

# STUDIO DESIGN PITFALLS

## Jochen Veith: Things People Don't Think About When Planning A Studio

One of the most in-demand studio designers in the world explains why there's more to building a studio than getting the acoustics right. Much, much more...

MORITZ HILLMAYER

With clients including Wisseloord Studios, Max Martin, Dr Luke and 301 Studios in Sydney, German studio designer Jochen Veith has shaped the international studio landscape for more than 30 years. Considering his achievements, it seems surprising that this line of work was not his original intention. Starting out as a musician, he often experienced frustration with the sound of recordings and live performances, which prompted him to become an audio engineer to do it better. Having switched to the other side of the studio window, the frustration did not subside, as Veith perceived many studios as acoustically suboptimal. Once more, Veith thought: "Then I will have to take care of it myself!" He learned about acoustics and measurement technology and got to work. Today, Veith is called upon whenever producers of all ranks and sizes plan to build new studios or experience troubles with their existing ones.

Originally, we intended to interview Veith on what is generally perceived as the main object of studio design: acoustics. It soon transpired, however, that building a recording or mixing studio requires a lot more than absorbers and diffusors. Temperature management, structural statics and the electromagnetic environment can turn any project into a nightmare.

### Site Specifics

We begin by asking him about a fundamental aspect of studio design, which people manage to get wrong surprisingly often: choosing a location and premises. Does every building have the potential to sound good? "Good question!" he replies. "And no. There are certain requirements that cannot be repaired easily. I know this sounds ridiculous, but people often think we can make something work just by putting some wondrous device up somewhere in the room. But the problems usually reach far deeper. It's certainly not enough to just put some rock crystal somewhere [laughs]. Or a small box with a hole, a Helmholtz resonator. Unfortunately, people reach out to me too late in a project. I receive calls from all around the world, projects that cannot be finished. Then I fly there and start doing detective work. Or you can try identifying problems by going through the plans. Sometimes there are fundamental flaws, like a basic geometrical problem, for instance. Then you realise: this can never work."

Photo: Jochen Veith





Just For The Record Studios in LA faced two major challenges: the roof could not bear a load, and the foundations had to be reinforced.

“There is a story to illustrate this point: imagine some popular band plans to convert a six-storey building into a production complex with offices and large studios. One studio, with all the trimmings, on every floor. The building has just been purchased for this very purpose. The band initially hired someone else, who soon had a bad feeling about the whole affair, so they consulted me. I arrive at the location, 15 people are waiting for me: managers, band members, architects, structural engineer and the people from the production companies. They all look at me and say: ‘Now you tell us how to make it work.’ A typical situation.

“I immediately asked about the building’s load capacity, as we would have needed to introduce quite a lot of weight to acoustically isolate the studios. The structural engineer called it ‘difficult’ and gave me a number. I suggested to reinforce the building by transferring load to the walls. But even the foundations could not bear any more load.

“They led me into the neighbouring building, the same construction, same type and look. In the cellar there were huge excavations, really deep, filled with steel, ready for the concrete to be poured in. The structural engineer then told me that they had added two more floors to the building. Now it was sinking and needed all new foundations.

I pondered for a while how to tell the gathered audience that, I am sorry, but this building is simply not fit for the desired purpose.

“There was a brief moment of silence before one of them... addressed me very loudly. How dare I show up, look around for hardly an hour and then say something like that! He said the kind of building I was imagining for the purpose does not exist. I then proceeded to explain that such buildings did exist. For example, any buildings that were made to



house heavy machinery, like old printing facilities. The silence returned, and I wondered what I did wrong this time. I was then told that they had a choice between two buildings, and they had spent a year trying to decide which one to pick. Eventually, they decided to take this one since the location was a little more convenient. Well, the other building was a former printing plant!

“For me, it was the journey plus a few hours of consultation, but the damage was in the millions. Not uncommon for

these kinds of situations, unfortunately. Take Wisseloord Studios, for example. We had to make some major adjustments because there was crosstalk between the halls. It was necessary to lift up an entire recording room, 100 square metres or more, and put it on new foundations. Excavate the ground, lower the base plate, install a special floating screed — that’s a lot. Especially when you just spent a lot of money and then discover basic problems with the result. It is never fun to bring this kind of news to the client. »





» “If I cannot install the necessary materials, I can never make it sound good, no matter what I do.”

