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| **طرح نگهداشت و افزایش تولید 27 مخزن** | | | | | | |
| **DATA SHEETS FOR LV INDUCTION MOTORS**  **نگهداشت و افزایش تولید میدان نفتی بینک** | | | | | | |
|  |  |  |  |  |  |  |
| D03 | Apr. 2023 | AFC | H.Shakiba | M.Fakharian | A.M.Mohseni |  |
| D02 | May. 2022 | IFA | H.Shakiba | M.Fakharian | M.Mehrshad |  |
| D01 | Feb. 2022 | IFA | H.Shakiba | M.Fakharian | M.Mehrshad |  |
| D00 | Sep. 2021 | 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-709025** | | | | |
| **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** | | | | | |

**REVISION RECORD SHEET**

|  |  |  |  |  |  |  |  |  |  |  |  |  |
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| **PAGE** | **D00** | **D01** | **D02** | **D03** | **D04** |  | **PAGE** | **D00** | **D01** | **D02** | **D03** | **D04** |
| **1** | X | X | X | X |  | **51** |  |  |  |  |  |
| **2** | X | X | X | X |  | **52** |  |  |  |  |  |
| **3** | X | X | X |  |  | **53** |  |  |  |  |  |
| **4** | X | X | X |  |  | **54** |  |  |  |  |  |
| **5** | X | X | X |  |  | **55** |  |  |  |  |  |
| **6** | X | X | X |  |  | **56** |  |  |  |  |  |
| **7** |  |  | X |  |  | **57** |  |  |  |  |  |
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| **Data Sheets for LV Induction Motors** | | | | |
| --- | --- | --- | --- | --- |
| **Item** | | **Category** | **Required Specification** | **Vendor Data** |
|  | | Driven Machine | Electrical Motor |  |
|  | | Driven Machine Tag No. | - |  |
|  | | Manufacturer | By Vendor |  |
|  | | Manufacturer's Number / Type | By Vendor |  |
|  | | Manufacturing Standard | IEC 60034 & IPS-M-EL-131(2) |  |
|  | | Location | [X] Outdoor (Under Shelter)  [ ] Indoor |  |
|  | | Area Classification | Acc. to requisition data |  |
|  | | Ambient Temperature | 5 to +55°C |  |
|  | | Relative Humidity | 100 % |  |
|  | | Dust | [X] Yes  [ ] No |  |
|  | | Corrosion | [X] Yes  [ ] No |  |
|  | | Elevation | 12.5m Above Sea Level |  |
|  | | Quantity | Acc. To Load List  (BK-GCS-PEDCO-120-EL-LI-0001) |  |
|  | | Tag Number | Acc. To Load List  (BK-GCS-PEDCO-120-EL-LI-0001) |  |
|  | Motor Type | | Asynchronous, Squirrel Cage |  |
|  | Mounting | | [ ] Horizontal [ ] Vertical |  |
|  | Rotor Construction | | [ ] Brazed Copper Bars  [ ] Aluminum Die Cast |  |
|  | | Frame Material | Steel Sheet or Cast Iron |  |
|  | | Rotor Cage Material | By Vendor |  |
|  | | Cooling Method | IC411 According to IPS-M-EL-131(2) |  |
|  | | Ingress Protection Degree for Motor | IP 54 |  |
|  | | Ingress Protection Degree for Terminal Box | IP 55 |  |
|  | | Explosion Protection of Motor | N/A for Safe Area  Zone 2, IIB, T3 |  |
|  | | Explosion Protection of Terminal Box | N/A for Safe Area  Zone 2, IIB, T3 |  |
|  | | Ex. Certificate Authority/Certificate No. | By Vendor |  |
|  | | Driven Machine Shaft Power Requirement (Pmp) | As Per Related Mechanical Data sheet (to be Specified by Vendor) |  |
