



Exploration & Production

## GENERAL SPECIFICATION

### ROTATING MACHINERY

**DS MEC 242**

**Gear unit data sheet**

|      |       |                               |
|------|-------|-------------------------------|
|      |       |                               |
|      |       |                               |
| 01   | 08/03 | Change of Group name and logo |
| 00   | 11/01 | First issue                   |
| Rev. | Date  | Notes                         |



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General Specification

Date: 08/03

DS MEC 242

Rev: 01

### Data sheet

|                                                                                                                                                                                            |  |                        |  |                                                                                                      |  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|------------------------|--|------------------------------------------------------------------------------------------------------|--|
| <b>CUSTOMER :</b>                                                                                                                                                                          |  | <b>ITEM :</b>          |  | <b>SPECIF.</b>                                                                                       |  |
| <b>LOCATION :</b>                                                                                                                                                                          |  | <b>Nbr. of units :</b> |  |                                                                                                      |  |
| <b>JOB N° :</b>                                                                                                                                                                            |  | <b>UNIT :</b>          |  | <b>Page : /</b>                                                                                      |  |
| 1 <b>APPLICABLE TO</b> <input type="checkbox"/> PROPOSAL <input type="checkbox"/> PURCHASE <input type="checkbox"/> AS-BUILT                                                               |  |                        |  |                                                                                                      |  |
| 2 Manufacturer :                                                                                                                                                                           |  |                        |  |                                                                                                      |  |
| 3 Size & Type :                                                                                                                                                                            |  |                        |  |                                                                                                      |  |
| 4 Service : <input type="checkbox"/> Continuous <input type="checkbox"/> Intermittent <input type="checkbox"/> Standby                                                                     |  |                        |  |                                                                                                      |  |
| 5 Driven equipment type : ISO 3977 classification <input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input checked="" type="checkbox"/> D                   |  |                        |  |                                                                                                      |  |
| 6 <input type="radio"/> <b>RATING REQUIREMENT</b>                                                                                                                                          |  |                        |  | <b>APPLICABLE SPECIFICATIONS</b>                                                                     |  |
| 7 Driven equipment power Normal: Maxi.: kW                                                                                                                                                 |  |                        |  | <input type="checkbox"/> API std 613 <input type="checkbox"/> API std 677                            |  |
| 8 Driver power Rated : Maxi.: kW                                                                                                                                                           |  |                        |  | <input type="checkbox"/> API std 670 <input type="checkbox"/> API std 671                            |  |
| 9 Gear rated power : kW Max. torque: N.m at RPM                                                                                                                                            |  |                        |  | <input type="checkbox"/> ISO 3977 <input type="checkbox"/>                                           |  |
| 10 Torque at Max. continuous speed : N.m <input type="checkbox"/> LS shaft <input type="checkbox"/> HS shaft                                                                               |  |                        |  |                                                                                                      |  |
| 11 Rated speed Input : RPM <input type="checkbox"/> Specified <input type="checkbox"/> Nominal                                                                                             |  |                        |  | <b>INSTALLATION DATA</b>                                                                             |  |
| 12 Output : RPM <input type="checkbox"/> Specified <input type="checkbox"/> Nominal                                                                                                        |  |                        |  | See specification :                                                                                  |  |
| 13 Allowable variation in gear ratio : + / - %                                                                                                                                             |  |                        |  | Altitude : m Barometer : mbar                                                                        |  |
| 14 Maximum continuous speed: RPM Trip speed: RPM                                                                                                                                           |  |                        |  | Ambient temperature: Mean value : °C                                                                 |  |
| 15 Minimum Gear service factor: External loads:                                                                                                                                            |  |                        |  | Mini: Maxi: Design: °C                                                                               |  |
| 16 Pinion harness: Shaft assembly designation:                                                                                                                                             |  |                        |  | Humidity at design temperature : %                                                                   |  |
| 17 HS shaft rotation facing coupling <input type="checkbox"/> CW <input type="checkbox"/> CCW                                                                                              |  |                        |  | Wind speed : m/s                                                                                     |  |
| 18 LS shaft rotation facing coupling <input type="checkbox"/> CW <input type="checkbox"/> CCW                                                                                              |  |                        |  | Atmospheric air <input type="checkbox"/> Dust <input type="checkbox"/> Fume                          |  |