### The Art Of The Possible

All buildings come with compromises, and a part of Jochen Veith’s role is to work around these. “Of course, you try everything to make a project possible. I recently worked with Moritz Braun in LA on Just For The Record Studios. It soon transpired that the roof of the hall could not carry the weight of a suspended ceiling, not to mention the air-conditioning units. The roof needed refurbishing. We then discovered that the hall’s base plate did not satisfy the requirements, which meant renewing the base plate and strengthening the foundations.

“We took the opportunity and built the base plate in a way that allowed us to float the massive walls and place the drywall ceilings onto the walls. Now every studio room is its own isolated cube with floating secondary floors, massive walls and double-layered drywall ceilings. The air conditioning and ventilation, with the exception of the compressors, are mounted in the gap under the roof. So the roof itself has no additional load to bear.

“I am always happy when I am able to inspect the location beforehand. It is a gigantic difference if there are train tracks next to the estate, or a subway underneath. I have been involved with projects that had eight or 10 train tracks go right past the building. It requires a lot of attention to counter this sort of

» The completed Just For The Record Studios, on Lankershim Boulevard in Los Angeles, where Jochen Veith helped German producer and musician Moritz Braun realise his ideal workspace. There are two large control rooms, each with a recording booth, three production studios with an additional vocal booth, as well as a lounge and offices. Local architects supervised procedures with regard to local regulations and the necessary permits.

influence. Under the right circumstances, it is possible, but even then it is a question of budget and can potentially topple a project entirely. There is budget, there is approvability, there is structural integrity. Those are aspects only a specialist can assess reliably. A few hours of consulting, even for large projects — that is often all it takes to save an investment.

“It happens time and time again. Take a place like Munich in Germany. It is a disaster because there are very few buildings on the market. Trying to find one that fits is a challenge. I prefer being involved in the search and acquisition of the building if I can, especially for larger projects. It is extremely important.”

Moreover, attempting to solve these problems without the experience of someone like Jochen Veith can actually make them worse. “Let’s say there is a subway going underneath, or a tram line next to it, and the building has a tendency to resonate at 35Hz. If you treat the acoustics with standard solutions, they will often also resonate around the same frequency. This can result in an amplification of the resonant frequencies, so the treatment makes it worse. The cure becomes the disease in a worst-case scenario.

“In these cases, an early assessment of how to approach the project is utterly important. I understand that people want

to do smaller projects on their own. But always consider: how much budget do I have, how much am I willing to invest? And how much am I willing to spend on securing this investment? Even if I put £5000 or £10,000 into room acoustics, I still want to spend it optimally and make sure I get the best possible result. I don’t just glue acoustic panels to the wall where they achieve very little or may even make matters worse. Just think about how much of your budget you would like to spend on having that sense of security.”

### Taking The Heat

An obsessive focus on one aspect of studio design, such as acoustics, can lead to people being blindsided by other problems. “For example, I had a client once who wanted to put a large old SSL into his control room. On a console of that size, be it API, or Neve, or whatever, you spend an amount X. But what use is this great mixing desk when it is placed in a room that will overheat in no time, making it impossible to actually use it? People often forget about that; a console of that size produces a lot of heat. Then there are the computers and power supplies, they produce the same amount of heat. Suddenly you have 5.5 kilowatts in the room and another 4.5 kilowatts just outside the door — maybe even more, depending on the desk. Then remember



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» The Jochen Veith-designed 301 Studios in Sydney, Australia is one of the largest studio complexes in the world.

» the acoustic treatment and you basically have a Thermos. There is a world of difference between massive walls, meaning stone wall or concrete, which provide a lot of thermal storage mass, and drywall. It usually is drywall in studios, so there is no storage mass. Every degree of warmth generated in such a room will stay in it, like a Thermos. If you fail to take the heat into account, all the greatest gear is of little use.

“We work a lot with air conditioning, from consulting to conceptual development, even before the project goes to the specialist. Even specialists from the respective fields are sometimes in over their heads when they are

not used to doing studio projects. It often doesn't work the way they were expecting. In the end, everything needs to work together: room acoustics, architectural acoustics, air conditioning — it all interacts. I have had air conditioning specialists tell me they never had projects that required silencers. Our wide-ranging expertise is a huge bonus there, of course. We can calculate those air-conditioning routes and silencer placements. We can calculate the dimensions, at least on a conceptual level. We can participate and suggest ways and solutions. We actually often define the concepts. We say: for this project we will use concept A or concept B or C, because we know from experience that it will work. The experts then know exactly what we are talking about. This is not limited to recording studios, of

course, but applies to any kind of room where acoustics are important, like home cinemas and the like.

