# Fan Selection Order

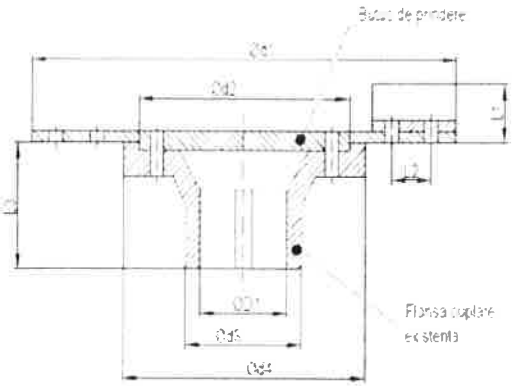
## SECTION 1: Customer Details

Pos: 09-GE24/1-10

**API information required (Mandatory)**

| | | | | | | |
|---|---|---|---|---|---|---|
| End User | **Petrotel-Lukoil S.A.** | Location: | **Onshore-outdoor** | | | |
| Industry sector | **Refinery** | Ambient temperature: | **min -35°C** | x | x | **max +45°C** |
| Location | **Ploiesti, Prahova-Romania** | Position: | **Horizontal** | - | x | **Vertical** |
| Area of Plant * | **FCC** | Direction of rotation: | **CCW** | - | x | **CW** |
| Fan Duty * | **Axial fan** | | | | | |
| Company: | **PETROTEL-LUKOIL S.A.** | Phone no: | **+40-766257243** | | | |
| Engineer: | **Iorgoiu Ciprian** | Email: | ciorgoiu@petrotel.lukoil.com | | | |

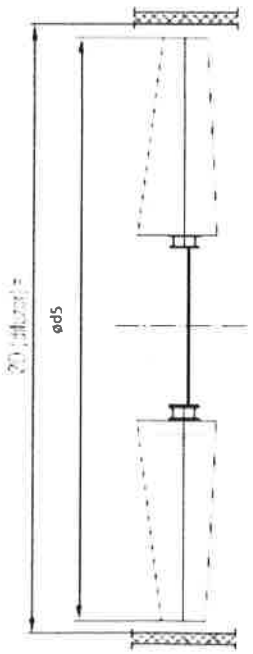
## SECTION 2: Dimensional & Type Details

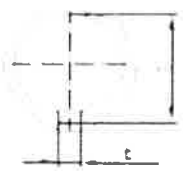


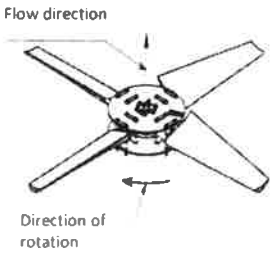

| | Value | Units |
|---|---|---|
| d1 (Fan hub OD): | **940** | **mm** |
| d2 (Clamping hub OD) | **290** | **mm** |
| d3 (Flange coupling OD): | **140** | **mm** |
| d4 (Flange coupling shaft side OD) | **345** | **mm** |
| d5 (Fan ring ID): | **3500** | **mm** |
| D1 (Flange coupling shaft side ID) | **85** | **mm** |
| L1 (Dist First Obstr.): | **60** | **mm** |
| L2 (Dist Between Blade's Clamping Bolts ): | **90** | **mm** |
| L 3 (Flange coupling hight ) | **160** | **mm** |
| b (key channel width ) | **22** | **mm** |
| t (key channel hight): | **90,4** | |
| Blades No: | **6** | **buc** |
| Blades Type: | **FRP** | |
| **Is the shaft harder than AISI 316L (160 HB)?:** | *No* | |
| **If yes state value or material spec:** | **NA** | |

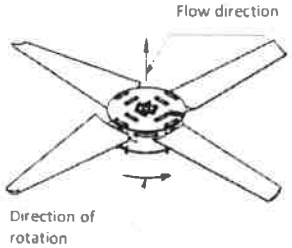
**Direction of rotation of the impeller when viewed against the air flow (mark the necessary with the "V" sign):**

| | |
|---|---|
| **V** | |



## SECTION 3: Fan Details

| | | | |
|---|---|---|---|
| Manufacturer: | SC COMPANIA DE VENTILATOARE | Size / Type: | VPV 3500 |
| Serial No: | NA | Shaft Speed (rpm): | - |
| Tag Number: | 09-GE24/1-10 | Driver Type: | Electrical motor |
| Typical Drive Arrangements: | Suspended belt drive, motor shaft up | Driver Speed (rpm): | 970 |
| Typical Plenum Arrangements: | Forced draught-box-type plenum | Driver Power*: | 35 kW |
| Static Pressure*: | 17 mm H2O | Transmission Type: | Belt |
| Air Flow*: | 81 m3/h | | |
| Air Temperature*: | 45° Celsius degree | | |
| Altitude*: | 170 m | | |
| Blade Pitch Adjusment: | Manual | | |