| 19 HS shaft end <input type="checkbox"/> Cylindrical <input type="checkbox"/> Taper <input type="checkbox"/> 1-key <input type="checkbox"/> 2-keys                                         |  |                        |  | Particle > 10 µ g/m3                                                                                 |  |
| 20 <input type="checkbox"/> Hydraulic taper <input type="checkbox"/> Integral flange                                                                                                       |  |                        |  | Particle < 10 µ g/m3                                                                                 |  |
| 21 LS shaft end <input type="checkbox"/> Cylindrical <input type="checkbox"/> Taper <input type="checkbox"/> 1-key <input type="checkbox"/> 2-keys                                         |  |                        |  | Corrosion by :                                                                                       |  |
| 22 <input type="checkbox"/> Hydraulic taper <input type="checkbox"/> Integral flange                                                                                                       |  |                        |  |                                                                                                      |  |
| 23 Other operating conditions:                                                                                                                                                             |  |                        |  | Installation: <input type="checkbox"/> Indoor <input type="checkbox"/> Off shore                     |  |
| 24                                                                                                                                                                                         |  |                        |  | <input type="checkbox"/> Heated <input type="checkbox"/> Outdoor <input type="checkbox"/> Under roof |  |
| 25 <b>SHOP TEST / INSPECTION</b>                                                                                                                                                           |  |                        |  | <input type="checkbox"/> Winterisation <input type="checkbox"/> Tropicalisation                      |  |
| 26 <input checked="" type="radio"/> Shop inspection <input type="radio"/> by control agency                                                                                                |  |                        |  | Area classification : <input type="checkbox"/> Safe <input type="checkbox"/> Hazardous               |  |
| 27 <input checked="" type="radio"/> Tests :                                                                                                                                                |  |                        |  | Group of explosion : <input type="checkbox"/> II A <input type="checkbox"/> II B                     |  |
| 28 Manufacturer standard test                                                                                                                                                              |  |                        |  | Auto ignition temp. : <input type="checkbox"/> T3 <input type="checkbox"/> °C                        |  |
| 29 Cleanliness inspection of equipment                                                                                                                                                     |  |                        |  |                                                                                                      |  |
| 30 Hardness verification                                                                                                                                                                   |  |                        |  | <b>Starting :</b> <input type="checkbox"/> Local <input type="checkbox"/> Remote                     |  |
| 31 Journal runout check                                                                                                                                                                    |  |                        |  | <input type="checkbox"/> Manual <input type="checkbox"/> Automatic                                   |  |
| 32 Contact check tape lift                                                                                                                                                                 |  |                        |  |                                                                                                      |  |
| 33 Axial stability check                                                                                                                                                                   |  |                        |  | <input type="checkbox"/> <b>AVAILABLE UTILITIES</b>                                                  |  |
| 34 Rotor(s) residual unbalance check                                                                                                                                                       |  |                        |  | <b>Cooling water :</b>                                                                               |  |
| 35 Oil system casing joint tightness                                                                                                                                                       |  |                        |  | Pressure bar g                                                                                       |  |
| 36 Mechanical 4 hour run test ; Use                                                                                                                                                        |  |                        |  | Allowable dP bar                                                                                     |  |
| 37 <input type="checkbox"/> Shop <input type="checkbox"/> Job lube system                                                                                                                  |  |                        |  | Temperature °C                                                                                       |  |
| 38 <input type="checkbox"/> Shop <input type="checkbox"/> Job vibration probes                                                                                                             |  |                        |  | Allowable dT °C                                                                                      |  |
| 39 <input type="checkbox"/> Shop <input type="checkbox"/> Job bearings RTD                                                                                                                 |  |                        |  | <b>Steam :</b>                                                                                       |  |
| 40 <input type="checkbox"/> Tape recordings of real-time vibration data                                                                                                                    |  |                        |  | Pressure bar g                                                                                       |  |
| 41 Sound level test                                                                                                                                                                        |  |                        |  | Temperature °C                                                                                       |  |
| 42 Dismantling-reassembly after test                                                                                                                                                       |  |                        |  | <b>Instrument air :</b>                                                                              |  |
| 43 Spare rotors fit in                                                                                                                                                                     |  |                        |  | Pressure mini bar g                                                                                  |  |
