	
8.30	Tank and Radiator Color	By Vendor	
8.31	Radiator Connection	Detachable & Shall be Bolted to Tank	
8.32	Rating Plate	Stainless Steel	
8.33	Accessory Equipment Contacts Current / Voltage Rating	5A / 250VAC	
8.34	Accessory Equipment Contacts Type	Dry Type –DPDT/ 230VAC	
8.35	Routine Tests Including	IEC60076	
8.36	a) Measurement of Winding Resistance	Witness & Report	
8.37	b) Measurement of Voltage Ratio & Check of Voltage Vector Relationship	Witness & Report	
8.38	c) Measurement of Impedance Voltage (Principal Tapping) Short-Circuit Impedance & Load Loss	Witness & Report	
8.39	d) Measurement of No-Load Loss & Current	Witness & Report	
8.40	e) Impedance & Load Losses at Rated Current on Principal Tap	Witness & Report	
8.41	f) Applied Potential & Induced Potential Tests	Witness & Report	
8.42	g) Dielectric tests	Witness & Report	
8.43	Type Test	Test Report on the Same Design Transformer is Required	
8.44	Painting and Finish	MFR Standard	
8.45	Test Report on CTs	- turns ratio error - Excitation Characteristics - Secondary resistance - Verification of low leakage flux	-
8.46	Special Tools if Any	By Vendor	-
8.47	Deviation from This Specification if Any	By Vendor	-

Note 1: Cable size shall be according to “BK-GCS-PEDCO-120-EL-LI-0002”.

Note 2: All required accessories shall be considered by vendor.