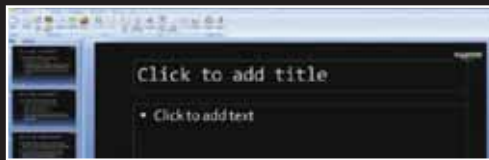


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**Glittering delights:
Swiss Palace receives AV facelift.**

Chris Fitzsimmons reports on a technological face-lift for the historic Federal Palace in Berne, Switzerland. Consultant WSDG engaged installer Kilchenmann AG, under project manager Urs Hirsbrunner, to fulfil a design concept produced by its Basel office.

Glittering delights



A

A. The sandstone Federal Palace has stood for 100 years

B. The new technology has been blended as much as possible into the building's fabric



B

Switzerland's Federal palace is a hundred-year-old edifice that has remained largely untouched since its construction at the start of the 20th century. However, following a four-year period of renovation, its classic sandstone façade now conceals building services and technology facilities worthy of a third millennium parliament building.

The awarding authority, Bundesamt für Bauten und Logistik (lit. Federal office for buildings and logistics) appointed Aeibi & Vincent Architekten AG with a mandate to integrate modern technology within a faithful restoration of the original building.

WSDG were then brought on board, under the leadership of Dirk Noy, in the company's Basel office. "The first contact we had was about four years ago," explained Noy. "It was an enquiry about a study of the existing system – an evaluation to see what the existing system can still do. Their first idea was to re-use that system, and maybe modify some minor elements."

The systems in this case refer to the sound reinforcement system in the National Council Hall, which is the main debating space of the Federal

Palace, and also audiovisual systems located in the numerous committee and conference rooms elsewhere in the building.

"The entire building was in a state of reconstruction for about two years. Everything from HVAC systems to washrooms were being upgraded, and this presented an opportunity to redo the electrotechnical systems too, with the wiring redone at the same time," he continued.

"We were then assigned to study the electro-acoustics of the main space, and using auralisation techniques were able to convey very dramatically our design intent to the client."

The legacy system up for replacement was a centrally hung, horn loaded solution. "Not a pretty sight," chuckled Noy. "The TV people really hated it because they couldn't shoot from the balconies. However, for a fifteen-year-old system it didn't sound too bad, as you can see from our STI histogram (see diagram). The old system had a mode STI of about 0.52 and the new one improves that up to around the 06.3 mark. That's a nice improvement."

The replacement system designed by WSDG uses the directivity control

provided by line array technology. Two hangs of Nexo's GEO 8 enclosures are located on either side of the centrepiece mural and driven by Lab.Gruppen C-Series amplifiers.

"The top element of each array covers the very back seats of the chamber, and the lower element is aimed carefully so that it doesn't hit the microphones in the chairpersons' positions. To provide coverage to those positions, we instead installed a kind of stage monitor arrangement on each desk. We used custom-built Stoll Audio Picoline speakers, also powered by Lab.Gruppen amps. They are only about 1" square, really discrete."

WSDG also used the same, very discrete, speakers to provide sound reinforcement to the balcony areas.

Opting to retain the existing Schoeps cardioid microphones, and custom built mixing solution, the consultant added some additional feedback elimination in the shape of a Bosch Plena frequency shifter. Additional DSP and audio distribution is performed by BSS Soundweb processors.

Outside of the National Council Hall, Kilchenmann also installed audiovisual equipment in five

Tech-Spec

Audio
AKG CS2 Conference system
Beyerdynamic SIS 120 translation system
Biamp AudiaFLEX DSP, EXPI, EXPD expanders
Bosch Plena frequency shifters
BSS Soundweb BLU160 DSP processors
Duran Audio DC-180 loudspeakers
Lab.Gruppen C-Series amplification
Marantz PMD 560 CF recorder
Nexo GEO 8 Loudspeakers
Sennheiser SZ-1029 IR transmitter
Stoll Audio Picoline loudspeakers
Symatrix ZoneMix 760 DSPs

conference rooms. The largest of these, known as room 301, is located in the roof space of the palace and is blessed with an amazing stained glass back wall. It caters for around 100 delegates including the chairman.

Here, from an acoustic perspective there is a lot of glass to deal with. Not only is there the impressive image at the back, but also windows on each side, which hide the translation and conference control booths. For this reason WDSG specified Duran Audio Intellivox DC-180 units to ensure minimal reflected sound.

The seamless custom integration of a flush mounted AKG CS2 conference solution, with its own loudspeakers, and also transcription points for secretaries increased the complexity of the system in room 301 and the other conference spaces.

