facilities

TSR Trades Asbestos for Acoustics

The public broadcaster for the Swiss Romande teamed with WSDG-E to redesign its audio facilities. DIRK NOY reports

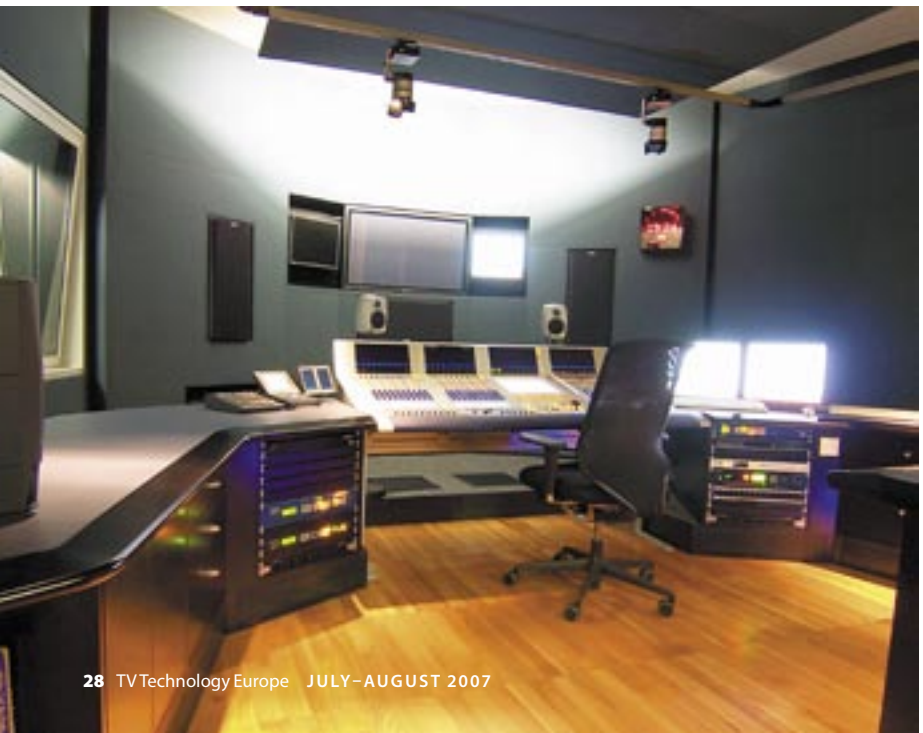
Situated in one of the world's most beautiful and peaceful regions, Télévision Suisse Romande (TSR) is the Swiss public-service broadcaster for the French-speaking community.

The TSR tower is the tallest building in Geneva, visible from virtually every point in the city. Originally built in the 1970s, it has served as the home for the station's audio rooms and technical facilities, as well as its management and production offices. Starting in 2005, a multi-year, asbestos-related tower overhaul necessitated the relocation of the station's technical facilities to other buildings on the TSR campus. In conjunction with this new construction, the entire technological infrastructure of the complex was overhauled to prepare TSR for full tapeless operation.

When the tender request was issued, TSR chose studio design/acoustical firm WSDG-E in nearby Basel. WSDG-E is the full-service European branch of US-based Walters-Storyk Design Group.

WSDG has designed more than 2000 production, post-production and recording studios around the globe, ranging from the recently completed GTRK Kultura Recording Complex in Moscow to the US$12 million Synchrosound Studio in Kuala Lumpur; broadcast facilities for CBS, WNET-TV in New York, The Food Network and Interlochen Public Radio in Michigan; and private studios for Green Day, Aerosmith, The Goo Goo Dolls and Alicia Keys. WSDG Principal John Storyk and I collaborated on a design that met TSR's architectural, acoustical and financial considerations.

Geneva Audio Post Control Room



Programme

The station's audio production facilities consist of two large (37 square metre) 5.1 control rooms, each with an attached isolation booth. These are used for TSR's in-house productions (both straight-to-air and pre-/post-produced audio content), as well as for its DVD publishing arm and external clients. Additionally, two medium-sized (18.5 square metre) multi-purpose control rooms with a shared ISO booth; six individual sound design suites; and a large (93 square metre) open office area, conference room and library for the station's collection of more than 40,000 CDs were created to complete the facility.

