

# selfbuilder & HOMEMAKER

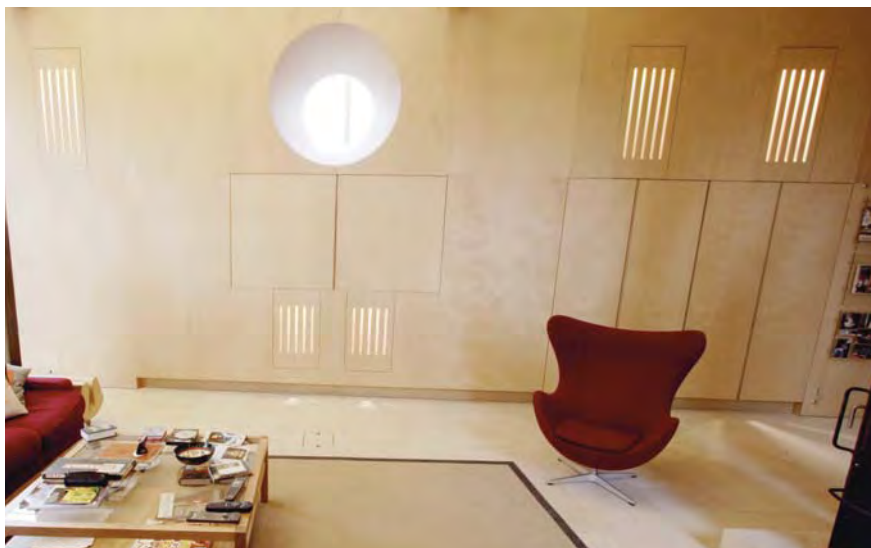
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**Hundreds of Product Ideas For Your Self Build**



# Invisible Loudspeakers!



**B**uilding or renovating your dream home can often lead to startling discoveries, especially when new technology is used. In creating a beautiful barn conversion William came across a new technology which was truly exceptional. Even the architect was impressed by the versatility!

When looking for a place in the country William discovered a run down barn for sale at the end of a farm track. He immediately knew he had uncovered something special.

William explained "When I came across the barn, it already had planning permission to knock it down, and build from scratch. But when I saw the wonderful Northampton Stone and beautiful original exposed beams, I decided to rescue it, and make it a truly remarkable home".

The task was not only to renovate this fine old building but to marry it with the latest home entertainment technology without compromising the interior design. Luckily the architect shared William's vision and understood that safeguarding the integrity of the barn was crucial to the whole project.

## Meticulous Craftsmen

The heart of the converted barn is the large, full height open plan room incorporating a floor to ceiling birchwood panelled living room area.

The panelling is one of the keynote design features, and absolute care was taken over its installation. Each sheet of birchwood panel was assessed by craftsmen for overall effect, cut and then positioned.

Every detail was considered to ensure the finish would be perfect. Each piece was matched so that when installed, the grain

pattern would be seamlessly carried throughout the whole fascia.

This, then left the problem of how to install an audio visual suite, speakers and all, without disturbing the elegant finish.

## Invisible Loudspeakers

To keep the panelling pristine the Architect had suggested invisible plaster In-wall loudspeakers. These could be installed in the wall or ceiling, and when plastered over they would be invisible. On discussion with the technical experts they suggested installing them within the panelling itself!

## Installation in the Wooden Panelling

Installation of the loudspeakers into the wood panels at the barn was straightforward. The location for the speakers was selected, the appropriate panels were removed and the speaker outline scribed on the back. The wood was routed away from the back leaving a 2mm thickness.

The loudspeakers were then glued into the recess, and pressure applied to ensure a good bond. Once the adhesive had set the speakers were wired up to the amplifier, and the system was ready to go.

## How it Works

It is a modern application of millennia old technology that endows these loudspeakers with their extraordinary attributes.

Using the same soundboard principle as acoustic instruments: billions of tiny vibrations are created in the panel and these excite the air molecules in contact with the surface which in turn create sound. It's how an acoustic guitar or violin work. This is in contrast to traditional loudspeakers which involve a piston pumping in and out to move the air to create the sound.

At the core of the loudspeaker is the strong, thin, lightweight composite panel that acts as a soundboard. Minute displacements are created on the surface of the board creating tiny

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pockets of vibrations. These vibrations are so small that when selected materials are bonded to the surface the vibrations can pass seamlessly through, without detriment to the material, to create sound. The bonded material can then be decorated to conceal the speaker.

**Use in Solid or Stud Walling**

In this application the loudspeakers were



installed to the back of wooden panelling, but they are more often installed into a wall or ceiling space where they are plaster skimmed over, and then decorated to provide an invisible sound source.

**Ideal for Large Spaces**

Because of the very different way that these speakers work they generate a diffuse sound wave in their complex vibrating structure. This means that the sound is not directional as it

evolves in all directions - a hemispherical wave.

So in a large room the sound sweeps through the space and into the corners to give a more even, ambient coverage. It is the same reason that a Grand Piano can fill all corners of a concert hall with music, but yet not deafen the player.

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