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TEST

ILUMNIA MAGISTER MK 2

ILUMNIA MAGISTER MK2 LOUDSPEAKERS

Shining example



Tested

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Two Belgian brothers who have been inspiring each other for years in their search for the ideal sound. That sounds like the stereotypical example of what many hi-fi enthusiasts like to do. The big difference here, however, is the combination of fanaticism, passion, having a goal and the presence of the necessary technical knowledge. Those are the motives behind one of the most extraordinary speaker systems I've come across in years. This concerns the Ilumnia Magister mk2 loudspeakers. Reproducers who are not only special because of their groundbreaking ideas and applied technology, but also stand out because of solving technical issues that were earlier difficult to cope with. In the review below you can read which experiences and challenges arose in this slightly different world of loudspeakers.

For the creation of this unique product and brand, we have to go quite far back in time. Namely the eighties and nineties. A period of time in which many original and special products were developed and manufacturers were busy creating their own unique sound. A character that is recognizable per brand, which was partly due to the absence of computers and which was mainly based on the knowledge and experience of designers and development teams. This important period formed the basis for the later course and way of thinking of the brothers Tom and Jef Nuyts.

Looking for the common thread

In search of the ideal sound, Tom in particular started to buy more and more hi-fi equipment. Loudspeakers, amplifiers, sources, it was almost endless. A lot of equipment came in, but disappeared again at the same rate. Looking back, that seems like a huge destruction of capital. But that's how you learned to pay for your hobby and it was more important that an enormous knowledge base was created about equipment and its design. Brother Jef, although certainly interested, was less involved with hi-fi in that phase. He certainly loved music and listened sideways, but he was not as fanatical as Tom at that time. Coincidentally, both gentlemen work in their daily lives at the same Belgian branch of one of the world's largest manufacturers of trucks. The knowledge acquired there turned out to be a very good basis for their own brand Ilumnia. Tom is in charge and Jef carries out electrical work. Tom is also in charge of management at Ilumnia and Jef is responsible for the realization of the ideas. Inventions that are clever and have now crystallized, so that this small development team deserves all the respect.

From evolution to revolution

The Ilumnia reproducers use a strikingly different driver technique. That's why these loudspeakers came to my listening room, as did Tom and Jef for an interview. They are two calm, thoughtful, but also very enthusiastic gentlemen. Enthusiastic music lovers

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who can express their points of view well-founded and who are extremely technically skilled.

Tom: 'You will probably be curious how we arrived at our concept. But to explain this it is important to follow the road that goes all the way back to the period when we still lived in our parental home. We come from a musical family of three children where, except for Jef, everyone was actively involved in music practice. Father played the tuba, our sister played the piano and oboe and I played the trumpet. Due to this constant contact with live music and real musical instruments, I was also interested in sound reproduction at an early age. You know how things like that go. At first you come into contact with simple things, but there is always an 'aha' experience in your hi-fi life that becomes determinative. My history of frequent purchases and sales has already been touched upon in the previous paragraph. But the grateful result is that a clear common thread has arisen between me and Jef, who has started to listen more and more with me over the years. What do we actually find important and which aspects are less important to us?'

In this interview, we will explain our thoughts about sound and developing loudspeakers.

What we discovered

'While researching, disassembling, experimenting and trying to improve the prototypes, one of the drivers at one point had a cone flipped on its head. Suddenly the realization arose that such a unit actually radiates sound even better that way. Of course, you always know something like that subconsciously, but it just surprised me that it sounded so good and especially how incredibly spacious it managed to perform. One of the special features of our current LEMS (Linear Excursion Motor System) driver was thus born. We had been building prototypes for three years now. After several long brainstorming sessions and earlier prototypes, we decided in 2013 to really get to work on it. Difficult, because having ideas is one thing, but getting a flawlessly working model on a larger scale is quite another. We found that just flipping the cone wasn't enough. We wanted more, which also came from listening to many different speaker systems over the years. This includes horns and the fast magnetostatic and electrostatic loudspeakers. So it should be an inverted dynamic loudspeaker unit at the speed of the aforementioned principles, with maximum linearity and minimum distortion.'

