



Technique and tips

An article by Ernst Müller

Pawel Acoustics: Development, production and maintenance of high-quality audio components

Of course, some of our members have been familiar with the excellent-sounding loudspeakers bearing the company name "Pawel Acoustics" for decades – incidentally, the company is celebrating its 35th anniversary this year. Some may also know that, for almost two years now, the Japanese headphone manufacturer STAX has finally had a reliable Swiss distributor again in Pawel. One thing is certain, however: Harry Pawel and his brother Markus are not as well known as they would be if the end consumers in our high-end scene knew who was behind the manufacture of certain high-quality and highly acclaimed brands that bear other company names. This is because the Pawel brothers have been developing and manufacturing devices for famous brand names for many decades. OEM is the magic word. Behind it lies the fact that there are companies like Pawel Acoustics that develop and manufacture for others without this being made public. So many of our members have probably admired and listened to "Pawel products" without knowing where and by whom they were manufactured. You won't find out here either. But before my thoughts start doing somersaults again, I'd better start a little more systematically, first with the geographical aspect.



Harry Pawel wearing Stax headphones

In January of this year, I wanted to find out more about this appealing company in Toggenburg, so I took the train via Zurich to Wil in St. Gallen. From there, you take the bus up to Toggenburg and get off at the Kirchberg post office. From there, it's just a 400-metre walk to Schalkuserstrasse 18, where you'll find yourself standing in front of a beautiful 200-year-old farmhouse, which is home to Harry Pawel and his family and also houses the production facilities and showroom.

Harry Pawel, now 56, grew up in Flawil. His professional career began with thorough vocational training as a radio and television technician. He became fascinated with technology at the age of 8 or 9, when



The production and workshop in Kirchberg (SG) is attached to the 200-year-old residential building.

the owner of a neighbouring electrical shop, who was an amateur radio operator, inspired him to build a shortwave radio. However, Pawel describes his visit to FERA at the beginning of his apprenticeship in Flawil as a key experience. There, at Tonstudio R, which even back then was demonstrating high-quality American hi-fi equipment, he discovered STAX headphones for the first time. He had never heard such quality before, and was now completely captivated by the hi-fi bug. While still an apprentice, he was able to buy a Thorens TD 124 with a long SME arm with his savings. Shortly afterwards, another professional career began: Pawel made his first recordings with a Revox A 700 for Wolfgang Sieber, now a world-renowned organist at the Lucerne Court Organ. Much later, in 1999, a CD with Organ-

works by Max Reger in HD quality. In the meantime, a high-quality Pawel recording studio had been established, which produced many recordings with choirs and brass bands – Harry Pawel himself, incidentally, discovered a fondness for sacred music. People may scold me for making this claim, but I'll say it anyway: you can tell from the excellent sound quality of Pawel loudspeakers that Harry Pawel has a wealth of experience with sound recording and has also discovered and cultivated a passion for active singing over a long period of time.

Pawel had started his actual development work early on. His apprenticeship was followed by a stay abroad, during which he developed a directly coupled (high-voltage) tube output stage at the request of a Stuttgart-based company that manufactured electrostatic loudspeakers. This was followed by two years of industrial experience at Siemens. Harry Pawel then set up his own business. Once again, a Fera marked the beginning of this phase of his life. Together with Jörn Frankenhäuser from Audio Compo, Pawel presented his first small loudspeakers. Dealers showed interest, and a first series of ten followed... In the first year, 100 pairs of loudspeakers were to be produced – even though no one had really been waiting for a new manufacturer of small loudspeakers, as Rodgers LS3/5a, Spondor and KEF already covered this market. The manufacture of electronics and services for other companies continued to secure the existence of Pawel Acoustics, which the enterprising young entrepreneur had founded in 1980 at the age of 22. For many years, Harry's younger brother Markus has also been working as his "right-hand man" in this "family business". With his solid technical knowledge, he is involved in development and is responsible for everything related to calculations. Harry is mainly the man at the front, Markus the man "in the lab".



