

1000 W from a Sheet of A4

230 V in, up to 1000 W out – how hard can it be?

By Michael Madsen

The Danish company ICEpower is gaining a serious foothold. The list of the company's customers is getting longer and longer, evidence of a very wide range of applications.

The company's success is, of course, due to technological advantages in the form of high efficiency, high output power and, not least, thorough professional documentation.

High sound quality

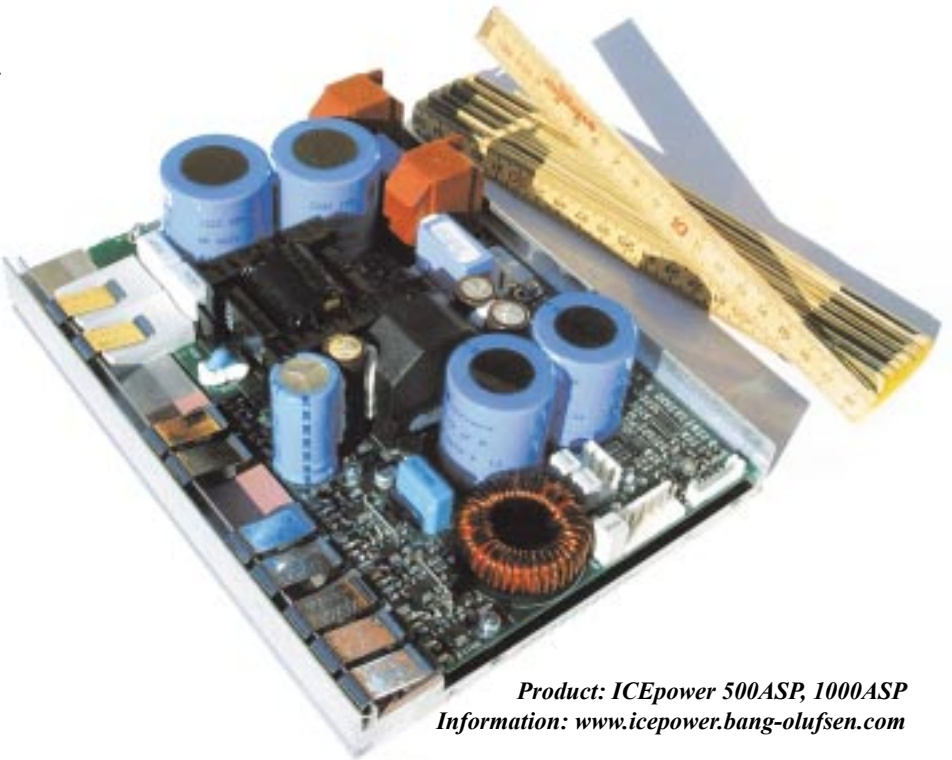
No one can be in any doubt any more that ICEpower has switch mode under control. Anyone can see this just by taking a quick glance at ICEpower's data sheets. These show that efficiency of around 80–90%, output power that is best expressed in kW, low distortion and low noise are a matter of course.

ICEpower can produce convincing measured results. However, as High Fidelity's readers surely know by now, good data does not necessarily guarantee good sound. How often have we tested equipment with outstanding measured results and disappointing sound? However, good measured results are no obstacle to good sound either, as you will see in the following.

ICEpower has come up with extremely advanced hi-fi products such as the epoch-making BeoLab 5 loudspeakers (test in HF no. 4/03) and the brand new ultra compact BeoLab 3 (test on page 4 of this issue). Both these active loudspeakers possess quite extraordinary properties and would be impossible to produce without ICEpower technology.

Here in Denmark, Acoustic Reality, in particular, has demonstrated that the ICEpower modules have a very special ability to rise to the occasion in terms of sound as their power supplies improve and their implementation continues to remain generally meticulous.

Internationally, and at the top end of the scale, the established high-end brand Rowland Research has drawn interna-



Product: ICEpower 500ASP, 1000ASP
Information: www.icepower.bang-olufsen.com

tional attention by making great use of ICEpower in its latest top models. The reputation and prices of these models demonstrate that Jeff Rowland certainly does not suffer from a lack of ambition.

Our previous experience with the ICE250 and ICE500 modules convinced us as well that these modules have enormous sound potential. At one stage we experimented by adding a couple of additional RIFA electrolytics of the highest quality for supplementary smoothing of the power supply in ICEpower's evaluation board. The experiment promptly led to greatly improved sound quality from the very bottom to the very top.