|  | | De-Rating Factor due to Ambient Temperature (Kt) | Vendor Shall Advise |  |
|  | | De-Rating Factor Due to Altitude (Ka) | 1 |  |
|  | | Design margin (Km) | Acc. to IPS Standard (Note 1) |  |
|  | | Motor Shaft Power Requirement @ Site condition (=Km X Pmp) | By Vendor |  |
|  | | Standard Rated Motor Output  =Km X Pmp/ (Ka Kt) | By Vendor |  |
|  | | Frame Size | By Vendor |  |
|  | | Frame Earth Boss | External |  |
|  | | Rated Voltage | 400 V ±10% |  |
|  | | Rated Frequency | 50 Hz ±5% |  |
|  | | Protection Devices | Switch-Fuse |  |
|  | | Neutral Earthing System | TNS |  |
|  | | Voltage During Motor Start | 80% Un |  |
|  | | Synchronous Speed | By Vendor |  |
|  | | Full Load Speed [RPM] | By Vendor |  |
|  | | Over Speed Capability | By Vendor |  |
|  | | Number of Poles | By Vendor |  |
|  | | Starting Method | Direct on Line |  |
|  | | Direction of Rotation (Viewed from coupling end) | Shall be Proposed by MFR Based on Driven Load Rotation of Direction | [ ] CW  [ ] CCW  [ ] Unidirectional  [X] Bidirectional |
|  | | Stator Winding Connection | Delta |  |
|  | | Location of Terminal Box  (Viewed from DE) | [ ] Right [ ] Left |  |
|  | | Insulation Class | Class F |  |
|  | | Class of Temperature Rise | Class B |  |
|  | | Max. Permissible Starting Time [s] | By Vendor |  |
|  | | Accelerating Time  DOL starting, at 100% Un [s] | By Vendor |  |
|  | | Accelerating Time  DOL starting, at 80% Un [s] | By Vendor |  |
|  | | Starting Torque at 100% Un [N.m] | By Vendor |  |
|  | | Starting Torque at 80% Un [N.m] | By Vendor |  |
|  | | Maximum Torque [N.m] | By Vendor |  |
|  | | Pull-Up Torque | By Vendor |  |
|  | | Locked Rotor Torque | By Vendor |  |
|  | | Rated Torque [N.m] | By Vendor |  |
|  | | Rated Current [A] | By Vendor |  |
|  | | Max Starting Current | By Vendor |  |
|  | | No Load Current [A] | By Vendor |  |
|  | | Locked Rotor Current [A] | <7In |  |
|  | | Locked Rotor Power Factor [A] | By Vendor |  |
|  | | Torque-Speed Class | Shall be Selected Based on Driven Load Torque Requirement | [ ] A [ ] B  [ ] C [ ] D |
|  | | Duty Cycle | S1 |  |
|  | | Current at ½ Rated Load | By Vendor |  |
|  | | Current at ¾ Rated load | By Vendor |  |
|  | | Current at Rated Load | By Vendor |  |
|  | | Starting Power Factor | By Vendor |  |
|  | | Power Factor at ½ Rated Load | By Vendor |  |
|  | | Power Factor at ¾ Rated load | By Vendor |  |
|  | | Power Factor at Rated Load | By Vendor |  |
|  | | Efficiency at ½ Rated Load | By Vendor |  |
|  | | Efficiency at ¾ Rated Load | By Vendor |  |
|  | | Efficiency at Rated Load | By Vendor |  |
|  | | No Load Losses | By Vendor |  |
|  | | Stall Time (Hot/Cold) (Sec) | By Vendor |  |
|  | | Transient Reactance (X'd) | By Vendor |  |
|  | | Sub - Transient Reactance (X"d) | By Vendor |  |
|  | | Acceleration Time At 80% Un (Sec) | By Vendor |  |
|  | | Bearing (DE) | | |
| Type (Detail Description by Vendor) | Anti Friction (Ball Bearing) |  |
| Manufacturer | By Vendor |  |