“And there are other factors. How well do you feel, that's the main one. Are there windows? Things like that. It's all a part of the whole deal.”

A good example is the vocal booth. Many people feel they need to build one in order to have a 'proper' studio, but is it necessarily the best use of their money and space? Veith isn't convinced. “The singers become claustrophobic and cannot deliver a convincing performance.”

### Something In The Air

Statics and air conditioning are two aspects of studio design that tend to be overlooked, then. Are there more? “Indeed! EMC or electromagnetic compatibility.



— The control room at Redboxx Studios in Rosenheim, Germany is another Jochen Veith design. Note the large windows providing natural light!

I had this one project in Switzerland which was a good example. I initially pointed out that they needed to mind EMC. They claimed they had an electrician who knew all about it and said it would be all right. So everything was installed. I was not involved with the electrical installation, and later the studio owner told me that he always has to switch off the light fuse — the fuse, not the light switch! — to record electric guitars. Single-coil guitars in particular are very susceptible to electromagnetic fields. Phase-angle-controlled dimmers are often a problem source in that context. LEDs can be even worse; at least, you have to be careful all the same. LED lamps can be dimmed in two ways: through the current, in which case I need to know the exact type of lamps and need a driver that will reduce the current if required. Or I use a pulse, so I switch the LEDs on and off and reduce the pulse width to make it darker. When LEDs are connected to such a driver with unshielded cables, you often encounter the aforementioned problems.

“You always have to take a close look at the situation at hand. For a start, use shielded 230V cables. I oversaw a project with Max Martin, shortly before Covid. A total of 13 control rooms, a large recording room, vocal booth and so on — a seriously big project. It included a number of production and composing studios side by side in one building by the main road. Their technical adviser

and I both asked the landlord to check for EMC to see if there are any problems coming from outside — high-frequency, like radio, and low-frequency, like power lines. They took some measurements at various points when it was still a building site, and probably couldn’t get everywhere. They concluded that there were no problems. But once everything was done, there were problems. Turned out that a huge main power line ran under the pavement right in front of the building. It caused a lot of interference. During the measuring, they did not get close enough to that wall, so they didn’t notice. In the end, the main power line had to be moved to the centre of the road, which caused a significant amount of additional cost.”

### Finding A Balance

Jochen Veith often gravitates towards using PMC monitors in his builds: “I do use other speakers where appropriate, but I have 17 years of experience with those systems, so there is some sort of connection. I just know the speakers very well, I can rely on them. Reliability is a major criterion for me. Those basic requirements, PMC just fulfil them. It is a tool, it needs to work. Full stop.” But he’s also aware that many recording studios are very personal spaces, which need to support the specific requirements and preferences of individual producers. “At the beginning of every project I speak with the clients to find out what their needs are. What will they do in the studio, what is important to them, how do they

work? I then translate this interview into dB and numbers and geometry and room division and acoustics. Do I integrate the speakers into the wall or would free-standing speakers suit the situation better? Stereo or multichannel? What kind of speakers is the client used to, what do they like best? All of these questions, and more, play a role.

“There is a phrase that has become something of a cliché, but it somewhat hits home: bring everything into balance! That is important to me. I know the state of the market. I know that all of this costs money. I just think it’s a problem when the balance isn’t right. Thinking that the solution is buying even more expensive gear. Always keep the balance, that is paramount. A new piece of equipment is easily bought or borrowed, but changing the basics — that’s always tough after the fact. And can be very frustrating. I know people who keep modifying, they are still not happy with the results and don’t know what to do. It’s always ‘a little here, a little there’. Add all that up and you get quite a number. “Some people spend £50,000 on speakers, but nothing on room acoustics. Wouldn’t it be much better to say: I have a certain budget and I want to make sure that everything is in balance? The gear, the microphones, the desk, the DAW. Proper wiring. Speakers that suit my situation. Room acoustics. Is the sound isolation all right? Does the air conditioning work? Only when all of these points are taken into consideration can the result be fun. Then it becomes a true proper workplace.” ■■■