| 44 Spare rotors mechanical run test                                                                                                                                                        |  |                        |  | Pressure maxi bar g                                                                                  |  |
| 45 String test : <input type="checkbox"/> Full load <input type="checkbox"/> Full speed                                                                                                    |  |                        |  | Temperature °C                                                                                       |  |
| 46 Oil system cleanliness                                                                                                                                                                  |  |                        |  | Dew point °C                                                                                         |  |
| 47 Actual running clearances check & records                                                                                                                                               |  |                        |  |                                                                                                      |  |
| 48                                                                                                                                                                                         |  |                        |  | Electricity : AC/DC Volts Phase / Hertz                                                              |  |
| 49 <b>ACCESSORIES BY MANUFACTURER (M) OR OTHER (O)</b>                                                                                                                                     |  |                        |  |                                                                                                      |  |
| 50                                                                                                                                                                                         |  |                        |  |                                                                                                      |  |
| 51 Base plate <input type="checkbox"/> with drip rim                                                                                                                                       |  |                        |  |                                                                                                      |  |
| 52 <input type="checkbox"/> Soleplate(s) <input type="checkbox"/> Subplate(s)                                                                                                              |  |                        |  |                                                                                                      |  |
| 53 Stainless steel shim                                                                                                                                                                    |  |                        |  |                                                                                                      |  |
| 54 Levelling pads                                                                                                                                                                          |  |                        |  |                                                                                                      |  |
| 55 Low speed coupling                                                                                                                                                                      |  |                        |  |                                                                                                      |  |
| 56 High speed coupling                                                                                                                                                                     |  |                        |  |                                                                                                      |  |
| 57 Coupling guard(s)                                                                                                                                                                       |  |                        |  |                                                                                                      |  |
| 58 <b>Notes:</b> Information to be completed : <input type="checkbox"/> By purchaser <input type="checkbox"/> By manufacturer <input type="checkbox"/> Either by purchaser or manufacturer |  |                        |  |                                                                                                      |  |
| 59                                                                                                                                                                                         |  |                        |  |                                                                                                      |  |
| 60                                                                                                                                                                                         |  |                        |  |                                                                                                      |  |
| 61                                                                                                                                                                                         |  |                        |  |                                                                                                      |  |
| 62                                                                                                                                                                                         |  |                        |  |                                                                                                      |  |
| 63                                                                                                                                                                                         |  |                        |  |                                                                                                      |  |
| 64                                                                                                                                                                                         |  |                        |  |                                                                                                      |  |
| 65                                                                                                                                                                                         |  |                        |  | 4 5                                                                                                  |  |
| 66                                                                                                                                                                                         |  |                        |  | 2 3                                                                                                  |  |
| 67                                                                                                                                                                                         |  |                        |  | 0 1                                                                                                  |  |
| 68 DESIGNATION                                                                                                                                                                             |  |                        |  | Date By Appr Rev DESIGNATION Date By Appr Rev                                                        |  |



