

[⇒ back to Contents](#)**Peter Starič****My Professional Life**

On my 80<sup>th</sup> birthday my friend Viktor Blažič gave me the facsimile of the Slovenian newspaper Jutro ('Morning') dated the day I was born.

In 1939, when I started tinkering with radio as a 15 years old boy, the word 'electronics' was not yet known. At that time, multigrad vacuum tubes with 'bakelite' bases were the 'state of the art' technology. The RF receivers with long, medium, and short wave bands were common and their tone quality was considered 'excellent'. Nevertheless, the first radio I built used a semiconductor — the crystal detector. Already in 1929, when the first 2.5 kW broadcasting transmitter was built near Ljubljana (improved to 5 kW in 1932), a young enthusiastic Slovenian engineer Zmagoslav Pipan had published a simple booklet with instructions of how to make a crystal set and a single vacuum tube receiver. The book — which I still have — was well written, and it was specially intended for teenagers. First I built the crystal detector and next the vacuum tube receiver. For the latter the author prescribed a 10 cm diameter coil. Since only iron dust cores and coils wound with 'litz' wire were used then, I was searching for the necessary 'pertainax' tube to wind the coil on, all over Ljubljana. Eventually I found it in a shop's scrap, where they had removed it from an old receiver (which would now certainly be a valuable museum piece).

My tutor, Drago Zrimšek, was himself a radio technician who also owned a radio shop. He showed me through the first steps in that marvelous world of radio. He taught me not only the practical 'know how' and the theory, but he also emphasized the knowledge of the mathematics necessary for designing the circuits. Since he had

an abundant supply of old vacuum tubes and other components, he helped me — a penniless boy — with the parts as well. From him I also learned how to build radio transmitters. With my friends Rado and Marjan we began establishing primitive short distance radio communications in our part of the town. We built two-tube regenerative short wave receivers and single vacuum tube transmitters, all line operated. For voice transmission we simply put a coal microphone (from a telephone) in the antenna circuit of the transmitter. The quality of the sound was fine, but we had to be careful to avoid touching the microphone with the nose, to prevent the shock and burns of a HV spark. My tutor also taught me how to repair modern radios so I could earn some money.

Such was the situation when in the spring of 1941 the Italians, Germans, and Hungarians attacked Yugoslavia. The Italians occupied Ljubljana the capital of Slovenia, introducing a curfew from 10 PM to 6 AM. They also built a barbed wire fence all around Ljubljana, with sentries patrolling. They forbade short wave transmitters and outdoor antennas. On the other hand, with the arrival of the Italians, nice kits from their firm Geloso became available, with complete instructions of how to build modern receivers. We listened to the short wave broadcasting of the BBC and Voice of America — which the Italians were jamming with 5 kW transmitters. On April 11<sup>th</sup>, 1941, on the same day the Italians entered our capital, the German Stuka planes destroyed the transmitter of Radio Ljubljana, which was in the would be German occupational zone. The Italians soon replaced it with a simple 300 W, and later by a 700 W, transmitter which was located in the center of Ljubljana.

In October 1941 a secret 6 W short wave radio transmitter of the Liberation Front began operating in the capital, to cheer up the population. Since after several months of futile attempts the Italians could not locate it (the transmissions were almost never from the same place) they confiscated all radio receivers.

Then we, the radio amateurs, came into action. We built a variety of regenerative short wave radios, using a variety of modern and outdated vacuum tubes. For almost all young amateurs this activity was interrupted at the end of June 1942 when the Italians sent all high school students and other, mostly young, people to concentration camps. Fortunately, when two soldiers came to arrest me, they did not search our apartment, so they did not find a two stage short wave transmitter (which my eldest brother had taken apart in that very afternoon). Six months later, after returning from the camp, I gradually resumed my former activities. In the meantime the Italians had returned the receivers, blocked so that it was possible to tune them only slightly around the local station. We built tunable adaptors with a single mixer vacuum tube, to transpose the short waves to the frequency of the local station. So we kept listening to the BBC and the Voice of America, and the Italians kept jamming ...

During the war, my interest had already turned towards measuring instruments. Then I built a tuning oscillator, a vacuum tube tester and a Wheatstone bridge. After the war, I registered at the University in Ljubljana, but my studies advanced very slowly, for my health was too much impaired after the concentration camp. It took me eleven years to get rid of the TB, which I picked up in the camp. Besides, I had to earn money for living. Fortunately, in Yugoslavia study at University was free of charge, as well as Medicare. I became a student assistant (with a meager salary) at the Physical Dept. of the Medical Faculty in Ljubljana, where I designed all sorts of electronics measuring instruments. Finally, I obtained permanent employment at the Slovenian

company Iskra, where I was designing oscilloscopes. In 1960 they gave me one year of paid absence to complete all the remaining exams, so I graduated as an electronics engineer in 1961. Then I continued designing oscilloscopes at Iskra.

Because of the worsening economic situation in Yugoslavia I started looking for employment abroad. In the autumn of 1967 I obtained employment at Tektronix, Inc., in USA. There I gained much knowledge and many friends. Since the poor Medicare and my unreliable health did not match well in the USA, I returned to Yugoslavia in 1970 to resume working at Iskra. There I designed a pH meter. However, anyone who came from the USA and who was not willing to enter the Communist Party was potentially suspect. Consequently some members of the Party considered me unfit for my position in the Instrument Design Department. At first I lost the post — but not the employment nor the meager salary — for six months. Then I moved from the instrument design to a branch factory for TV and Hi-Fi equipment. Though my work was successful there, after some years I received the same ‘treatment’, this time lasting for two continuous years (being at ‘work’ regularly from 6 AM until 2 PM and not given any task). During that time no attempts to obtain an employment elsewhere were successful. However, in those ‘leaden’ years I studied wideband amplifier circuits on the basis of the knowledge I gained in the USA, and the necessary mathematical tools — just to keep my brain working. Also, playing my piano up to three hours a day, walking through nature, and mountaineering gave me the necessary strength to overcome those unpleasant times.

Eventually, I have obtained employment at the ‘Jožef Stefan’ Institute, where I was designing mass spectrometers. This is a research institute with an excellent professional atmosphere. There I met Erik Margan, the co-author of this book. At first our cooperation was in other fields, but gradually our spare time work merged in the theory of wideband and pulse amplifiers. At the end of the 1980s I moved to the ‘Milan Vidmar’ Institute, where my job was the overhauling of the high voltage surge generator. My new employer expected me to gain a PhD degree, which I did in two years. The studies during my involuntary pause at the Iskra TV factory provided a sound basis for my Thesis, which also forms the major part of the present book. However, Erik has somehow taken my work ‘out of mothballs’, thoroughly overhauling it with his up to date knowledge of computers and programming. In addition he has written some chapters, too. Thus the present book is the result of an equal effort by both of us.

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(family name pronounced ['stah:rič])

Ljubljana, 2004

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