Industrial fans general
Guidance to choosing the direct driven industrial fans

The fans can be divided into 4 groups which are type, pressure area and application.

1. Medium pressure fans: pressure area. 150-6,500 Pa.
   - Diagram 1 Clean air: Very low dust holding capacity, eg after filtration
   - Diagram 2 Dusty air: Up to 0,2g/m³ dust content, eg welding smoke
   - Diagram 3 Dusty air: Up to 2g/m³ dust content, eg cutting processes with or before filtration

2. High pressure fans: pressure area. 1500-25,000 Pa.
   - Diagram 4 Dusty air: Up to 0,2g/m³ dust content, eg welding smoke
   - Diagram 5 Dusty air: Up to 2g/m³ dust content, eg cutting processes with or before filtration
   - Diagram 6 Dusty air: Up to 20g/m³ dust content, eg granulate in form of finer particles.

   - Diagram 7 Material transportation: Up to 200g/m³ dust content, eg chips and granulate.

   - Diagram 8 and 9: Aggressive air: Acid – water damp, eg exhaust from fume cupboards, galvanizing tabs

The following procedure can be followed:

1. Decide mode of transport
   - a. Clean air
   - b. Dusty air
   - c. Material transportation
   - d. Aggressive air

2. For a and b the actual pressure area should be decided.
   - Medium pressure fans up to 6,500 Pa from diagram 1, 2 or 3.
   - High pressure of up to 25,500 Pa from diagram 4, 5 or 6.

   For pressure areas of up to 6,500 Pa a medium pressure fan should be chosen to begin with for price related reasons.

   For c and d diagrams 7, 8 or 9 should be applied, where the fan is decided by the help of desired pressure and air capacity.

3. With the desired pressure and air capacity, one should generally look for a fan curve, where operation point (desired pressure and air capacity) lies closely to the curves’ point of discontinuity. Here the fan will operate most optimal with the highest efficiency.

The following examples give some enlightenment on this:

If one regulates a fans capacity, this should be recommended with the help of a frequency converter. In which case the motor should be equipped with thermal sensors in motor winding also called PTC. These monitor the temperature of the motor winding. If winding is too high, which can happen if the motor is rotating at a low speed, the motor will stop for safety reasons and can be restarted again after it has cooled down.

For small motor effects the industrial fans can be delivered with a one phased motor, which can be regulated by a transformer.

Øland recommends first and far most that you regulate with a frequency converter. This will give the best on operational and economy regulations.
Example 1:
Exhaust of clean air

Points of operation are:
Air flow: 2700 m³/h
Total pressure: 750 Pa

Total pressure of 750 Pa indicates a medium pressure fan.
Clean air gives the first result in diagram 1
Fan nr 2 (FR 281-1,1kW) shows as the best one to choose.
If the right fan is not found in the diagram 1 searching should continue to diagram 2 and 3.

Contact Øland A/S, if none of the diagrams gives you desired results.

Example 2:
Exhaust of for example welding smoke

Points of operation are:
Air flow: 11.000 m³/h
Total pressure: 2.500 Pa

Total pressure of 2.500 Pa indicates a medium pressure fan.
Clean air gives the first result in diagram 1
Fan nr 6 (FR 451-1,1kW) shows as the best one to choose.
If the right fan is not found in the diagram 1 searching should continue to diagram 2 and 3.

Contact Øland A/S, if none of the diagrams gives you desired results.

Example 3:
Exhaust of for example welding smoke

Desired operation point
Air flow: 4000 m³/h
Total pressure: 2000 Pa

Total pressure of 2000 Pa indicates a medium pressure fan.
Air exhaustion from car fumes normally has a lower dust content which contains finer particles.
The low dust contents gives the first search in diagram 2.
Fan nr 5 (FQ 401-4,1kW) shows as the best one to choose with a bit higher capacity.
If the right fan is not found in the diagram 1 searching should continue to diagram 2 and 3.

Contact Øland A/S, if none of the diagrams gives you desired results.
Example 4
Process exhaust clean air

Desired operation point
Air flow : 10,000 m³/h
Total pressure : 15,000 Pa

Total pressure of 15,5000 Pa indicates a medium pressure fan.
Clean air should be the first searching point in diagram 4.
If the right fan is not found in the diagram 1 searching should continue to diagram 2 and 3.

Fan nr 31(FGP 801-75kW) shows as the best one to choose with a bit higher capacity.

Contact Øland A/S, if none of the diagrams gives you desired results.
0. Industrial fans general - examples .................................................................

1. Medium pressure fans - clean air ..............................................................1.000-90.000 m3/h - 150-3.600 Pa

2. Medium pressure fans - dusty air up to 0.2 g/m3 ....................................700-90.000 m3/h - 500-6.500 Pa

3. Medium pressure fans - dusty air up to 2 g/m3 .......................................700-55.000 m3/h - 500-5.000 Pa

4. High pressure fans - dusty air up to 0.2 g/m3 ........................................200-50.000 m3/h - 2.500-25.000 Pa

5. High pressure fans - dusty air up to 2 g/m3 ............................................700-60.000 m3/h - 1.500-16.000 Pa

6. High pressure fans - dusty air up to 20 g/m3 ...........................................2.000-17.000 m3/h - 2.000-18.000 Pa

7. Conveying fans - material transportation up to 200 g/m3 ......................80-14.000 m3/h - 700-15.000 Pa


9. Plastic fans - rust-acid proof with F-Wheel .............................................80-20.000 m3/h - 100-3.500 Pa

Diagrams in the following serve for a fast and safer version of the desired fan. Any wishes for more detailed technical data please employ the Øland electronical dimensioning program. “Industrial fans”. A CD with dimensioning program can be requested on +0045 70 20 19 11.
Example 5
Material transportation

Desired operation point.
Air flow: 2.000 m³/h
Total pressure: 4.500 Pa

The searching should go directly in diagram 7.
Fan no. 19 (KBP-501-7,5kW) proves to be the best choice.

Contact Øland A/S, if none of the diagrams gives you desired results.

Example 6
Exhaust from galvanizing bath

Desired operation point
Air flow: 5.000 m³/h
Total pressure: 600 Pa

The searching should go directly in diagrams 8 and 9
Fan no. 16 (VRE 315-501-7,5kW) proves to be the best choice.

Contact Øland A/S, if none of the diagrams gives you desired results.