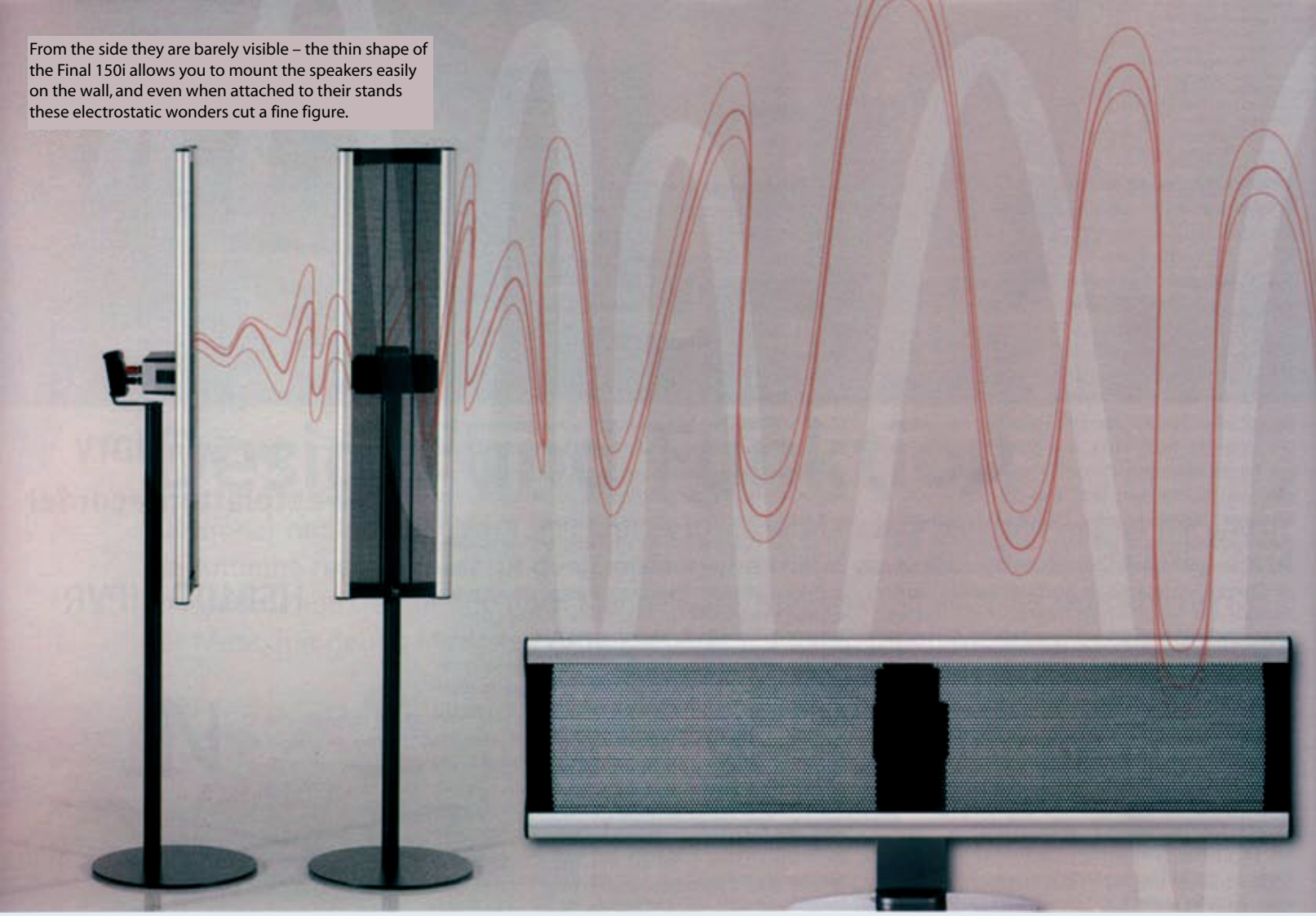

From the side they are barely visible – the thin shape of the Final 150i allows you to mount the speakers easily on the wall, and even when attached to their stands these electrostatic wonders cut a fine figure.

The Weightlessness of the Wave

Electrostatic speakers are still on the edge of the consciousness of most home-cinema enthusiasts, but is that fair? We undertook a thorough investigation of this fascinating subject with Final Sound's surround set, and have relieved ourselves of some of our preconceptions.

FRANK GEISELER

The term "box" is normally associated with a container - something you put another thing into. Like a horsebox, or a shoebox even. In the world of entertainment systems, of course, it refers to the loudspeaker itself, but would we still be getting excited about boxes today, had the principle behind the subject of our test, the 150i from Dutch manufacturer Final Sound, succeeded in dominating sound reproduction over past decades? After all, what could be any less box-like than these ultra-thin panel speakers that you can see right through! The aluminium frame is just 2.5 cm deep, and each of these sound daemons weighs in at only 3.5 kg. With these properties and their good-looking design, the panels look just the business next to a flat-screen TV or projector screen. And since home cinema is not just about systems that look good, we can also get excited about the fact that electrostats have the reputation of being able to reproduce music with extremely high quality. But what exactly is this type of speaker all about?

The Velodyne CHT 12 R is a powerful back-up and ensures balanced sound quality.

