AERODYNAMIC TESTS

All the aerodynamic performance curves given in the catalogue have been obtained by using a test chamber with submerged orifice and auxiliary fan, described in Standard Specification CCT 18-10. The performance curves are drawn up for an air density of 1.2 kg/m³ (0.075 lb/ft³).

Test equipments
Description of the test equipment, method and use, necessary formula to calculate flow and pressure from instrument readings are given in detail in CCT 18-10, to which reference should be made for further information. Details are given here of the test equipment and its functioning from a practical viewpoint. The test equipment takes the form of a large cylindrical chamber arranged to take at one end the fan under test and extended at the other end by a duct connected to the auxiliary fan. In the duct there is a shutter (b) and an inlet for ambient air, which is controlled by shutter (a). An air tight bulkhead is situated in the cylindrical chamber in which is the orifice for flow measurement. Pressure tappings P2 and P3 are positioned on each side of the bulkhead. A honey comb grid and metal meshs ensure stable airflow upstream of the orifice. Pressure tapping P1 is situated close to the end wall on which the fan under test is mounted.

Because of the large dimensions of the chamber in relation to the fan under test, the dynamic pressure due to the velocity of the air is completely lost and static pressure is read directly from a manometer connected to the tapping P1. The purpose of the auxiliary fan is to cancel out the aerodynamic resistance of the equipment, thereby allowing the fan under test to operate at free air conditions.

Operation (Fig.16)
With the fan under test and the auxiliary fan both running, shutters (a) and (b) are adjusted to give a zero reading of static pressure on P1.

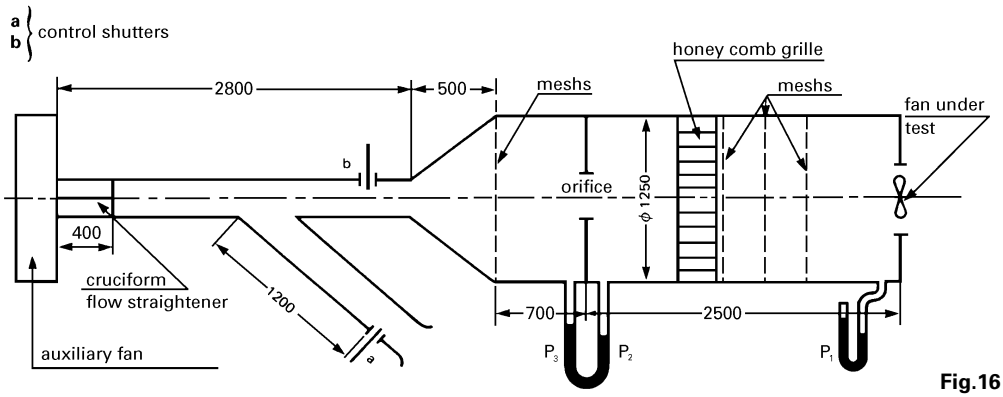


Fig.16

The corresponding flow is calculated from the pressure differential P2-P3 and is the free air-flow. By progressively closing shutter (b) at each position a flow and static pressure can be obtained, up to the point of complete closure which corresponds to the shut off pressure.

The values of flow and pressure thus obtained (corrected if the density differs from 1.2 kg/m^3 at the time of the test) can be plotted as fan aerodynamic performance curve, such as those given in the technical leaflets. Experience has shown us moreover that tests made with our chamber give results very close to those obtained with the chamber described in MIL-B-23071 Standard which is based on the test equipment of AMCA, Standard Test Code, bulletin 210. These test rigs that of CCT 18-10 are based on the principle sometimes called "by chamber" and always give lower results that those based on the principle of "venturi", where part of the dynamic pressure developed by the impeller is recovered as static pressures, that tends to give static pressures higher than the true value.

MECHANICAL METROLOGY

Our laboratory includes extensive equipment (eg.: laser recorders) to measure mechanical dimensions with extreme accuracy (up to 1/10 µm).

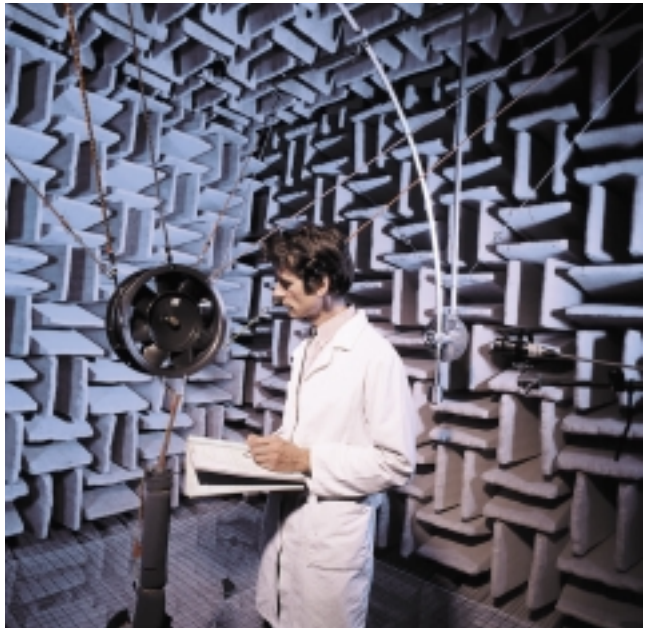
INSTRUMENTATION

Our equipments allow us to design and test electric and electronic parts:

- Reliability: several cabinets for environmental conditions tests (temperature, humidity, salt spray), and accelerated ageing tests.
- Shocks and vibrations: extensive testing can be completed with a vibration pot.

ACOUSTIC TEST

We are equipped to perform noise level tests in our own sound proof chamber. The fan under test is supported on elastic mounts in the center of the test chamber. A microphone is placed 1 meter from the center line of the fan and is connected to instrumentation that includes a measuring amplifier, a condenser microphone, a pass-band filter, and a recorder.



6 sides sound proof chamber

RESEARCH AND DEVELOPMENT

All our R & D files are stored on computerized technical data base including data-sheets libraries.
All our designs are done with computer assisted programs such as AUTOCAD, ORCAD and I-DEAS which are compatible with our production computer system.