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Date: 08/03

DS MEC 242

Rev: 01

|                                                                                                                          |       |                                                                                                                          |      |                                                                                                                          |      |      |
|--------------------------------------------------------------------------------------------------------------------------|-------|--------------------------------------------------------------------------------------------------------------------------|------|--------------------------------------------------------------------------------------------------------------------------|------|------|
| <b>CUSTOMER :</b>                                                                                                        |       | <b>ITEM :</b>                                                                                                            |      | <b>SPECIF.</b>                                                                                                           |      |      |
| <b>LOCATION :</b>                                                                                                        |       | <b>Nbr. of units :</b>                                                                                                   |      |                                                                                                                          |      |      |
| <b>JOB N° :</b>                                                                                                          |       | <b>UNIT :</b>                                                                                                            |      | <b>Page : /</b>                                                                                                          |      |      |
| <b>1 <input type="checkbox"/> BASIC GEAR DATA</b>                                                                        |       |                                                                                                                          |      | <b><input type="checkbox"/> CONSTRUCTION FEATURES (continued)</b>                                                        |      |      |
| 2 Mechanical rating : kW at RPM                                                                                          |       | <b><input type="checkbox"/> Radial bearings</b>                                                                          |      | Pinion                                                                                                                   | Gear |      |
| 3 Full load power loss: kW Mechanical efficiency (%)                                                                     |       | Type :                                                                                                                   |      |                                                                                                                          |      |      |
| 4 Pitch line velocity : m/sec                                                                                            |       | Diameter / Length: mm                                                                                                    |      |                                                                                                                          |      |      |
| 5 Tooth pitting index, "K" Actual : Allowable :                                                                          |       | Loading : <input type="checkbox"/> kPa <input type="checkbox"/> Bar                                                      |      |                                                                                                                          |      |      |
| 6 Tangential load, "Wt"                                                                                                  |       | Clearance (min.- max.): mm                                                                                               |      |                                                                                                                          |      |      |
| 7 Bending stress number, "St"                                                                                            |       | Pinion                                                                                                                   | Gear | Span : mm                                                                                                                |      |      |
| 8 Actual                                                                                                                 |       |                                                                                                                          |      | <b><input type="checkbox"/> Thrust bearing(s)</b>                                                                        |      |      |
| 9 Allowable                                                                                                              |       |                                                                                                                          |      | Pinion                                                                                                                   |      | Gear |
| 10 Material index number :                                                                                               |       | Location :                                                                                                               |      | Manufacturer :                                                                                                           |      |      |
| 11 Anticipated Sound Pressure Level : dBa at                                                                             |       | Type :                                                                                                                   |      |                                                                                                                          |      |      |
| 12 Journal static weight loads - Pinion : kg                                                                             |       | Size :                                                                                                                   |      |                                                                                                                          |      |      |
| 13 Gear : kg                                                                                                             |       | Loading / Rating: kPa                                                                                                    |      |                                                                                                                          |      |      |
| 14 WR2 referred to LS shaft : kg.m2                                                                                      |       | Internal thrust load : N (+) (-)                                                                                         |      |                                                                                                                          |      |      |
| 15 Breakaway torque : N.m @ LS shaft                                                                                     |       | External thrust load : N (+) (-)                                                                                         |      |                                                                                                                          |      |      |
| <b>16 <input type="checkbox"/> GEAR DATA</b>                                                                             |       |                                                                                                                          |      | <b><input type="checkbox"/> Coupling(s)</b>                                                                              |      |      |
| 17 Power loss (kW) each HS bearing : LS bearing :                                                                        |       | Pinion                                                                                                                   |      | Gear                                                                                                                     |      |      |
| 18 Power loss (kW) each thrust bearing :                                                                                 |       | Manufacturer                                                                                                             |      | Model                                                                                                                    |      |      |
| 19                                                                                                                       |       | Coupling rating : kw/100RPM                                                                                              |      |                                                                                                                          |      |      |
| 20 Outside diameter mm                                                                                                   |       | Pinion                                                                                                                   | Gear | Mount coupling halves <input type="checkbox"/> <input type="checkbox"/>                                                  |      |      |