The brothers Markus and Harry Pawel are a well-coordinated team here in their factory.

Harry Pawel in conversation

Ernst Müller: Your company has always been very active as an OEM (Original Equipment Manufacturer= manufacturing products for other audio companies). Such activities are usually not publicised due to contractual obligations and are therefore subject to confidentiality. Are there any examples that you can now disclose?

Harry Pawel: Many companies do not want the names of those who develop and manufacture for them to be mentioned, for various reasons. We have always complied with this request. Highlights in the past – this is not a secret today – include...

No more secrets – activities for the companies Goldmund and Ensemble. The wonderful collaboration with Ensemble lasted from the late 1980s until 2000. In addition to the amplifier electronics, which we took over from Ensemble and developed further – including some new innovations – we were able to "conjure up" digital electronics from scratch: a high-quality CD drive and a converter. We were fortunate enough to develop entire generations of digital electronics, from HD-CD to high sampling.



Here is a 6-kilo, 250-watt digital power amplifier from 1984.

Ernst Müller: You have been representing STAX for some time now.

Harry Pawel: We have a long tradition of working with Stax. For the former Stax importer, Audio Compo, owned by the late Jörn Frankenhäuser, we handled all back-office tasks for 20 years (with only a brief interruption). At that time, Stax also manufactured amplifiers, power amplifiers, CD players, converters and electrostatic loudspeakers. This allowed us to get to know these products from the ground up. Since the mid-1990s, Stax has returned to its core competence with headphones and the associated amplifiers and has greatly expanded this area.

EM: Unfortunately, Stax headphones have led a rather obscure existence in Switzerland for several years.

Harry Pawel: Well, that's because after Jörn Frankenhäuser passed away, the Japanese owners of Stax handed over the Swiss representation to Stax Germany. I did apply for the representation at the time, and Jörn Frankenhäuser recommended me to the Japanese. But Japan decided otherwise. The problem was that Stax Germany paid little attention to the Swiss market. In 2013, the Japanese company contacted me and offered me the representation. The fact that Stax had been rather "neglected" in Switzerland for a good six years was also due to the fact that discerning Swiss customers tend not to want to be supplied via Germany. It will certainly take two or three years for Stax to regain the status in Switzerland that befits the high quality of this product.



Harry Pawel holds Stax's flagship product, the SR 009, in his hands. "Top-of-the-line electrostatic"

EM: Stax currently offers a wide range of nine headphone models and six matching headphone amplifiers. Prices range from 375 to 5850 CHF. Your company also offers three versions of the "Pawel Acoustics HP-1" processor, starting at 1600 CHF.

Harry Pawel: This processor, which is connected upstream of the amplifier, provides the user with spatial hearing acoustics that correspond to high-quality loudspeaker reproduction.

EM: You represent a growing number of retailers where Stax headphones can be listened to and purchased. These include AAA industry members such as Grammophon 2010 in Basel, Audio Vinyl in Zurich and the Hifi Zentrum Churerhof in Chur. Other stores include Aug & Ohr in Zurich and Keck Electronic in Geneva.



The wide range of Stax headphones and headphone amplifiers can also be listened to in the showroom in Kirchberg.

Harry Pawel: The number of our dealers is growing steadily. New Stax dealers include "hifi-Technik" (owned by AAA member Kurt Bühler) in Bern, "HifiLounge" in Baar, "Keck Electronic SA" in Geneva and "musica liquida" in Lugano.

EM: Pawel Acoustics loudspeakers have not been prominently featured by retailers in Switzerland to date.

Harry Pawel: That's right. The focus in recent years has been on exports. We have a good market in Asia. Since

In 2007, we were delighted to gain a foothold in Asia through the HiFi Show in Japan. In the near future, I would like to raise awareness of our loudspeakers in our own country, for example through some of our Stax dealers.

EM: Back to OEM: What has Pawel Acoustics developed and produced for unnamed companies, and does it still do so for some of them today?