The origin of the LEMS driver

Jef: 'Due to my daily work in advanced electrical engineering, I am usually well versed in aspects that are technically feasible and which are not. But certain design aspects of the LEMS driver proved so difficult to overcome for a long time that it tended to stop us. Achieving and realizing the extremely narrow tolerance with which the cone without a rolled edge should still be as 'airtight' as possible was a particular challenge. After building several hundred prototypes, we finally succeeded in making a driver that we believe is unique and meets the requirements. Unique in concept as well as in the final realization. We have arrived at a loudspeaker unit that consists of a fully adjustable chassis that can be accurately calibrated, in which the paper cone can float completely freely in the magnetic field of an electromagnet. 'Free' means completely free, so without the spider and rolled edge, which are always necessary for this type of driver. These are parts that add the typical slowness, distortion and non-linearities to the reproduction of any traditional driver. Sound wise, it is also very easy to spot. Especially because we all subconsciously experience that every conventional speaker system needs a certain volume level to play well. If you set it very softly, the music will no longer come out well and only at a higher volume does the acoustic picture suddenly fall into place. This problem also arises when playing loudly. With very loud music there is a gradual or even abrupt brake on the playback. The dynamics are limited, the music sounds less obvious and can sound audibly distorted. Again, it is the voice coil and rolling edge that hinder the cone from making a linear deflection to the end of its range.'

LEMS power supply

'Our Vocalis monitor and the floor-standing Illumnia Magister mk2 to be tested here, are both equipped with an electromagnet. This has to do with the way in which we believe that a cone should ideally behave. To achieve this, the LEMS driver is equipped with two coils. The first serves to make the cone



float freely, while the second converts the music signal into the necessary movement. A double approach whereby the control over the cone (only with the Magister) can be set with a rotary control on the front of the separate power supply supplied as standard. With the Vocalis, this power supply is built into the loudspeaker cabinet itself and it is not possible to choose other modes. With the Magister, the power and therefore control of the suspension can be set in five positions via the separate power supply. This makes sense if you use different amplifiers. For example, with a transistor design, position three can be a good starting point, while for tube amplifiers up to 300B models, position four or the highest position five can be chosen and will be convenient. This is a unique and proprietary feature for loudspeakers. The power supply is connected to the mains and connected to each loudspeaker box by means of a balanced long cable.'

Omni directional LEMS driver with direct beam tweeter

Tom: 'Another important aspect is the omni directional character. In my listening room and laboratory I actually mainly have direct-radiating beam models from (too) many different brands. But why was the omni direc-

tional principle chosen for the Illumnia models? As indicated earlier, it has been discovered that a cone loudspeaker unit may perform even better if it radiates the other way around. The traditional hollow shape then becomes more of a pyramidal shape. If you lay such a cone flat, a beautiful spatial presentation is created. Of course, Jef and I also experimented with a more indirect radiating tweeter, but we found that to be unsuccessful. The tweeter of our two models has therefore become conventional direct-radiating and is based on a Scanspeak ring radiator, which we modified ourselves. The tweeter is housed in its own sleek, solid aluminum housing. A construction that consists of two parts and in which the inner and outer casing are separated from each other by a rubber decoupling. In order to optimally connect the omni directional LEMS driver to this and to make it a point source, a lot of work has gone into achieving the correct angle of the latter unit. It eventually came out at 9 degrees. This eliminates the typical disadvantages of omni directional radiators and combines the advantages without introducing new disadvantages of their own.'

Cabinet construction

'We were also concerned about the

cabinet construction and our aim to match each Illumnia for the lower frequencies to the space where it will eventually be installed at the customer's site. Both the metalwork and the woodwork are not of Belgian origin. The beautifully shaped aluminum parts are manufactured according to our specification in the remote, but nowadays quality-conscious, Asia. They have been very good at this kind of work for many years now, and very importantly, the large, heavy and massive parts still remain somewhat affordable. We have engaged a specialized Dutch company for the cosmetic final finish and the realization of the particularly small tolerances necessary for us. There is only one company that is capable of this and does not even do anything else for many other companies on a daily basis. The beautiful cabinet is also a traditional piece of Dutch handicraft, using marine grade birch plywood of the highest quality. This cabinet is milled into rings with the greatest precision by an advanced CNC milling machine and as the last step assembled manually. The bass ports are also milled and are not plastic pipes. CNC makes it possible to design a cabinet with convex and concave sides that are also milled asymmetrically on the inside. As a result, standing waves



no longer stand a chance and it also contributes to the unique completely free Illumnia sound.'

