

Sound investment:

The development of an alternative Hemi-Anechoic Room design

As more and more manufacturers accept the need for acoustic testing, an alternative innovative Free-Field Room design offers a very economic and space saving solution.

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The study of sound generation and noise has become extremely important in recent years as the general public have become increasingly sound conscious.

At the same time, as this problem is recognised as being pollutants, manufacturers of cars and car components are trying to eliminate their effects. To help to locate extraneous noise sources in vehicles and to reduce these, IAC GmbH has developed a Free-Field Room concept usually constructed for large room sizes, which can be placed on hard floor surfaces, in the absence of structurally transmitted noise and vibration. The so-called PlanarCHOIC Free-Field Rooms are suitable for sound measurements of cars, truck cabs, fork lifts, construction equipment, car tyres and component testing.

Several car and truck manufacturers and component suppliers already use PlanarCHOIC Rooms successfully.

These PlanarCHOIC Rooms, while maximizing space utilisation, come with specially engineered planar choic modules with perforated metal surfaces. These are available in single or double walled configurations – depending on the noise reduction requirement of each specific case.

Special care must be taken in the relationship of PlanarCHOIC Room volume to test object dimensions to assure a free-field measurement environment.

Also, correctly specified measurement locations are essential for accuracies of the maximum allowable differences between the measured and theoretical levels as for example the ISO Standard 3745.

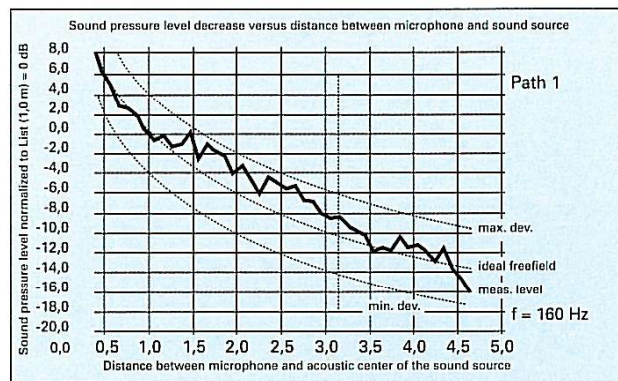
PlanarCHOIC FREE-FIELD ROOMS

Extensive research work by IAC has proved that it is quite possible to achieve high levels of sound absorption from planar-choic modules with perforated metal and durable surfaces. The PlanarCHOIC Free-Field Room is the end product of this research.

The number of Rooms already built and used by IAC clients have proven the practicability of this new innovative room design.

TEST RESULTS

All laboratory testing in conjunction with theoretical calculations and test measurements in the field confirm that its results comply with the relevant standards.



Graph 1 shows the performance of an IAC PlanarCHOIC Room at a frequency at 160 Hz and its deviation from the inverse square law, along measurement path 1

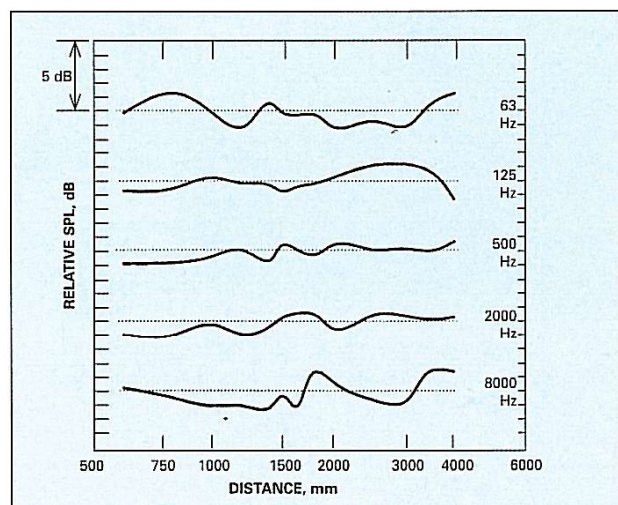


Fig 1 shows PlanarCHOIC measured inverse square law plots:

■ APPLICATIONS

More and more manufacturers are recognizing the need or are forced to carry out acoustic tests on their products.

Recent Anechoic Chambers or Free-Field Rooms designed and built by IAC are being used to test car engines, car generators, power assisted steering and car seat adjustment systems, exhaust gas systems, car tyres, radios, full vehicle tests and so on.

The company has published a multi-page guide on the design and construction of Anechoic Chambers / Free-Field Rooms which contains technical data and test results for the IAC range of room and chamber products including ancillaries.

Some of the projects for Anechoic Chambers in Europe include customers like Nissan, Jaguar, Opel, Tennex Europe, Delphi Automotive Systems, Goodyear, TRW, IMS, Sebring, Continental Teves, Porsche, BMW, DaimlerChrysler, Fiat, Volvo, Renault PSA and many others.



VIEW inside PlanarCHOIC Room designed and built for a world wide known car tyre manufacturer at point of carrying out the acoustic performance test.



VIEW towards large acoustic entrance door inside PlanarCHOIC Room.

COMPANY PROFILE

Industrial Acoustics Company (IAC) is the world's largest manufacturer of acoustic products and systems, with offices and production centres in the USA, UK, Germany, Denmark, France, Spain, Italy and an international network of agents and distributors. The company has specialised for over 50 years in the design and construction of all types of acoustic test facilities, including anechoic, semi-anechoic and reverberation rooms. It is also a major provider of noise and acoustic control products and systems for use in the aerospace, power generation, marine, utilities, construction, broadcasting, education, healthcare and manufacturing industries. The company is registered to the ISO 9001 quality standard.

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