‘Yule’ Centrifugal fan

MODEL CAPACITY:
- FLOW RATE FROM 2000 M³/Hr TO 30,00,000 M³/Hr
- PRESSURE UPTO 4900 mm WG
- TEMPERATURE UPTO 450 DEG.C (CONTINUOUS)
- SPEED UPTO 3000 RPM
- POWER UPTO 6 MW FOR SINGLE FAN

SPECIALITY:
- HIGH EFFICIENCY
- GUARANTEED PERFORMANCE
- SOUND MECHANICAL RUNNING, LOW NOISE
- QUICK DELIVERY
- ONE YEAR ON-SITE WARRANTY (excl. wear liners)
- VERY RELIABLE SERVICE BACK-UP BY REAL EXPERTS IN THE FIELD
FAN MODEL SELECTION:
- BEST EFFICIENCY MODEL SELECTED BY A SPECIAL SOFTWARE PACKAGE
- ESTIMATED PERFORMANCE CURVE GENERATED.
- FAN DESIGN (IMPELLER, SHAFT → MATL, PLATE THK, WT., WK² etc.) DONE BY COMPUTER AIDED DESIGN (3D)
- BEARING, COUPLING SELECTION, DAMPER TORQUE etc. ALSO DONE BY Auto-CAD.
- SPEED-TORQUE CURVE GENERATED- FOR MOTOR SELECTION BY MOTOR MANUFACTURER.

Efficiency of different Models of Fan

![Efficiency Graph]

MAX.EFFY.: BCB-11→80.8% ; BCB-24→81.76%  
BCB-42→82.2% ; BCB-65/2→82.6%  
BCB-92→85.8% ; BCB-143→84.4 %
Estimated Performance Curve of Fans

**Estimated Performance Curve**

1480 RPM, DENSITY = 1.0352 Kg/m³

 CLIENT: ANDREW YULE & CO. LTD.  
FD FAN  
INLET: SIDE BOX & DVC  
T.A. = 2.9449 m²

Damper curves are @ 15 Deg. closing
Estimated Speed-Torque Curve of Fans
(required for Motor selection)

1. Rotor Wt = 11500 Kgf; GD2 = 12000 Kg-m^2
2. Torque at Sh. Power = 1839 Kgf-m
3. Design Shaft Power = 1650 KW
4. Keep Inlet Damper Full Shut while starting

**Estimated Fan Speed - Torque Curve**

- Break-Away Torque: 110.5 KGF-M
- Full Load Torque: 1839 KGF-M

Graph showing % Fan RPM vs % Full Load Torque.

With Inlet Damper Full Open at 190 deg. C
With Inlet Damper Full Closed at 40 deg. C
RANGE OF APPLICATION:

POWER PLANTS:

- ID FAN - UPTO 21 LAC M³/Hr.
  -> NTPC- RIHAND TPS: 3186 MM DIA IMPELLER; 2060280 M³/Hr.; 352 MM WG ST. PR;
    2.82 MW; 720 RPM; IMP+SHAFT WT = 23.4 T
  -> NTPC-TALCHER TPS: 2560 MM DIA IMPELLER; 684000 M³/Hr.; 350 MM WG ST. PR.; 0.8
    MW; 740 RPM; IMP+SHAFT WT = 9.4 T

- FD FAN -> UPTO 6 LAC M³/Hr
  -> WBPDCL- KOLAGHAT TPS : 2045 MM DIA FAN ; 515520 M³/HR ; 425 MM WG ST.PR. ;
    0.95 MW ; 980 RPM

- PA FAN:
  UPTO 1 LAC M³/Hr; 1500 mm WG ST.PR; 1500 RPM

- SA FAN :
  UPTO 0.3 LAC M³/Hr; 1800 MM WG ; 3000 RPM

STEEL PLANTS:

- SINTER EXHAUST FAN -> UPTO 12 LAC M³/Hr
  -> VIZAG & ROURKELA STEEL PLANT: 3660 & 3695 DIA FAN ; 9-11 Lac M3/HR ; 1500-1600
    MM WG ST.PR. ; 4.2 – 5.2 MW ; 990 RPM
  -> TISCO : 4010 MM DIA FAN ; 9.3 Lac M3/HR ; 1662 MM WG ST.PR. ; 4.97 MW ; 980 RPM

- GB, CA & ID FANS:
  UPTO 3 LAC M³/Hr; 750 mm WG ST.PR; 2980 RPM

CEMENT PLANT:

for all types of application viz. PA, Raw Mill, Coal Mill, Cement Mill, Cooler, Separator, Bag House,
ESP/Waste Gas/P.H. etc.
Capacity Range: 2,000 – 8,00,000 m3/hr ; St. Pr: 100-1800 mm Wg.
  Temp. up to 420 deg.C ; Speed: 600-3000 RPM ; Effy. up to 87%

- Raw Mill Fan:
  -> GRASIM PLANT: 2910 DIA Double Inlet Fan ; 6.3 Lac M³/Hr; 970 mm WG ST.PR. ; 105
    deg.C; 2.1 MW ; 990 RPM