Bass tuning

Jef: 'During the development of the Magister mk2 version, we decided to offer further possibilities to integrate with the listening room for the lowest frequencies. The loudspeakers are therefore not equipped with a single port at the front, but with three bass reflex ports. A principle that is applied to more loudspeakers in the high

price segment and ensures that the Magister can better integrate at the selected location into the room. The supplied user manual offers guidelines for placement. The essence is that the bass ports can be blocked or opened, using foam plugs, depending on the needs.'

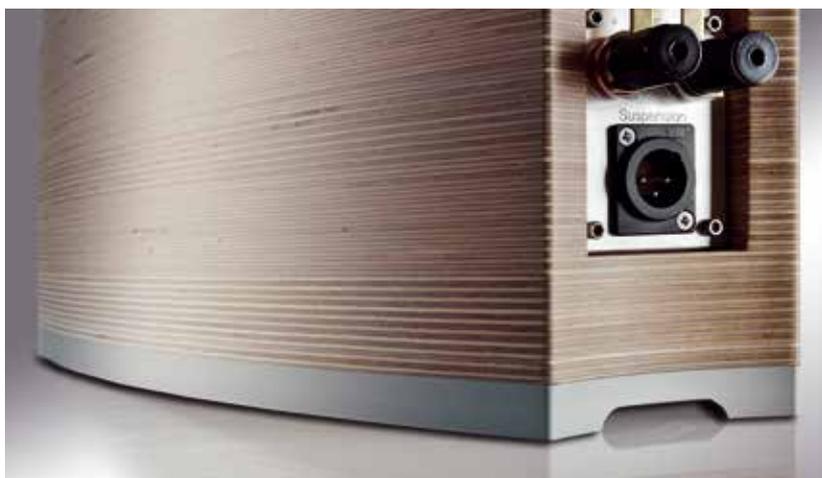
Tuning the mid and high frequencies

Tom: 'Omni directional loudspeakers offer unique aspects. But since loudspeakers often cannot be drawn

up completely free of the walls, we have continued, just like with the bass tuning, to fine tune the mid area and high range. On the back of the Magister loudspeakers, there are also two rotary controllers in addition to the bi-wiring connections. The 'mid-high' controller covers the range from 400 Hz to 10 kHz, whereby that area can be strengthened or weakened in five steps of a total of 1.5 dB. The second regulator is above 10 kHz for the range and can be changed plus or minus 3 dB. The Magister has 98 cm height, 25 cm width, 48 cm depth and a weight of 33 kg of living room-friendly dimensions. Both the top and bottom are finished with beautifully stylized solid aluminum panels and the sensitivity of this two-way system is 88 dB. The artlike positioned LEMS driver has a paper impregnated cone with a diameter of 20 cm. The tweeter contains a silk dome that is 2.54 cm in diameter. The impedance is 8 Ohm and the specified frequency range runs in a real space (so no dead room measurement) from 37 Hz to 25 kHz. The supplied power supply for the LEMS driver measures 34 x 9 x 24 cm and weighs 4 kg.'

Preparation

Time, after the interview, to take over for the listening experience. After many years of living exclusively with direct-radiating loudspeakers, there were recently two beautiful omni directional challengers in the listening room. The first one was the Veddan Atom loudspeaker, created by designer André Kamperman. The second was the Illumnia Magister mk2, again a different and innovative loudspeaker concept. In order to be able to assess the qualities as best as possible, a lot has been experimented with the placement and with a number of different sources and amplifiers. For the sources, think of the Grimm MU1 music server with Mola Mola Tambaqui DAC, the Moon 680D Streaming DSD DAC (including Mind 2 streaming module) and an Aqua Diva mk2 CD drive. The amplifiers are the Zanden 6000, the Trafomatic Rhapsody and the Moon 700i V2. Cabling consist of the new



models from the AudioQuest Mythical Creature series (Thunderbird, Firebird and Dragon). Siltech provided the Classic Legend 880 models, in addition to cables from Nirvana, Kemp and Essential Audio Tools.

