

A Visit to Nagra

Nagra's main office is about 45 minutes from the train station in Geneva, with their factory another five minutes away. The first thing you notice when deplaning in the Geneva airport is the giant ads for watchmakers, each one more beautiful than the next. The minute you step through the door at Nagra's factory you recognize the same high level of technical excellence and precision around every corner.



We started our tour in the engineering department where we saw various phases of product development, with digital and analog products from the pro-audio and HiFi divisions being made together. Nagra's diverse background in pro sound and military electronics give a level of sophistication that few strictly HiFi-based companies can offer. Not only does this give Nagra a wider range of capabilities, it also insulates them somewhat from the effects of the current volatile market in consumer audio.

With the same engineering talent applied to products such as the Nagra 6 pro recorder (which took two years to go from initial concept to finished product) and the VPS phono stage all under one roof, the level of passion in the engineering department is easy to see.

The designer of the Nagra 6 boards showed us some of his process for building the circuit board and the levels of complexity involved in component placement. "It is very much like laying out a small city, deciding the optimum placement for everything. With some circuit traces as small as 100 microns, we have to take great care to minimize noise and maximize bandwidth." The same care went into the production of the LB digital recorder, which has become one of my prized possessions. *(continued)*





At the next workstation, we saw Nagra's latest creation, a 60-watt-per-channel solid-state amplifier that had debuted at CES this January. It was plugged into a massive test bench with every possible parameter being measured. Upside down in the same room was a working prototype of a new vacuum-tube power amplifier featuring 300B tubes.

The most important part of a Nagra

The Nagra factory could just as easily be mistaken for a watch-making facility or a Formula 1 garage. It is a marvel of Swiss precision, with every workstation featuring state of the art instrumentation (some of it built by Nagra), but high-tech instruments are not the whole story. What makes Nagra products so special is the care and expertise of their workforce, many who have been with the company 20 years or more. There is a high level of pride and dedication at Nagra. The stable workforce contributes to the quality of the end result. Highly experienced workers assemble the products with great care and every assembly is checked and rechecked to ensure that it meets the standards set by the engineer.



Nagra products have always been compact because of their background in high-performance location recording. When you are carrying a recorder to a remote location, every gram that can be saved in construction will pay dividends in the recording engineer's back muscles. Keeping everything compact also shortens signal paths and lowers noise, which is a benefit to pro and consumer audio alike.

Back in the days of the legendary open-reel recorders, Nagra made every bit of their products in house, right down to the nuts, bolts and screws. The screws are no longer made in house and a few minor bits of casework are jobbed out, but everything else is still made in the Nagra factory. Our tour guide Matthieu Latour (sales and marketing manager for Nagra HiFi Products) explained while showing us a faceplate for the PL-L preamplifier, "Our front panels use a process for the lettering and coating the aluminum that we invented over 20 years ago. When that is completed, we must remove the coating from the rear face of the panel to retain its conductivity, and this requires a level of care that we can not send to a subcontractor."

Upon leaving the machine shop, we met a new apprentice at Nagra who was recently hired. Latour emphasized to us that in Switzerland, these trades are viewed with great respect and the craftsmen at Nagra are as important to the final product as the engineering staff.

All of the input and output transformers are wound in-house and we saw a demonstration of the exacting process that goes into making the output transformers for the VPA vacuum-tube power amplifiers. Just as I was thinking about the ladies at McIntosh who still wind all of the transformers, Latour said, "We are much like McIntosh in this respect, winding our own transformers. It is the only way to ensure consistent quality."

We Meet the Wizard

After the factory tour, we were introduced to Jean-Claude Schlup, who oversees all product design at Nagra. Mr. Schlup gave us a tour of his research and design facility, which includes a full suite of instruments for UL and CE certification. He even had a gigantic RF antenna so they can bathe their products in radio waves to make sure things are adequately shielded.



"We are much like McIntosh in this respect, winding our own transformers. It is the only way to ensure consistent quality."



We were shown some of Nagra's pivotal products ranging from their first recorder to some defense projects and, finally, current Nagra gear. Interestingly, Schlup's lab is behind a foot-thick steel door with a big rubber gasket (actually in the basement of the building, a bomb shelter!).

After getting Schlup's perspective on Nagra, we were taken into his fairly large listening room where a full complement of Nagra audio gear was warmed up and ready to play. We listened to the PL-L and PL-P preamplifiers through the VPA tube monoblocks and a pair of speakers that Schlup designed himself. It was interesting to hear the reference system where Nagra products begin, and Schlup had a wide range of music on hand by which to evaluate things. We started out slow with some jazz and a little Elvis. But showing his wry sense of humor, he ended the listening session with "Smoke On the Water" from Deep Purple.

By the end of our visit with Mr. Schlup, he had asked us as many questions as we had asked him. While explaining his thought process for the PMA and PSA solid-state amplifiers (the pyramids), he told us that the pyramid shape was not just for cooling. It was also so that no one could stack anything else on top of them!

Off to Listen to More Music

Our next stop after Mr. Schlup was an outstanding lunch in the Nagra factory cafeteria. Well-fed workers are happy workers, and perhaps even that contributes to the care in assembly of Nagra products.

Before returning to Montreux, we were able to spend about two hours in Nagra's big listening room, this time with a pair of PMA amplifiers driving the Verity Audio Lohengrin II speakers. The very efficient (95db/1watt) Verity speakers had some major authority, and even though the room was still awaiting some room treatments, they sounded excellent. The Nagra folk left us to our own devices and were gracious hosts, even when we played "Thriller" at Studio 54 levels. On the way back to our hotel, Latour commented, "We wondered who was playing Michael Jackson so loud."

As someone who has always been a big fan of Nagra components, and has owned a few over the years, my journey to the factory completed the picture and underscored the level of care and attention to detail that goes into every one of them. ●