* Please state units. e.g. psia, psig, barg, inches, mm

## SECTION 4: Customer Suggestions

| | |
|---|---|
| Size: | - |
| Type: | - |
| Hub Material: | - |
| Blades Ring Material(s): | FRP |
| Blade Pitch Adjusment: | Manual |
| Other Specification (e.g.API, ATEX): | ATEX; PED |
| Quantity: | - |
| Price: | - |
| Delivery: | DDP Ploiesti |

| Remarks: | |
|---|---|
| | |

Head Mechanical Engineer

21.07.2022

Senior Mechanical Specialist Engineer

20.07.22

Chief Unit

Mechanical engineer

14.07.2022

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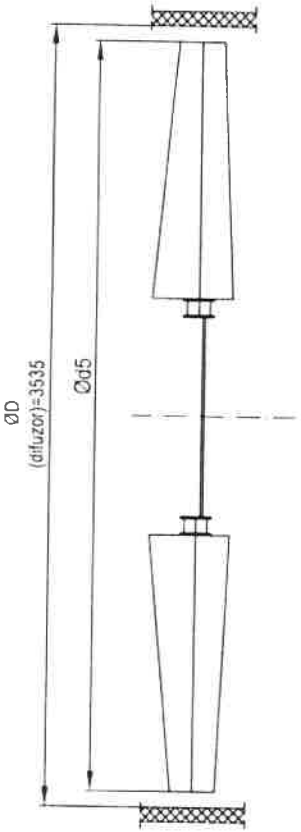
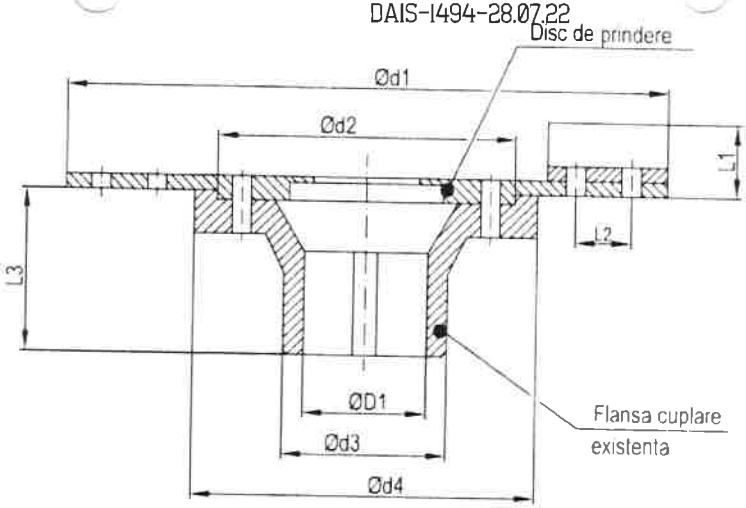
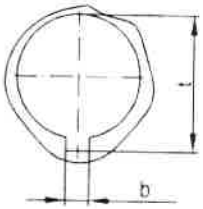
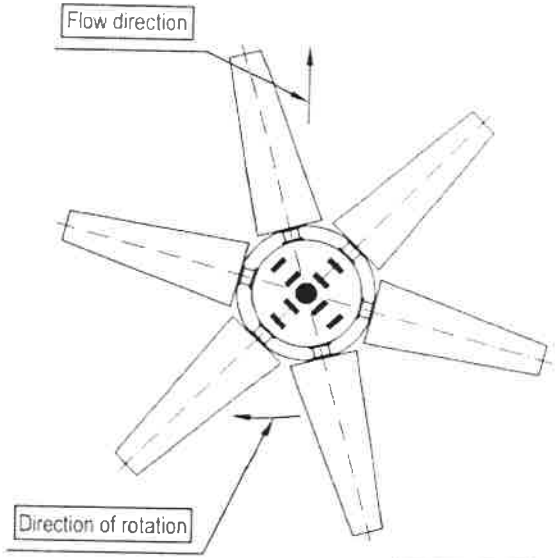
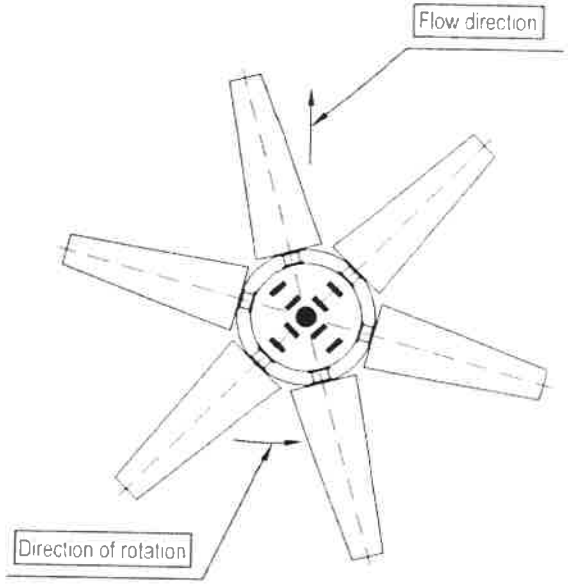
DAIS-1494-28.07.22