| 21 Root diameter mm                                                                                                      |       |                                                                                                                          |      | <b><input type="checkbox"/> Materials</b>                                                                                |      |      |
| 22 Center groove diameter mm                                                                                             |       | Gear casing : Oil seals :                                                                                                |      |                                                                                                                          |      |      |
| 23 Durability power kw                                                                                                   |       | Radial bearing : Thrust bearing(s):                                                                                      |      |                                                                                                                          |      |      |
| 24 Strength power kw                                                                                                     |       | HS shaft : LS shaft :                                                                                                    |      |                                                                                                                          |      |      |
| 25 Face overlap ratio                                                                                                    |       | Pinion(s) : Hardness :                                                                                                   |      |                                                                                                                          |      |      |
| 26 Transverse contact ratio                                                                                              |       | Gear Rim(s) : Hardness :                                                                                                 |      |                                                                                                                          |      |      |
| 27 Length line of action mm                                                                                              |       | Low temperature operation: <input type="checkbox"/> Yes <input type="checkbox"/> No                                      |      |                                                                                                                          |      |      |
| <b>28 <input type="checkbox"/> CONSTRUCTION FEATURES</b>                                                                 |       |                                                                                                                          |      | <b><input type="checkbox"/> Bearing temperature devices :</b>                                                            |      |      |
| 29 Type of gear <input type="checkbox"/> Reducer <input type="checkbox"/> Increaser                                      |       | <input type="radio"/> Type : <input type="radio"/> Thermocouples <input type="radio"/> Resistance temp. detectors        |      |                                                                                                                          |      |      |
| 30 <input type="checkbox"/> Single stage <input type="checkbox"/> Double stage                                           |       | <input type="radio"/> Single <input type="radio"/> Duplex                                                                |      |                                                                                                                          |      |      |
| 31 <input type="checkbox"/> Single helical <input type="checkbox"/> Double helical                                       |       | <input type="checkbox"/> Resistance material: Ohms                                                                       |      |                                                                                                                          |      |      |
| 32 <input type="checkbox"/> Epicyclic <input type="checkbox"/>                                                           |       | <input type="checkbox"/> Manufacturer : <input type="checkbox"/> Model :                                                 |      |                                                                                                                          |      |      |
| 33 <b>Teeth</b>                                                                                                          |       | <input type="radio"/> Location journal bearing <input type="radio"/> Number per bearing :                                |      |                                                                                                                          |      |      |
| 34 Number of teeth Pinion : Gear :                                                                                       |       | <input type="radio"/> Highest temperature point <input type="radio"/> Other :                                            |      |                                                                                                                          |      |      |
| 35 Gear ratio: Center distance: mm                                                                                       |       | <input type="radio"/> Location thrust bearing <input type="radio"/> Number per bearing :                                 |      |                                                                                                                          |      |      |
| 36 Pitch diameter (mm) Pinion : Gear :                                                                                   |       | <input type="radio"/> Active side: <input type="radio"/> Inactive side:                                                  |      |                                                                                                                          |      |      |
| 37 Finish: RA                                                                                                            |       | <input type="radio"/> Monitor supplied by <input type="radio"/> Purchaser <input type="radio"/> Manufacturer             |      |                                                                                                                          |      |      |
| 38 AGMA geometry factor "J" Pinion : Gear :                                                                              |       | <input type="checkbox"/> Alarm set @: °C <input type="checkbox"/> Shutdown set @: °C                                     |      |                                                                                                                          |      |      |
| 39 Helix angle: deg. Normal pres. angle: deg.                                                                            |       | <b><input type="checkbox"/> Vibration detectors :</b>                                                                    |      |                                                                                                                          |      |      |
| 40 Net face width, "Fw": mm Pinion L/D:                                                                                  |       | <input type="checkbox"/> Type : <input type="checkbox"/> Model :                                                         |      |                                                                                                                          |      |      |
| 41 Normal diametral pitch: Backlash: mm                                                                                  |       | <input type="radio"/> Manufacturer :                                                                                     |      |                                                                                                                          |      |      |
| 42 Tooth plating: <input type="checkbox"/> Recommended <input type="checkbox"/> Not Recommended                          |       | <input type="radio"/> Number at each shaft bearing Total number:                                                         |      |                                                                                                                          |      |      |
| 43 <b>Manufacturing methods</b>                                                                                          |       | <input type="radio"/> Oscillator-demodulator supplied by: <input type="radio"/> Purch'r <input type="radio"/> Manufact'r |      |                                                                                                                          |      |      |
| 44 Teeth generated by the : Procees                                                                                      |       | <input type="radio"/> Manufacturer : <input type="checkbox"/> Model :                                                    |      |                                                                                                                          |      |      |
