

Bespoke Acoustic
Solutions

Case Study Acoustic Enclosure Design

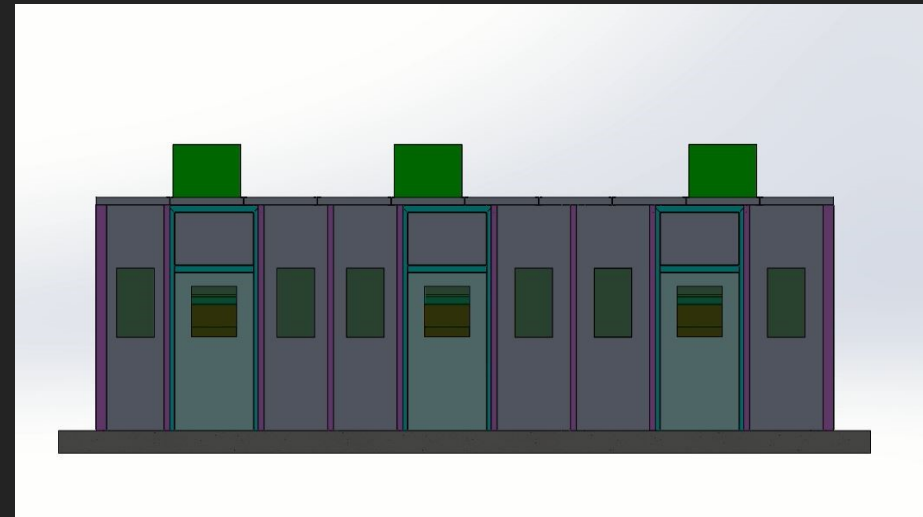


Designing an Acoustic Enclosure



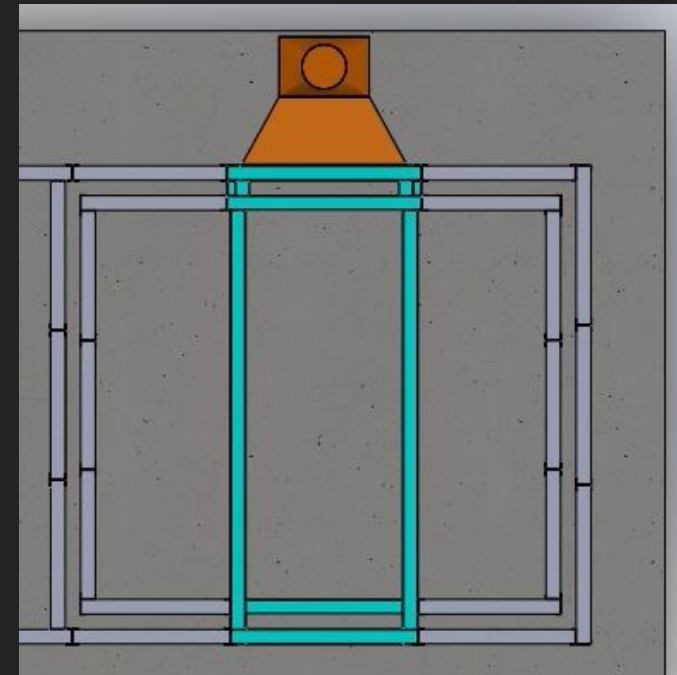
We were appointed to design/ supply and install a 3 room acoustic enclosure to facilitate paint spray testing at the University of Nottingham. The rooms as well as being required to meet certain noise requirements also needed to allow for airflow in and out of the enclosure/ access for a robot sprayer and as the build was part of the universities research programme the rooms needed to be accessible by person with restricted movement.

The initial steps after agreeing the design specification and sizes was to produce a 3D cad model of the enclosure. The model can be seen in the photo to the left

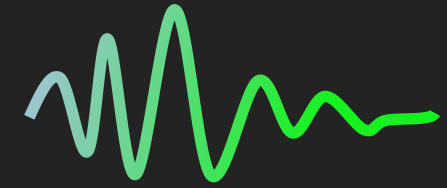


Designing an Acoustic Enclosure

The 3D model allows the end user to visualise the facility right at the start of the design process and iron out any issues they may not become evident until the build part of the project. Additionally the 3D model allows the designer to reduce errors and notifies them of potential clashes or tolerance issues. The use of modelling software allows standardised parts to be developed that can automatically change sizes without the need for redrawing each individual part. This reduces the lead time in design and speeds up the process into the manufacturing stage.



Due to increased levels within the end room – the room has been constructed as a room in room



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Once the design is complete and signed off for approval the Cad files can be sent to the CNC laser cutting machines and then onto the panel benders so that the parts can be profiled and formed. This link allows the parts to be manufactured within minimal waste and ensures consistency and repeatability in the forming of the elements – this in turn reduces scrap and rework time.

When the parts are all manufactured and assembled we are able to do a dry build of the assembly before sending off the equipment for powder coating.



*View on the rear elevation during
pre build process in our factory*



*View on Front face of
the enclosure*

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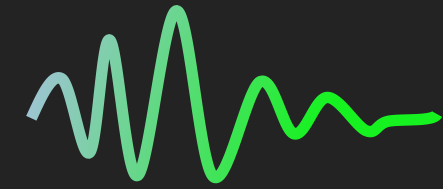
When the components have all been powder coated to the clients specification the build is ready to progress on site.

Risk and method statements are then supplied to the client and once an agreement over the safe working practices are reached our team of professional installers are sent to site to complete the installation to the clients satisfaction.

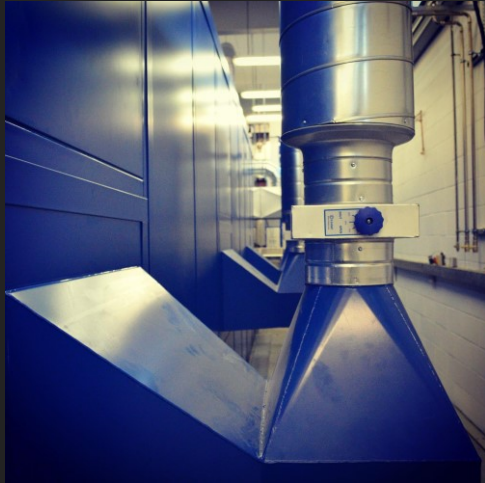


View on the front side of the enclosure

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*Ductwork
Connections at rear
of enclosure*



*View from above
showing the
attenuated air
intakes situated on
the roof.*



*Inside the enclosure.
Showing the internal
surfaces powder
coated in white to
compliment the
exterior colour*



*Acoustic Doors with
closers and drop
seals to complete
the installation*

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As part of remit with the client we agreed to return to site once the build was complete and undertake noise tests on the enclosure.

The test entailed producing a steady state noise source within each of the room and then taking readings within the source room and then readings outside the room and within the adjacent rooms. This gave us an indication of the as built transmission loss through the system.

The readings were witnessed by the client and the project was signed off as complete with an acceptance certificate.

Another satisfied customer.



Acoustic testing to determine specification compliance