Harry Pawel: About 10 years ago, we developed a surround sound headphone system for a renowned company in the professional sector. We did some important contract work for a major Japanese company, and two years ago we were fortunate enough to work for an American high-end manufacturer (amplifiers). We are intensively involved in studio technology for a German company. We regularly receive interesting commissions at irregular intervals.

EM: Isn't it frustrating to do important work for renowned companies without the public knowing about it?

Harry Pawel: No, there is definitely something appealing about being able to manufacture a high-quality device, run the test, calibrate it, pack it up after the final test, organise the shipping with all the paperwork involved until it is picked up from here and taken to the airport. And we also provide all the service support. I feel morally responsible to our customers for a long time to come. Even today, I still look after devices belonging to Ensemble customers who purchased devices manufactured by us up until 2000.

Working more in the background also gives you more freedom, as you are not subject to the constraints of control by large companies. As a small company, you appreciate this advantage and can commit to different things according to your own convictions. Of course, as a small, resourceful company with vision, you also have to be careful not to get bogged down in a wide variety of projects. For some time now, we have been focusing more strongly on our core businesses, i.e. specific OEM work, our loudspeakers and also the Stax agency.



The Pawel brothers have a large selection of top-quality measuring microphones at their disposal.

EM: Let's talk about the loudspeaker models from Pa-wel Acoustics, which have now been around for over thirty years. Some excellent reviews have been published, which has certainly boosted sales. There's a splendid Japanese brochure on the table.

Harry Pawel: Of course, there are periods of continuity and peak times with our own loudspeakers. I remember that in the early days, we sold 100 pairs of our large loudspeakers in Japan in one year, which was an enormous challenge for a small company, which was still based in Wil at the time.



A picture from today: these drivers are 'burned in' around the clock in the factory.

EM: What are the developmental stages in the history of Pawel loudspeakers?

Harry Pawel: I made the 'original prototype' in 1980. Over the next two years, adjustments were made and the finishing touches were added to this 'Pawel Compact', as this small two-way loudspeaker was initially called. It remained unchanged as the PA 1 until 2000, with sales of the model increasing steadily. In 1986, we also launched the "PA 1 Reference" model, which featured an even higher-quality bass/midrange driver. In 2001, we developed the "Professional Top Studio Midfield Monitor" (PA-303) for recording studios – and, as a complement to this, the "Professional 18-inch Studio Subwoofer" (PA 318). Until recently, this focused on individual orders from studios and was therefore not designed for the high-end market. In 2006, six years after the end of our collaboration with Ensemble, we entered the high-end sector as a new

Now operating under its own company name, Pawel Acoustics Elektra entered the Japanese market. This loudspeaker replaced the PA-1 and is still available today. In 2007, independent of the Japanese market, the Arabella model was added as a new two-way floorstanding loudspeaker.



The Elektra Mk3 from Pawel Acoustics. The price for a pair of these loudspeakers is £14,500.

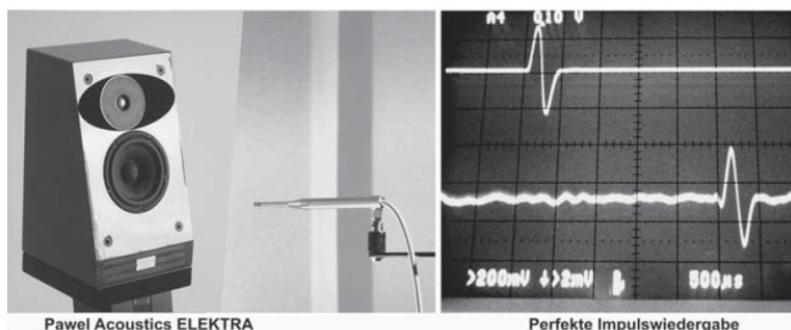
EM: What distinguishes a Pawel loudspeaker, what is the "spirit" of the design and what sound characteristics does it achieve?

Harry Pawel: Quite simply, the technical design should be as simple as possible, but not too simple!