| 45 Teeth finished by the : Procees                                                                                       |       | <input type="checkbox"/> Alarm set @: Shutdown set @: μ meter                                                            |      |                                                                                                                          |      |      |
| 46 Teeth hardening method                                                                                                |       | <b><input type="checkbox"/> Axial position detector :</b>                                                                |      |                                                                                                                          |      |      |
| 47 Gear to shaft (§ 2.5.3.2) <input type="checkbox"/> Integral <input type="checkbox"/> Shrunk-on                        |       | <input type="checkbox"/> Type : <input type="checkbox"/> Model :                                                         |      |                                                                                                                          |      |      |
| 48 Rim attachment (§ 2.5.3.2)                                                                                            |       | <input type="radio"/> Manufacturer : <input type="radio"/> Number required :                                             |      |                                                                                                                          |      |      |
| <b>49 <input type="checkbox"/> PIPING CONNECTIONS</b>                                                                    |       |                                                                                                                          |      | <input type="radio"/> Oscillator-demodulator supplied by: <input type="radio"/> Purch'r <input type="radio"/> Manufact'r |      |      |
| 50 Service                                                                                                               | N'ber | Nominal Ø                                                                                                                | Type | <input type="radio"/> Manufacturer : <input type="checkbox"/> Model :                                                    |      |      |
| 51 Lube oil inlet                                                                                                        |       |                                                                                                                          |      | <input type="checkbox"/> Alarm set @: Shutdown set @: μ meter                                                            |      |      |
| 52 Lube oil outlet                                                                                                       |       |                                                                                                                          |      | <b><input type="checkbox"/> Keyphasor(s) required :</b>                                                                  |      |      |
| 53 Casing drain                                                                                                          |       |                                                                                                                          |      | <input type="checkbox"/> Type : <input type="checkbox"/> Model :                                                         |      |      |
| 54 Vent                                                                                                                  |       |                                                                                                                          |      | <input type="radio"/> Manufacturer : <input type="radio"/> Number required :                                             |      |      |
| <b>55 <input type="checkbox"/> LUBRIFICATION REQUIREMENTS</b>                                                            |       |                                                                                                                          |      | <input type="radio"/> Oscillator-demodulator supplied by: <input type="radio"/> Purch'r <input type="radio"/> Manufact'r |      |      |
| 56 <input type="checkbox"/> Minimum startup oil temperature :                                                            |       |                                                                                                                          |      | <input type="radio"/> Manufacturer : <input type="checkbox"/> Model :                                                    |      |      |
| 57 <input type="checkbox"/> Total oil flow : m3/hr Oil pressure: bar g                                                   |       |                                                                                                                          |      | <b><input type="checkbox"/> Vibration transducers :</b>                                                                  |      |      |
| 58 <input type="checkbox"/> Oil system furnished by : <input type="radio"/> Purchaser <input type="radio"/> Manufacturer |       |                                                                                                                          |      | <input type="checkbox"/> Velocimeter <input type="checkbox"/> Accelerometer                                              |      |      |
| 59 <input type="checkbox"/> Oil viscosity : cP at 40°C / cP at 100°C                                                     |       |                                                                                                                          |      | <input type="radio"/> Manufacturer : <input type="checkbox"/> Model :                                                    |      |      |
| <b>60 MISCELLANEOUS</b>                                                                                                  |       |                                                                                                                          |      | <input type="radio"/> Location : <input type="radio"/> Number required :                                                 |      |      |
| 61 <input type="radio"/> Undamped critical analysis report                                                               |       |                                                                                                                          |      | <input type="checkbox"/> Alarm set @: Shutdown set @: mm/s - mm/s2                                                       |      |      |
| 62 <input type="radio"/> With damped rotor response analysis report                                                      |       |                                                                                                                          |      | <b><input type="checkbox"/> Monitor :</b>                                                                                |      |      |
| 63 Torsional analysis by : <input type="radio"/> Gear vendor <input type="radio"/> Other                                 |       |                                                                                                                          |      | <input type="radio"/> Supplied by : <input type="radio"/> Purchaser <input type="radio"/> Gear manufacturer              |      |      |
| 64                                                                                                                       |       |                                                                                                                          |      | <input type="radio"/> Manufacturer : <input type="radio"/> Location :                                                    |      |      |
| 65                                                                                                                       |       |                                                                                                                          |      | 4                                                                                                                        |      |      |
| 66                                                                                                                       |       |                                                                                                                          |      | 2                                                                                                                        |      |      |
| 67                                                                                                                       |       |                                                                                                                          |      | 0                                                                                                                        |      |      |
| 68 DESIGNATION                                                                                                           |       |                                                                                                                          |      | 1                                                                                                                        |      |      |
| Date By Appr Rev                                                                                                         |       |                                                                                                                          |      | Date By Appr Rev                                                                                                         |      |      |