The other type of speaker
While electrostatic speakers are not exactly a recent innovation, it is only in the last few years that technological developments have allowed them to compete with the more widely used electrodynamic systems in terms of volume and ease of use. At the same time, costs of production have fallen to the extent that these systems are now of interest to a wider spectrum of buyers. Previously, this type of speaker had to overcome a range of preconceptions – they were too quiet, too expensive, too weak in the depths of the bass, and could only be driven by the most powerful of amps. Accordingly, only a small group of HiFi enthusiasts and a few manufacturers have really bothered about electrostatic speakers for any length of time.

But here are the facts: each electrostatic speaker is constructed from an extremely thin, electrically conductive membrane, which vibrates between two statically chargeable grids (also known as stators), thus producing sound waves that we can hear. In order for these grids and the foil membrane to remain constantly charged with the required high voltage, each speaker has to be connected to the mains electricity. An integrated transformer then powers up the voltage to the required high levels. The music signal is thus transformed into an alternating current with opposite poles at the two stators, with the alternation causing one stator to repel and the other to attract the membrane.

An advantage of this technique is that the entire surface of the membrane is able to produce the sound wave, in contrast to traditional dynamically driven speakers, in which the membrane is effective only from a single point. In addition, the mass of the foil membrane is extremely low, enabling it to be driven very quickly.

Easy installation
These electrostatic speakers, manufactured by Dutch firm Final Sound, are distributed throughout Germany by Audio Reference. The Final 150i speakers are supplied complete with all the brackets required for wall mounting. This is a particularly effective method of integrating the system into your living room without taking up too much space. Stands for the more traditional fixing option are also available.

As is the case with all electrostatic speakers, each 150i requires a separate power supply, which is delivered through the power supply units that come as standard with the set. The entire electronics of each Final speaker is contained within a small case in the centre of the rear of the speaker, ensuring nothing detracts from the visual appeal of the attractive, see-through design.

The finest surround
We first tested the 150i system in a 2.1 configuration with a subwoofer from Velodyne acting as support, and then in a 5.1 configuration in order to establish the surround-sound qualities of the speakers. Even in stereo mode, the unassuming electrostats showed off their capabilities, conjuring up a sound in our audio room that seemed even more transparent than the speakers themselves. The precision with which the Final speakers reproduce mid and high tones will make an impression on even the most discerning of ears. Each individual detail of the sound picture being painted is reproduced by the electrostats with a sheer weightlessness, recreating a precisely positioned stage with the required depth.

From the depths of space
When it comes to depth, the addition of a subwoofer to the 150i set is definitely recommended. Whatever you choose, it should be able to deliver solid bass foundations in the sub-150 Hz frequency range, since it is only at this point and above that the Final speakers can really work their magic. The 27 kg Velodyne CHT 12 R is a harmonious complement to the Finals. It can both reach far enough into the depths to ensure a sufficiently bombastic bass to accompany Hollywood's finest movies, while also enlivening the frequencies in the area of transition to the electrostatic speakers. When situating the subwoofer it is advisable to place it between the front speakers, since the relatively high transition frequency means it is possible to locate the bass speaker. Moreover, you should definitely take your time in adjusting and matching the volume of the subwoofer against that of the satellites, since this has a significant effect on the acoustic experience.
In terms of sound volume, it is worth saying that while the 4 Ohm speakers are less efficient than comparable dynamic boxes, a medium-sized amplifier or AV receiver is certainly sufficient when it comes to using the Final speakers to stage a refined home cinema show. A large contribution is required here by the integrated subwoofer, although the CHT 12 R in our test system had no problems in putting a rumbling beat through our bellies. The potential of the 150i system cannot reach the volume of fully-fledged bass-reflex systems.

Thanks to the fact that the entire surface of the membrane is used to produce the sound wave, all electrostats deliver a certain scaling effect that means less sound reaches the floor and the ceiling. However, in the case of the Final speakers this did not cause the precise replication of the full stereo width to suffer, even away from the ideal listening position.

Outlook
Speakers that work using the electrostatic principle are more than just a nice alternative to the traditional dynamic models. In terms of both audio and aesthetics, they represent completely new ways of designing your own home cinema. If you can't bear to forego an impressive bass, then you have two choices – either go up to the expensive end of the mature electrostats range, or simply get yourself a good, old-fashioned subwoofer as the perfect addition.

With the 400i, Final Sound also offers standing electrostatic speakers. The picture above demonstrates just how easy it is to integrate the transparent panels into your living room.

5.1 Loudspeakers	
Equipment	
Manufacturer	Final Sound
Model	150i + Velodyne CHT 12 R
Price in euro	3450.00 including subwoofer
Information	www.audioreference.de
Dimensions (W/H/D) in cm Panel	78.2 x 20.7 x 2.5
Dimensions (W/H/D) in cm Electronics	14 x 6.5 x 7
Weight in kg	Satellites: 3.5 each Velodyne 12 R: 27
Colours	Silver and black
Final Sound 150i+Velodyne CHT 12 R	
Equipment/manufacture quality	8 out of 10
Ease of use	9 out of 10
Quality of audio	69 out of 80
Total	86 out of 100
HDTV Final Sound 150i + Velodyne CHT 12 R	Very good – Issue 1/2008

Assessment classifications: 100-95: Reference class, 94-90: Excellent, 89-85: Very good, 84-70: Good, 69-55: Satisfactory, 54-40: Sufficient, 39-0: Not good enough