- Kiln ESP Fan:
  -> PRIYADARSHINI CEMENT: 2265 DIA Double Inlet Fan; 4.98 Lac M³/Hr; 175 mm WG
    ST.PR. ; 368 KW; 740 RPM

- Cement Mill Fan:
  -> VIKRAM CEMENT : 1980 DIA Single Inlet Fan ; 1.4 Lac M3/HR ; 1020 mm WG ST.PR. ;
    475 KW ; 985 RPM

BEARINGS AND BEARING HOUSINGS OF
‘YULE’ MAKE

- WHITE METAL LINED SLEEVE BEARING (2” TO 10” SIZE) – RING LUBRICATED, WATER COOLED
- PRESSURE FED WHITE METAL LINED SLEEVE BEARING (2” TO 12” SIZE)
- HOUSINGS FOR DOUBLE ROW SPHERICAL ROLLER BEARINGS (DRSR) -> 60 MM DIA UPTO 200 MM DIA

YULE make Ring Lubricated DRSR Bearing Housing
QUALITY PLAN FOR YULE FANS:

YULE make Uniblock Housings

'YULE' (CYL. ROLLER - DEEP GROOVE BALL) UNIBLOCK BEARING HOUSING
WEAR PROTECTION IN FANS:

- BLADE PROVIDED WITH LINERS (50% TO 100% WIDE):
  (a) WITH HARD-SURFACING (650 BHN) or
  (b) HARDENED PLATES (HARDOX- 400/500) USED AS LINER

- CENTRE SHEET LINERS (Adjacent to blade area) PROVIDED

- OPEN BLADED IMPELLERS USED FOR HEAVY DUST LOAD
- Volute Casing also provided liner, if required
- REMOVABLE LINERS FOR EASY REPLACEMENT

VIBRATION AND NOISE:

- VIBRATION RANGE OF MACHINE CLASS-III FANS ARE AS PER ISO:
  2372 / VDI 2056 -> 1.8 MM/S TO 11 MM/S ; NORMAL VALUE 2 TO 4 MM/S

- NOISE LIMIT : 85 dB @ 1M FROM FAN without or with SILENCER /
  ACCOUSTIC LAGGING/ ACCOUSTIC ENCLOSURES – as may be the case

PERFORMANCE TEST:
Testing Facility:
- Own Test Bay
- Test Duct upto 2m dia
- Calibrated testing Instruments
- Testing as per BS:848:Part-I
- Test Report & Curve generated by Computer
- Expert Testing Team

Fan Operation: Myth and Reality –

- $Q_v$ INLET VOL. FLOW RATE (m$^3$/s)
- 3.0 3.2 3.4 3.6 3.8
- 3.0 3.4 3.8
- $P_1 = C \times Q_v + 2$
- Characteristic Error
- $-0.07 \text{ m}^3/\text{s}$
- $-2.0 \%$
- $-0.3 \text{ KW}$
- $-6 \%$
- $5 \text{ KW Sh. Power}$
- $\text{SYS. RES. CURVE}$
- SPECIFIED DUTY
- 3.4 m$^3$/S, 1100 Pa
- 5 KW Sh. Power
- @1.2 Kg/m$^3$ density
- $P_1 = C \times Q_v + 2$
- Characteristic Error
- $-0.07 \text{ m}^3/\text{s}$
- $-2.0 \%$
- $-0.3 \text{ KW}$
- $-6 \%$
- $5 \text{ KW Sh. Power}$
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- Characteristic Error
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- $-2.0 \%$
• Dynamic Balancing to be done at Rated Speed of Fan -> Not essential. Balancing Machines can do the job very well at their rated speeds of 200/ 400 RPM as they are sensitive enough and calibrated for these speeds

• Shaft to be Dynamically Balanced : Not required -> As Shaft unbalance is within 0.1% of Impeller’s Permissible Residual unbalance

• Always Use Silencer to reduce Noise : System Resistance will increase and power may go up by 5 to 15% .

CONTACT INFORMATION :

• For Fan, Spares enquiry/ Offers:
  Mr. A.K. Dutta - +919903032720 , Mr. Sandipan Das: +919831501221 / +919836744337.
  Mr. Swarup Ghosh: +918100975193.

• For ESP/ Bag Filter /spares enquiry/ Offers & WPC Execution:
  Mr. Sourav Sengupta: + 919830853319. / Mr. T. K. Chattopadhyay: +919874420015.

• For Fan PO/ Contracts related matters:
  Mr. Vivek Dolai: +919836744825. / Mr. EP Radhakrishnan: 0332242 5979
  Mr. Amit Ganguly: +919874573880 , Mr. Sarasij Ghosh - +919433660240

• For Installation & Service related issues:
  Mr. A. K. Chowdhury: +919830286070. / Mr. S. N. Mullick: +919836744823.
‘Yule’ Air Pollution Control

Electro Static Precipitator (ESP)
Pulsejet & Reverse jet Bag Filter / Bag House

Fume Extraction & Cleaning Systems.

Gas Conditioning Towers.

De-dusting Systems in Electric Arc Furnaces.