ICEpower with switch mode power supply

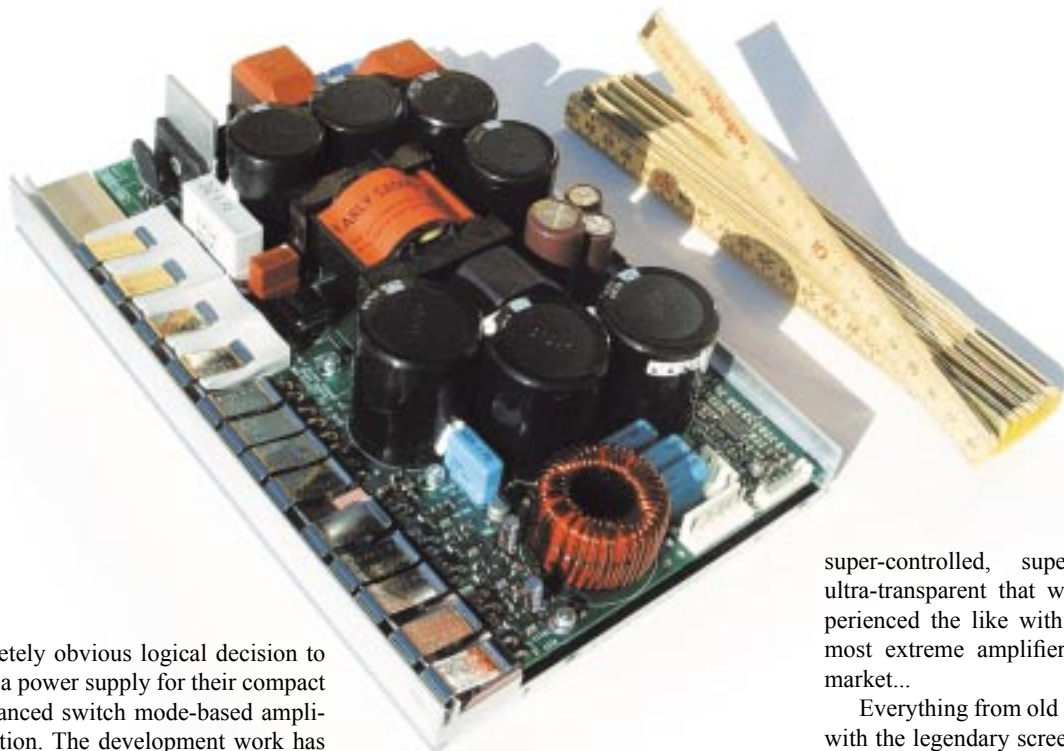
For many years, it was almost considered to be a law of nature that large amplifiers were fitted with mains transformers the size of footballs and electrolytic capacitors the size of beer cans (the large im-

ported kind, ed.).

The truth is, however, that a traditional unregulated power supply such as this consisting of just a transformer, a bridge circuit and electrolytic capacitors is as bad as it is simple in technical terms. And this primitive solution is not even cheap. It is extremely expensive. Large transformers and electrolytic capacitors are typically the most expensive components in a large power amplifier.

One of the most successful users of switch mode-based power supplies in high-end gear is the Scottish company Linn, which must be regarded as one of the pioneers in the field. For a number of years, Linn has used the technology in a wide range of products, for example the very compact mono power amplifier Klimax Solo 500 (test in HF 1/00), which has an output of 500 W/4 ohm. However, it is not the amplifier itself that is of the switch mode type, just the power supply.

In ICEpower's case, it was probably



a completely obvious logical decision to develop a power supply for their compact and advanced switch mode-based amplifier solution. The development work has resulted in an integrated solution in which the power supply and the amplifier are located on the same PCB with all the technical and practical advantages this provides.

The power supply and the amplifier, and not least the way they interact, are dedicated to audio, which is very important for the specific properties and limitations of the design and thus also the sound performance of the new amplifiers. The output from the power supplies, which are adapted for operation of further ICEpower modules in, for example, a complex active loudspeaker, is one of the strong features of the new series.

250/500 – or 1000 W for that matter

The 1000ASP is a mono amplifier that outputs up to 1200 W in 4 ohm. Its dimensions are 23.4 x 15 x 6 cm (it is actually much smaller than the page of High Fidelity you are currently reading!) and its total weight is 1.7 kg (including cooling profile).

The 500ASP, which is an equivalent amplifier with an output of just over 500 W in 4 ohm, measures just 19.9 x 15.1 x 5.4 cm and weighs just 1.26 kg. Two complete 500 W amplifiers with power supplies, cooling and everything take up less space than a sheet of A4!

The new series also includes a 250ASP, but for now we will concentrate on the 1000ASP and 500ASP.

Unlike the previous models, the

models in the ASP series are effectively protected against short-circuiting, overheating, high frequency, etc. These are practical measures that make life easier for the user and for the manufacturer. In critical professional applications like a PA system, high or uninterrupted availability is of great importance. To ensure this, the safety circuits are carefully designed so that the amplifier automatically returns to normal operation as soon as a critical situation is over.

The sound

After changing from the ICEpower 500A evaluation board (with extra electrolytes in the power supply) to the 500ASP, the bass and lower mid-range were much improved with better control and generally more effective reproduction.

However, the top initially seemed slightly less detailed than usual. However, on a subsequent occasion, the 500ASP also proved able to provide much more convincing reproduction in the top than the 500A without the extra electrolytes could.

After changing to the 1000ASP, however, I immediately experienced a difference of a totally different calibre via the Martin Logan electrostats. Somewhat surprisingly, the 1000ASP outperformed both the 500ASP and the 500A in several respects (with or without extra electrolytes). The 1000ASP is so super-detailed,

super-controlled, super-dynamic and ultra-transparent that we have only experienced the like with a couple of the most extreme amplifier designs on the market...

Everything from old Dylan recordings with the legendary screeching harmonica to various demanding classical works sounds civilised with a marked genuine “flesh and blood” feeling. Everything is simply held in a (sensitive) iron grip and everything from the smallest details to the loudest discharges of energy is supplied with impressive precision and authenticity. A very impressive experience...

Conclusion

ICEpower only supplies amplifiers to its parent company Bang & Olufsen and a number of other producers, but unfortunately not directly to hi-fi enthusiasts.

After having got to know the two larger members of the new ASP family, we have to say that ICEpower is now able to supply extremely compact “turnkey” amplifiers that are very easy to use.

The sound quality from ICEpower’s ASP series belongs in the extreme high-end class, in our opinion. The sound from the biggest, the 1000ASP, took us by surprise in particular, not least because amplifiers of over 1000 W with ultra-detailed high-end sound are still a great rarity. The few times we have experienced something that even bears a passing resemblance to the sound we experienced here, we have had to put up with back pain for several weeks afterwards after carrying the amplifier in question.

Now it just remains to be hoped that ICEpower’s customers will decide to use the new ASP amplifiers in their new products. That is really something to look forward to!