The physical relationship between time and frequency response is always very important to us. Our loudspeakers are therefore consistently designed using 2-way technology with the specification of

"time align" arrangement of the drivers to phase optimisation of the crossover. My brother Markus has developed his own measurement method for this, which breaks down the temporal behaviour beyond the digital measurement technology commonly used today.

In terms of sound, our broadband loudspeakers are very musically balanced, three-dimensional and offer astonishingly realistic spatial representation. In short, an experience in time and space with the necessary fun factor!



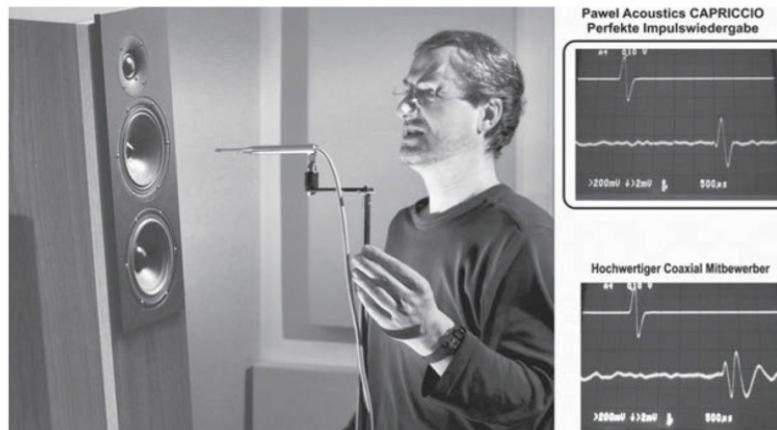
The Elektra Mk3 is characterised by perfect impulse reproduction.

EM: Are you a fan of Richard Strauss' operas? After all, your two loudspeaker models are called Elektra and Arabella!

Harry Pawel: I'm not solely focused on Strauss operas. But I do find them very beautiful and some time ago I chose the name Elektra for the small model and Arabella for the large one.

EM: Will there be a "Rosenkavalier" soon?

Harry Pawel (laughs): No, that name would probably sound too specific, but our new project is actually called Capriccio is named after another Strauss opera. Capriccio will replace the now sold-out Arabella model as a floorstanding loudspeaker. The aim is to present the new model at the High End show in Munich in May this year.



Markus Pawel measures the impulse response of the future model "Capriccio"

EM: What is the current sales market for Pawel loudspeakers like?

Harry Pawel: The Swiss market is small – we haven't pushed it either – maybe 5%. The Asian market accounts for about 85%, with a strong emphasis on Japan. America is cyclical and also has traditionally good manufacturers. There are also small new markets such as Vietnam, and even Greece remains a market despite the crisis. Russia, however, has declined after good times.

EM: From the links on your homepage, I gather that you are a member of both the Audio Engineering Society (AES) and the Association of German Sound Engineers (VDT). Do you have a long tradition of recording music?

Harry Pawel: When my brother Markus and I moved into a property in Wil as a production facility in 1992, we wanted to get closer to music and artists in addition to manufacturing, which can be somewhat repetitive and 'isolated'. So we decided to set up a recording studio. We had the necessary funds at our disposal, we had already made recordings (mostly on the side at weekends) in previous years, so some of the high-quality equipment was already available. Now we had a really high-quality control room and mastering studio. A digital editing system, which also included equipment from Studer (hard disc recording) and, of course, well-maintained analogue equipment – that's what I grew up with. At peak times, we had eight tape recorders with different formats (half-inch, quarter-inch, one-inch). At that time, the end product in Wil was the CD. Before that, in the 1970s and early 1980s, the music cassette was the main medium. This medium was particularly important for folk music recordings and recordings with brass bands, as the production of cassettes was much cheaper than that of vinyl records for small runs, which was significant for amateur and professional bands in Switzerland. At the beginning of the 1980s, CD production was still expensive – even low-cost CD production cost well over CHF 20,000 at the time. This only changed towards the end of the decade. We ran our studio until 2007. The market was then literally flooded with low-cost recording studios – in the worst cases, these consist of nothing more than tools from the internet, a console, a converter and a computer.