| Minimum Life Without Load | Minimum 40000 Hours |  |
| Minimum Life With Load | Minimum 32000 Hours |  |
| Lubrication | Grease |  |
| Cooling Water/ Oil Capacity | N/A |  |
| Permissible Trust Force [N] | By Vendor |  |
|  | | Bearing (NDE) | | |
| Type (Detail Description by Vendor) | Anti friction (ball bearing) |  |
| Manufacturer | By Vendor |  |
| Minimum Life Without Load | Minimum 40000 Hours |  |
| Minimum Life With Load | Minimum 32000 Hours |  |
| Lubrication | Grease |  |
| Cooling Water/ Oil Capacity | N/A |  |
| Permissible Trust Force [N] | By Vendor |  |
|  | | Space Heater | Not Required |  |
| Space Heater Voltage [V] | 230VAC, 50Hz, 1Ph |  |
| Space Heater Power [W] | By Vendor |  |
|  | | Temp. Detector (Winding/Bearing) | By Vendor |  |
|  | | Terminal Boxes | [X] Power Terminal Box  [X] Space heater (if required) |  |
|  | | Main Power Cable Specification & Size & Orientation | According to  (BK-GCS-PEDCO-120-EL-CN-0003) |  |
|  | | Motor Weight (Net/Shipped) | By Vendor |  |
|  | | Rotor Moment of Inertia | By Vendor |  |
|  | | Method of Cable Entry | [X] Cable Gland  [ ] Sealing Gasket |  |
|  | | Cable Gland Hub of Main Terminal Box | By Vendor |  |
|  | | Cable Gland Entry for aux. Terminal Box (if applicable) | 1 X M25 (if Required) |  |
|  | | Short Circuit Capability of Terminal Box | 30 kA for 0.2 S |  |
|  | | Sound Level at 1 distance meter From Motor | Max. 85 dB(A) |  |
|  | | Finish Color | Manufacturer Standard |  |
|  | | Load Torque/Slip, Current/Slip Curves | By Vendor |  |
|  | | Motor Torque/Slip, Current/Slip Curves | By Vendor |  |
|  | | Time - Current Heating (Thermal Limit) Curve | By Vendor |  |
|  | | Motor Thermal Capacity Data | By Vendor |  |
|  | | Installation, Operation & Maintenance Instruction | By Vendor |  |
|  | | Spare Parts List for Two Years Operation | By Vendor |  |
|  | | Commissioning Spare Part List | By Vendor |  |
|  | | Dimensional Outline Drawing | By Vendor |  |
|  | | Certified Type Test Report & Written Statement | By Vendor |  |
|  | | Certified Conformity for EX Type Motors | By Vendor |  |
|  | | Deviation List (if Any) | By Vendor |  |
|  | | Test & Inspection | Factory Routine Test Report Shall be Submitted |  |

DE: Drive End

NDE: Non Drive End

CW: Clockwise

CCW: Counter Clockwise

Note 1: IPS design margin is defined in accordance with standard output power rating of motor:

|  |  |  |
| --- | --- | --- |
|  | Standard Output Power Rating | Design margin |
| 1 | Up to 22kW | 1.25 |
| 2 | from 22kW to 55kW | 1.15 |
| 3 | Above 55kW | 1.10 |

Note 2: The following values are default unless otherwise specified during finalization of motors:

|  |  |  |  |
| --- | --- | --- | --- |
|  | Standard Output Power Rating | Cable Size | Gland Size |
| 1 | 5.5kW | 3x6 | M25 |
| 2 | 7.5kW | 3x6 | M25 |
| 3 | 15kW | 3x16 | M32 |
| 4 | 18.5kW | 3x16 | M32 |
| 5 | 30kW | 3x50 | M40 |
| 6 | 37kW | 3x50 | M40 |
| 7 | 45kW | 3x70 | M50 |
| 8 | 55kW | 3x95 | M50 |