| | Value | Units |
|---|---|---|
| d1 (Fan hub OD) | 940 | mm |
| d2(Clamping hub OD) | 290 | mm |
| d3(Flange coupling OD) | 140 | mm |
| d4(Flange coupling shaft side OD) | 345 | mm |
| d5(Fan ring ID) | 3500 | mm |
| D1(Flange coupling shaft side ID) | 85 | mm |
| L1(Dist First Obstr.) | 60 | mm |
| L2(Dist Between Blade's Clamping bolts) | 90 | mm |
| L3(Flange coupling hight) | 160 | mm |
| b(key channel width) | 22 | mm |
| t(key channel hight) | 90.4 | mm |
| Blades No | 6 | buc. |
| Blades Type | FRP | |
| Is the shaft harder than AISI 316L (160 HB)? | No | |
| If yes state value or material spec | 2C35I | |

**Pozitie montaj : GE24/2**
**Sectorul : 2**
**Instalatia : CC**

Directionn of rotation of the impeller when viewed against the air flow (mark the necessary with the "V" sing)

V

| Intocmit (nume, semnatura) | Vizat (nume, semnatura) | Aprobat (nume, semnatura) | Data |
|---|---|---|---|
| Ene Ion | Alin Ionita | ing. C. Iorgoiu | 08.07.2022 |

TURBOENERGY POWER

**FISA SELECTIE VENTILATOR**

Date 04.06.2021

**REFERENCE No.** **21V12104**

| | |
|---|---|
| Customer | |
| Customer Ref | MAIL 04/05/2021 |
| Item No | 01 |
| Position | 01 |
| Customer specification | |

Impeller Type FRP / 37V / 06h / E1-A / 03500 / AP

| | | | | |
|---|---|---|---|---|
| Diameter | [mm] | 3500 | Application | General |
| Blade chord | [mm] | 370 | Installation type | Forced draught |
| Number of blades | | 6 | | |

| | | |
|---|---|---|
| Air Volume | [m3/s] | 81 |
| Static Pressure | [mmH2O] | 17 |
| Velocity Pressure | [mmH2O] | 3.69 |
| Total Pressure | [mmH2O] | 20.69 |
| Air Temperature | [deg. C] | 45 |
| Elevation | [m] | 180 |
| Air Humidity | [%] | 60 |
| Air Density | [kg/m3] | 1.063 |
| Fan Stack Angle | [deg] | 0 |
| Fan Stack Height | | 0 Diam. |
| Inlet Type | | Flange |
| Tip Clearance | | 0.005 Diam. |
| Obstructions Area* | Inlet(a/A x/D) Outlet(a/A x/D) | (0.1 0.1) (0.0 0.0) |
| Speed of rotation | [rpm] | 280 |
| Tip Speed | [m/s] | 51.4 |
| Blade Pitch Angle | [deg] | 12.5 +/- 0.5 |
| Absorbed Power | [kW] | 19.7 |
| Static Efficiency | [%] | 68.6 |
| Total Efficiency | [%] | 83.5 |
| Sound Power Level PWL | [dB(A)] | 95.6 +/- 2 |
| Sound Pressure Level SPL axial | [dB(A)] | 82.8 +/- 2 at 1 [m] |

PWL and SPL Spectrum [dB(A)]

| Hz | 62.5 | 125 | 250 | 500 | 1000 | 2000 | 4000 | 8000 |
|---|---|---|---|---|---|---|---|---|
| PWL | 77.5 | 86.4 | 88.6 | 88.9 | 90 | 87 | 81.5 | 72 |
| SPL axial | 64.7 | 73.6 | 75.8 | 76.1 | 77.2 | 74.2 | 68.7 | 59.2 |
| Tolerance | +/- 5 | +/- 5 | +/- 3 | +/- 2 | +/- 2 | +/- 2 | +/- 2 | +/- 2 |

| | | |
|---|---|---|
| Blade Mass | [kg] | 18 |
| Fan Mass | [kg] | 147 |
| Fan GD2 | [kgm2] | 283 |
| Axial Thrust | [N] | 1952 |
| Blade Passing Frequency | [cpm] | 1680 |
| Blade Natural Frequency | [cpm] | 1003 |
| Blade Aerodynamic Load | [N] | 325 |
| Blade Failure Load | [N] | 10833 |
| Pressure Margin | [%] | 47.8 |
| Volume Margin | [%] | 21.6 |

* For noise calculation only