The loudspeakers at a glance: in the foreground on the right is the small Elektra, behind it, slightly obscured, is the previous Arabella model, and in the foreground on the left is the new Capriccio. This model is just missing its exterior finish.

EM: And what is new or innovative about the future Capriccio model?

"Capriccio" model?

Harry Pawel: The design will be new. This model can be played louder than its predecessor. We ourselves listen to music at a "normal" volume. However, it is an adaptation to market conditions that loudspeakers can be played louder without any problems. For the first time, we have used a passive membrane instead of bass reflex tube technology in this model. Thanks to our wealth of experience, we have also gained new technical insights, which we are incorporating to perfect the design. The price for a pair of Capriccio speakers will be 22500 CHF.



The Pawel brothers received high praise from the trade press for the sound quality of this recording for the Dorian CD label in January 2003.

But back to us: looking back, we have been involved in over 400 productions. Our most active years in this field were between 1992 and 2000. In terms of musical genre, the focus was on sacred music, choral music, natural instruments and brass bands. A highlight of our recording work was certainly the productions for the renowned DORIAN label, which brought us international recognition.

We made good sales with this work, which we did on the side. We decided not to start our own label. In good times, the musicians had contracts with companies or their own labels.



A look inside the factory

EM: I also see on your website that Pawel Acoustics has equipped a few recording studios in Switzerland with studio monitors.

Harry Pawel: After 2000, we had spare capacity and were able to carve out another niche for ourselves with studio monitoring speakers for large installations. This was largely limited to loudspeakers, but in some cases we were also able to install electronics developed for our own use for single-point recordings in studios and concert halls, which we had preferred since the 1980s – such as a tube microphone preamplifier, a microphone, an AD converter, etc. These devices are still largely in use today.

EM: What possible developments do you see in the audio and sound recording sector in the coming years?

Harry Pawel: In the audio sector, the era of spectacular innovations ended about 10 years ago, which, incidentally, makes life more difficult for hi-fi magazines. They now increasingly feature reviews of new recordings in popular music. However, most of these new releases fail to appeal to music lovers in the long term. This was not the case in the 1980s and 1990s. Musicians such as Michael Jackson and Freddie Mercury moved the masses with good music over the long term. Today, interest in new recordings is usually short-lived.



EM: You give me the impression that you are quite satisfied with the developments in the audio sector that have taken place over the last few decades. Are there any areas that frustrate you?

Harry Pawel: Absolutely! The current problem, which tops all previous ones, is compression in sound recordings. Let's take a look back first: in the past, different standards and system confusion unsettled the market. In the analogue sector, I'm thinking of Betamax, VHS and Video 2000 for video, or in the digital sector, the wide variety of formats. Whatever you think of the CD, Philips and Sony succeeded in establishing a format that has now been around for over thirty years.

When discussing today's problems, we must mention the relatively poor to sometimes very poor sound quality of MP3s. This is a curse for the industry because many young people have no idea how good sound quality can be – whether in high-end audio, on vinyl or even on CD. However, what tops all the problems and evils of the last thirty to forty years is "overcompression", on every medium, be it MP3, CD, the internet or high resolution. This problem is particularly prevalent in popular music, but also affects jazz and classical music. What is happening here has nothing to do with music anymore! This bad habit began in the mid-1990s, when music gradually became "louder". In the early years of this century, the so-called "loudness war" definitely took hold. A constant "even louder"

However, increasing the volume only works with distortion and compressors. When we listen to the radio today, the music is usually unlistenable. This is also the case with satellite and internet radio. High compression rates have also taken hold of classical music stations.

EM: So you're not talking about compression in the recordings.