Line-up

In my experience, (partly) omni directional loudspeakers present a somewhat more pronounced spatial impression, which is also often somewhat diffuse. Love it or hate it, but there is always a clear difference with direct-radiating loudspeakers. The endless (auditory) experimentation of the brothers does pay off here. The first was the placement. Years ago, my basement listening room was fitted with special acoustic walls. With the intention of not having to toe in loudspeakers too much. The intention is to get a lifelike 3D stage. It results in an as little as possible hi-fi feeling. But, how will omni directional loudspeakers in that room react? As a result the direct-radiating tweeter and 9-degree angled LEMS driver present a well-chosen compromise between direct and indirect sound. There is also believable focus and outline of the recorded musical instruments. Ilumnia wants to realize an increase in experience and spaciousness and that can indeed be observed. There are three amplifiers used for listening. With all amps, position four (out of five) of the LEMS driver supply (which controls magnetic field control/damping) gives the most balanced result. In a lower setting, the looseness increases a bit, but also quickly lacks some control. Position five gives a more compact and closed view. In a different home situation, the results may be different. It is important to experiment yourself or to have the distributor set up the system.

Listening

A different loudspeaker system by definition means a different sound. However, there exists also a better and more natural sound. Really well designed loudspeakers, by people with advanced listening skills, often have similarities. Examples are the Master loudspeakers, the Estelon YB mk2 and also the Ilumnia Magister mk2 which all offer compa-

nable performance. There are of course also differences. Each loudspeaker has characteristic properties. However, music remains recognizable on all these loudspeakers. Do the LEMS driver have certain advantages and disadvantages? When playing softly, this loudspeaker unit sounds a lot like an electrostatic or magnetostatic. A typical light-footed and massless reproduction without sounding mechanical or artificial. In other words, call it self-evident or communicative, but it is different

from traditional dynamic systems. The integration with the highs is also excellent. It looks like a well-designed point source. With sound at a higher volume that is very dynamic and with deep bass, you meet the mechanical limitations of this concept. There was a sound of a cone banging against the safety limit switch. Nothing can break and at a slightly lower volume the normal sound image was restored. But the LEMS driver has slightly less power handling and goes less loud than a traditional dynamic design.





The solution

To get deeper lows and a higher volume level, Ilumnia will soon come with a suitable subwoofer. The LEMS driver then has less work, but according to Jef there is an inaudible transition between the LEMS driver and the subwoofer and a good integration. The bass loudspeaker is therefore not audible as a separate driver. In daily practice, the Magister mk 2 loudspeakers appear to be able to reproduce almost all sorts of music. Classic offers a beautifully layered 3D panorama and natural tonal balance. Singer/songwriter music offers a traceable textual experience, a clear texture of the acoustic guitars and is able to evoke emotions. Pop draws attention to the excellent timing, rhythms and musical turns. Jazz is a feast of subtleties, textures and exciting mutual interactions. The LEMS driver together with the Scanspeak tweeter gives an expressive loudspeaker. The listener remains engaged, regardless of the sound level. With a correct setting and a chosen combination of the three bass ports, the bass is sonorous, pure and well defined. Although the presentation resembles an electrostatic or magnetostatic panel, the bass and mid-bass clearly have the power and impact of a true high-end loudspeaker system. So very attractive.

For whom?

For which target group are these loudspeakers intended? They are certainly aimed at a target group that must dare to think outside the box. With proper placement and direction, they can involve the listener deeply in the music. The build and finish are excellent. Perhaps they are modern classics. They are not inferior to the Italian design. Ilumnia is a brand for critical people who find musical values important and who are also sensitive to aesthetics.

Epilogue

Scandinavian sobriety, American/Japanese innovation and Italian grandeur and style in a single design from Belgium? Yes, these Ilumnia Magister mk 2 speakers have it all. Tom and Jef Nuyts have transcended the international loudspeaker world with their cleverly designed LEMS driver. Despite decades of development efforts, many large companies have not progressed much. However, these gentlemen have truly achieved the impossible with a remarkable improvement in sound quality in the form of the LEMS driver. For the (Dutch) consumer, a listening appointment can be made with the Dutch importer in 's-Hertogenbosch in Brabant. It is also possible to experience the Ilumnia Magister in your own living environment. To get acquainted with lifelike music reproduction.

Text & photography: Werner Ero

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