AAD is a multi-disciplinary team of acoustic consulting engineers which provides a practical approach to the resolution of acoustic problems. The team offers unrivalled experience of the needs of automotive industry. AAD has developed noise and vibration solutions covering every aspect from component development through to power train testing and, of course, has designed facilities for every aspect of vehicle and component design, test and development.

In all cases AAD’s objective is to provide expert aid to hard pressed automotive development teams; helping them to bring new projects to fruition in the shortest possible time.

Assignments are many and varied; they may involve negotiation at the planning stage, or geo-acoustic modelling of the impact of a new facility on the external environment. AAD is also often required to create large scale interior replicates, to close tolerances, of external free-field acoustic conditions. Such facilities allow externally acquired data to be merged with measurements from the internal facility in the sure knowledge that the acoustic background of one is an accurate replica of the other. AAD can also meet any need for more straightforward noise and vibration suppression in a cost effective manner.

Whatever the challenge, AAD responds with rapid, pragmatic design and experienced management able to bring facilities into service in the most cost-efficient manner. The AAD team leads this specialist field and is on call wherever the critical requirements of quality, speed and maximum value cannot be compromised.

AAD’s consultants fit easily into professional teams alongside architects, structural engineers, services engineers and the client’s own expert personnel. The objective is always to ensure that each project enjoys considered and cohesive acoustic design to the highest possible standards. It’s a practical, “hands on”, no nonsense approach which secures the client’s investment. AAD ensures there will be no need for unplanned, costly post-construction work.

Semi-Anechoic Chambers

Many aspects of modern motor vehicle development demand specialist indoor testing environments which provide a faithful representation of outdoor acoustic conditions. Such facilities allow the acquisition of accurate data on component performance, which can be translated to the entire vehicle and on into quality characteristics with appeal for the end user. Valuable development and refinement test time can be saved. Our clients’ own acoustic experts know that if they demand the best for test environments, the resulting products are destined for success.

Developing such facilities requires a special combination of knowledge and experience. The construction of large, scientifically controllable “free-field over a reflecting plane” facilities capable of accommodating a vehicle, or its power train, or other components and a dynamometer requires AAD’s specialist skills. The team can also ensure that this type of test chamber features adequately low levels of background noise whilst still handling sufficient quantities of cooling air.

AAD engineers are experienced in accommodating from the design stage forward, all the complex essential services for such a facility, from water supplies to CCTV and data acquisition systems.
As leader in the field, AAD has worked in conjunction with a world renowned designer of loudspeakers to develop a suite of reference anechoic test sound sources. The resulting instrumentation and technology is unique to AAD. Used in association with our specially developed traversing microphone data acquisition technique, the team are able to qualify facilities in timespans which could not be approached in any other way. AAD has undertaken design, construction management and commissioning of semi-anechoic chambers for a wide range of Noise Vibration and Harshness (NVH) applications including:

Whole vehicle model development programmes
Entire powertrain development and refinement
Engine aspiration air intake system design and refinement
Vehicle air intake system design and refinement
Whole vehicle refinement
Engine component refinement
Engine development

AAD has also developed such facilities for tail pipe noise evaluation and refinement and simulation of whole vehicle drive by.
Mileage Accumulation Facilities
Whether mileage is accumulated round the clock on a test track, or within a purpose built facility, there's always a risk that statutory noise nuisance can threaten the test programme. AAD consultants have unrivalled experience in both types of test regime and can make an immediate practical response as soon as an existing or potential problem is identified. Whether the need is for a multi-roll automated high speed facility, capable of nonstop round-the-clock operations, or a proving ground in a noise sensitive location, AAD has the Town and Country planning, measurement, modelling and design expertise to provide a speedy and happy resolution.

Noise and Vibration Suppression
There still exist a large number of automotive test and development buildings which give rise to unpleasant and sometimes dangerously high levels of noise emission. AAD engineers have applied noise abatement techniques across the full spectrum of new and refurbished automotive facilities. These range from the creation of a variable acoustic environment suitable for large scale design and review studios to electro-servo-hydraulic rig rooms and the vibration patterns and location requirements of inertial mass support systems. The team is also experienced in Five Axis milling facility design.

AAD personnel are accredited by the Institute of Acoustics for work relating to employee exposure to noise and have substantial experience of the control techniques applied by engineers working in automotive test environments.
Other AAD Services

Whether noise arises from stand-alone test buildings, or from entire proving grounds, AAD's unique experience in the geo-acoustic modelling of noise impact on the external environment permits rapid, accurate response. Effective solutions can be quickly developed for any site potentially troubled by excessive noise, whether the problem is large or small scale and the solution simple or complex. Noise grid-maps – used in conjunction with AAD's field-installed noise data logging technology – aid rapid development of a practical solution.

Substantial experience in TV and radio recording and broadcast facilities supports AAD's ability to provide reference listening room conditions for the development of in car entertainment systems and component evaluations. Quality assured test facilities for “bought-in” in-car entertainment items such as amplifiers and loud speakers can also be quickly developed for incorporation into existing buildings.

Communication counts and AAD has extensive experience in the design of the right acoustic conditions for auditoria, simultaneous translation facilities and teleconferencing suites. This experience can be put into the service of hard pressed international automotive teams, enabling them to communicate more easily and comfortably and thus more effectively.

AAD provides a modern service in a modern world and the team's assessments and design solutions are transportable across the Internet - country-to-country, desk-to-desk - at the touch of the keyboard.
AAD automotive projects include:

Drive-by vehicle development semi-anechoic chambers

Chassis NVH semi-anechoic chambers incorporating 4 x 4 roll sets

Powertrain NVH semi-anechoic facility incorporating multi-mode dynamometer

Vehicle refinement semi-anechoic facility

Mileage accumulation facilities accommodating from 2 to 8 dynamometers

Vibration test and fatigue laboratories

Proving ground Environmental Impact Assessments

Structural simulation and analysis multi axis facilities

Inertial mass system evaluation, design and installation supervision

Various vehicle and component manufacturing and parts distribution related assignments