Harry Pawel: No, the problem lies in the addition of compression processes. This can start with the sound recordings, where the loud areas are compressed so that the quieter areas can also be heard more loudly. But it continues during mastering for the sound carrier. Radio stations take it even further. The latter has always been the case; in the past, this meant adding another "tower effect device", but today it means computer programmes that compress everything even further. All these steps compress music that has already been compressed. The combination of these processes leads to disastrous sound results, because compressing a highly compressed recording even further causes the listener pain rather than pleasure – regardless of whether it is listened to on vinyl, CD or high-resolution audio. This even results in pumping effects. Incidentally, voices are also highly compressed in the speech range, especially on the radio. As a result, voices "pump" and distort slightly. This is particularly noticeable on kitchen radios or car radios: you cannot set a reasonable volume, but have to listen quietly so that voices do not "annoy" you because you feel like you are being shouted at.

EM: Is this also the case with news items, which are spoken directly?

Harry Pawel: Yes, because it's a question of computer programmes and equipment – and, of course, the decisions made by sound engineers, if there are still any left, and programme makers. If you delve deeper into this issue, you can also diagnose this bad habit as a consequence of the ratings factor in radio and television. Just as an aside: it could also be debated whether we need five more radio stations or whether we should rather limit ourselves to a few stations with high-quality content. Until about two years ago, Swiss radio was still an island of high-quality sound culture, but it has since become 'louder'.

EM: Isn't it different for stations like Bayern 4 Klassik and France Musique?

Harry Pawel: It's (still?) much better there. In Germany, there is also a higher culture in this regard. France Musique has always compressed its programmes, but has retained a "decency factor". SRF 2 broadcasts live concerts, which limits the problem.

Let's return to the subject of sound recordings. Whether CD or vinyl, new releases usually do not meet my quality standards. The aim is to achieve distortion and the loudest possible sound. One might ask what this means in this day and age, with all the possibilities of high resolution! If this continues, we will essentially destroy the sense of sound culture in an entire generation of young people (and in ourselves). People who cannot sit in a recording studio during a recording – and perhaps hardly ever attend an unamplified concert – hear the

original sound of music at all. Today's concerts often feature digital equipment with compression, mixing desks and sound systems that do the same thing in concert as they do on recordings. Compression also destroys the musical expressiveness of a work, for example when the "intro" is already as loud as the fortissimo! If you play a work at a normal volume, it's grotesque that we now have such sensational digital technology, yet at the same time offer end users below-average sound quality.



EMT and SME tonearms in a new frame.

EM: Who or what is to blame for this development? Twenty years ago, end users were satisfied with the quality, weren't they?

Harry Pawel: The question arises as to whether the chicken or the egg came first. Is it sound engineers, programme makers and producers who compress heavily (perhaps because musicians want them to), or is it the equipment manufacturers who implement what is technically possible? For me, it's clear: if the technology hadn't been pushed, we wouldn't have the compression options we have today. Companies developed equipment with high compression capabilities for recording studios, etc., some sound engineers implemented this, and eventually the producers noticed and gave the technicians the tools.

When EMI re-released all of the Beatles' recordings about three years ago, for example, they took the digitised recordings in high resolution and compressed them so that they are louder than all of their predecessors, both on CD and LP.

EM: Perhaps this is also the reason why some Beatles fans found the original discs much more pleasant when comparing them directly. What is your demand for the future?

Harry Pawel: First of all, I would like to point out that compression was also used in the past. Elvis Presley and the Rolling Stones were always compressed loud, but there were differences compared to other recordings. Today, "everything runs like a machine". We absolutely must reduce compression and allow for differences in volume again. Faithful reproduction should take precedence over chasing ratings. My greatest concern is that improvements are made in this area.



Harry Pawel in conversation at Swiss High End.

EM: It is quite typical of you that, at the end of all your considerations, there is not a promotional vote for your products, but rather your sincere concern for sound culture and listening aesthetics among people. But I would like to add spontaneously: I have rarely heard music that sounds so "right" and completely convincing to my personal ears as I have here today in your showroom through your "small" Elektra MK 3 loudspeakers. Thank you for our conversation, and I look forward to hearing the future floor-standing model "Capriccio"! Incidentally, Pawel Acoustics will be present at Klangschloss Greifensee on 2 and 3 May with an attractively priced anniversary offer.

www.pawel-acoustics.ch