> State-of-the-art acoustical treatments were employed extensively throughout the audio rooms.

The audio rooms are laid out on two adjacent floors accessed by stairways at both ends. Each floor has a dedicated machine room with independent climate control, a back-up cooling system; fire repressing systems and emergency electrical power facilities. The first floor also includes a comfortable lounge for TSR personnel, clients and guests.

subhead) Structural Acoustics

Two challenging issues arose during the structural acoustics planning phase. First, the only existing isolation between the substantial principal TV shooting stage and the future 5.1 audio post control rooms was a narrow brick wall. Second, the concrete slab at the base of the lower of the two future audio floors proved markedly thinner than anticipated.

Both problems were resolved by removing the top layer of the lower slab to significantly reduce its weight load. This solution also made it possible to build a sealed bottom-to-top brick wall adjacent to the TV stage 'shooting' wall.

The individual control rooms and the ISO booths were built as room-within-room units, completely isolated with independent walls, floating floors and spring-hung ceilings. Acoustical doors were provided by Industrie Akustik Siegburg (IAS).

Room Acoustics

The Swiss public broadcasters adhere to a number of specific internal room acoustics standards that provide precise guidelines in terms of room geometry, reverberation characteristics and loudspeaker positioning. These proprietary principles, which were first devised in the 1980s, have been configured

with current ITU/EBU standards to address issues related to 5.1 production environments.

State-of-the-art acoustical treatments were employed extensively throughout the audio rooms: traditional porous absorption can be found alongside metal and rubber membrane low-frequency absorbers by Pawel and Fraunhofer-Institut für Bauphysik (IBP) Compound Baffle Absorbers (CBA). Rear wall diffusers by RPG Diffuser Systems facilitate a smooth sounding, balanced listening experience thanks to reduction of direct reflections, but without the drawback of increasing total absorption.

The room acoustics were developed with the aid of CATT-Acoustic computer simulation software. This approach ensured that the issued architectural construction drawings would translate to world-class acoustics and make it possible to listen to music replayed in the virtual computer model of the spaces before construction. After completion of the project, extensive acoustical measurements were performed throughout the facility.

All control rooms display an acoustical behaviour within the boundaries of the ITU/EBU recommendations: the reverberation times are fully within the specified upper and lower limits, and are distributed linearly over all one-third octave frequency bands. Even at low frequencies (below 100 Hz) room behaviour is extremely well balanced.

Technology

As expected for contemporary broadcast facilities, the audio signal path is fully digital. The Audio Post Rooms are centred on a Swiss-made Studer Vista 7 digital production console. The Studer Vistonics console topology, with its rotary controls mounted on top of a flat panel display, enables fast and intuitive access to all vital parameters.

Audio is replayed through a PMC 5.1 audio monitoring system and a secondary Genelec stereo monitoring system. Frequency responses measured after the install are very even, particularly for loudspeakers without active system equalizers in the signal path.

The main recording and editing surface is a Swiss-made Merging Technology Pyramix digital audio workstation capable of recording and editing audio on both SACD and DVD-A resolution level. The Pyramix system is complemented by a Merging Technologies VCube hard-disk based video player/recorder designed specifically for audio post production. The 5.1 Audio Post rooms are equipped with a TC Electronic M6000 mastering processor offering numerous features like up-sample limiters, multiband processors, up/down conversion, George Massenburg equalizers and other tools.

A full surround sound encoding, decoding, quality control and monitoring chain by Dolby is available in these rooms as well. Both multipurpose mixing rooms are outfitted with Yamaha DM2000 digital production consoles and PMC audio monitors. Video and film content are displayed on 42-inch Panasonic plasma screens in all control rooms.

I found this to be a demanding but exceptionally gratifying project. We were fortunate to collaborate with an extremely knowledgeable client, Thierry Bonvin, head of the TSR Post Production Audio Section. He had an excellent grasp of the technical issues and helped John Storyk and I to provide the station with optimal solutions to each issue that arose. And the fact that our European headquarters is so conveniently located to this project greatly expedited the logistics of site visits.

John Storyk noted that TSR was on our active project list for over two years. The fact that the audio wing was not only renovated, but moved to a totally new space in the building, and that the station remained in active production during the process lent some increased complexity to the assignment.

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