

Working with Kjær and Brüel

Svend Gade, Brüel & Kjær, Nærum, Denmark

I am very fortunate to have had the experience of working with Viggo Kjær and especially Per V. Brüel for more than 12 years. They are the two marvelous founders of the famous Brüel & Kjær company – “First in Sound and Vibration.”

My life was probably a “random walk” until I ended up in the field of sound and vibration, where I have now been for almost 30 years. I was born in a small village some 60 km north of Copenhagen in 1949. My parents were poor people, so the standard procedure for young people like me was to get a job after finishing primary school. Seven years of school was quite normal at that time. Following school, I would probably become an apprentice at the local shipyard or the famous local motor and propeller factory, just like my big brother. Or maybe I would become a fisherman like so many of my playmates. As it happened, my father found an apprenticeship for me at a local electrician’s workshop.

But I had other plans. I was one of the brightest pupils in my class, so I wanted to go to high school (gymnasium), but I did not dare tell my father about these plans. My mother knew, but she kept silent. Actually I only told my father about high school after I had been there for three weeks, and then he accepted the fact.

That was back in 1964, when all young boys were inspired by the Beatles and the Rolling Stones and wanted to be pop stars, so I also started a band that became relatively famous in Denmark back then. Some of my records from the 60s and 70s are, occasionally, still played on Danish National Radio. However, I realized that I probably should get a more serious education – just in case. I was unsure as to whether to study mathematics at Copenhagen University, become an engineer at the Danish Technical University (DTU), or to become a school teacher or maybe even a medical doctor.

My classmates in high school recommended that I become an electronics engineer, so they made the choice for me. It was a mere coincidence that I ended up at the Acoustical Laboratory at DTU, where Fritz Ingerslev was a professor during the final years of my study. That was also where and when I became acquainted with Brüel & Kjær instruments for the first time in my life. My final diploma in 1973 included a project in calibrating Brüel & Kjær probe microphones using their excellent instruments such as the Heterodyne Frequency Analyzer Type 2010 – a state-of-the-art instrument at that time.

My interest in acoustics was thus ensured, so in 1974 I applied for a job as a

traveling engineer with the sales department at Brüel & Kjær, situated 5 km north of the DTU. I did not get the job, probably because I looked like a musician with long hair, fur coat and long boots, and insisted on having spare time to play rock concerts. However, I was offered a job in the development department by Jens August Jensen, a job I did not want. Then I started to study medicine and got work at various hospitals for the next six years. In 1976 I started to study to become a teacher and also worked at various schools, teaching topics such as mathematics, chemistry, physics, electronics and photography.

In 1980, my musical career came to an end, since I was now a qualified school teacher. But I made a 180-degree turnaround and decided once more to try to obtain employment at Brüel & Kjær. This time I dressed up nicely and got a job as an application engineer in sales with special focus on digital signal analysis, or digital filter analyzers and FFT analyzers.

I have never regretted making this choice and was happy that Brüel & Kjær could finally use me. Actually I was extremely nervous on my train trip to work the very first day – May 5, 1980 – I almost turned back on the subway. I was not sure that I was clever enough to work among so many famous and skilled people. But I ended up working in a remarkable company run by two remarkable men – Per V. Brüel, leader of the sales department, where I was employed and Viggo Kjær, head of development.

I soon learned that there used to be a third important person in the company – Holger Nielsen, who died in 1978. He was responsible for instrument production from 1945 until his death in 1978. You can see a picture of Nielsen, Brüel and Kjær to the left of Brüel’s hand on the front cover of this magazine. They are standing behind one of the development engineers. This new working place was very different from what I had ever experienced before. For Per and Viggo, being directors was not just a job – it was their lifework and, more importantly, also their hobby. This is probably also why both Kjær and Brüel are still alive today at the age of 94 and 93 years old respectively – it was their hobby! Their mission statement was quite simply, “*We will have fun and we will make money, on the other hand we won’t have so much fun, that we don’t make any money, and we won’t make so much money that we don’t have any fun.*” That had a great impact on all of us working there – our colleagues were our playmates.

Reading the article “Of Acoustics and Instruments – Memoirs of a Danish Pio-

neer – Part 1” in this magazine, it is clear that Per Brüel had a very exciting life and was involved in many projects as a pioneer in acoustics. But he also had a great sense of humor. If somebody asked him at the factory, how many people were actually working at B&K, a typical reply might be, “oh, about half.”

Another story tells of an engineer who, on his very first day, noticed that Brüel was the only person working there early in the morning. The engineer presented himself to Brüel and asked, what kind of work he was supposed to do. Brüel answered that he could start by cleaning the floor. The engineer exclaimed, “But I am an engineer!” Brüel replied, “Oh you are an engineer – then I will show you how to clean the floor.”

Kjær was and is a very quiet and almost anonymous person. But don’t let that mislead you. Brüel has always stated that the two people who have had the most impact on his career were Professor P. O. Pedersen and Viggo Kjær! Viggo Kjær was a bright student getting the second highest mark ever in the 100 year history of the Danish Polytechnic School in 1938. I met Viggo Kjær for the first time shortly after I started working at the factory.

I was visiting a customer with my colleague Henrik Herlufsen. So we borrowed a company car and headed to the company gas station. Normally the gas pump was locked, so we looked around and spotted an ‘elderly’ person and asked for his help. The conversation went something like this . . .

“You need a key,” he said. We answered, “Yes we realize that, but where can we get it?” “You can get it from Department 17.” “OK, but where is department 17?” He looked at us for a while, and then he said, “I will go and get the key.” He went for the key, and filled up our tank. We thanked him – unfortunately we forgot to give him a tip and also to ask him to clean the windshield. Later we realized that this was our first ‘meeting’ with Viggo Kjær. Since then Herlufsen and I have often referred to him as “the man from the gas station.”

Holger Nielsen was famous for “management by walking around” (MBWA) a long time before it was introduced by management gurus and management theory. When he was working at Brüel & Kjær, there was never a single strike by workers from production. He solved all problems on the spot. One year, on the very first day after the summer holiday, he was standing at the entrance gate handing out 100 Kroner bills (approximately \$15) to all workers arriving there early in the morning. Nobody

was late for work in the following days, although there were no more 100 Kroner bills handed out.

Thirty years later, I have travelled all over the world at a rate of approximately 100 days a year. I have presented more than 150 papers at various conferences (Inter-Noise, ICSV, IMAC, ISMA, SAE in the U.S., Brazil, Japan, and others). I've written 15 articles for *Sound and Vibration Magazine* as well as articles for other magazines, contributed to 16 *Brüel & Kjær Technical Review* book-

lets and several in-house magazines, and too many more to remember. I have held seminars at local Brüel & Kjær offices and at customer sites on almost any subject related to sound and vibration. For example: sound intensity, mobility-based modal analysis, operational modal analysis, sound quality, acoustic holography, machine diagnostics, digital signal processing, etc. You name it – I've done it. Now I also hold web seminars on these topics in the new Internet world.

For all this I thank Viggo Kjær and Per V.

Brüel. They made this possible for me – I did not make it possible. Without Kjær & Brüel, I have no idea where I would be today – laborer, musician, teacher, medical doctor, or unemployed, alcoholic, dead. Who knows? They showed me the way to a valuable, meaningful life and gave me a great job, and showed the way to so many other people in this world of sound and vibration.

Thank you Per and Viggo.

The author can be reached at: sgade@bksv.com.