The recording of meetings for reporting reasons was one of the

most important functions of the room as Dirk Noy explained: "They come into the meeting with a laptop, which they plug in at a dedicated seat. Everyone has the same laptop and software, and as a backup there is also a Marantz PMD 560 CF recorder. Both units record at the same time and there is even a UPS for each. If everything else fails the reporting must not, this was made very clear to us by the client."

Distribution of audio within the room was carried out over a Cobranet network, using Biamp's AudiaFLEX platform. As part of this Biamp EXPI and EXPO mini expanders were located around the room providing endpoints for the translation solution. Language options available from the Beyerdynamic SIS 120 units include French, German, Italian and a reserve channel.

A trio of Symetrix ZoneMix 760 units cover DSP for feedback

elimination and an audio mix-down for the recording units.

The video presentation system centres around a Sony VPL-FH300L high definition projector. This was selected due to its near silent performance and projects a VGA feed taken from an Extron Crosspoint 128 Ultra matrix. Sources for the projector include a TV tuner, Marantz DVD player, room camera, a Wolfvision Visualiser and a Sony multimedia PC. All of these are displayed on a motorised HKS Congress screen. This retracts completely invisibly into the wood panelled wall thanks to an ingenious custom mechanism.

For overall media control, Kilchenmann have employed AMX's Netlinx system. A NI4100 system controller sits in the main rack, governing everything from video source switching to the conference system.

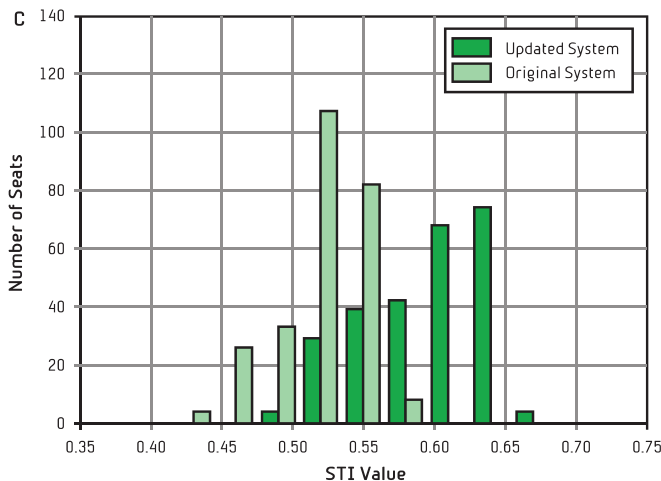
The conference system itself can operate in two modes. For smaller sessions, it can be set to operate in a simple, self-controlled mode where delegates use an AMX NXT touch panel to control proceedings. In normal use the whole system is managed by an operator in one of the translation and control booths.

In the other four conference rooms (each catering for around 60 delegates), a similar but less complex system is installed. There is no translation functionality, and as they

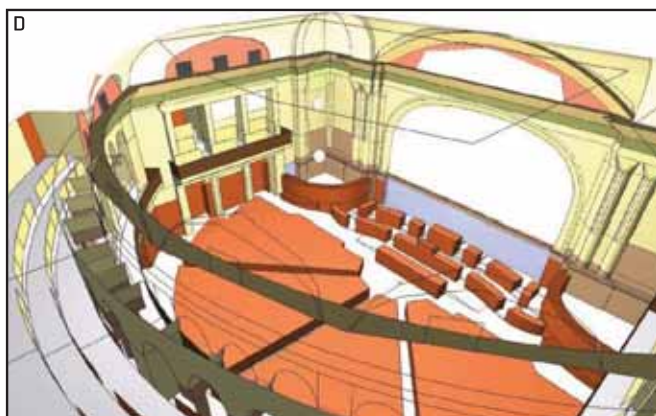
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Tech-Spec

- Video**
 AMX NI4100, NI3100 control processors, NXT series touch panels
 Extron CP 128 Ultra, CP 84 Matrix switchers, video scalars
 HKS Congress motorised screen
 LG-Philips 45" LCD displays in custom housings
 Magenta Infinea DVI extenders
 Projecta Elpro projection screens
 Projectiondesign F30 projectors
 PureLink 36x36
 Sony VPL-FH300L projector
 Wolfvision VZ-57 visualisers



C. Speech intelligibility in the National Council Hall comparing the old and new sound systems



D. 3D acoustic model made for the auralisation analysis of the Palace.



E. Digital signage in the corridors of power

CASE STUDY Federal Palace, Switzerland

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► are smaller spaces sound reinforcement comes from Tannoy loudspeakers located behind the Projecta Elpro screens (fixed). The projection solution is projectiondesign F30s in these cases, which are fed from a smaller Extron Crosspoint 84 matrix switcher.

Of note throughout these conference and committee rooms is the need for privacy. There is no hard wiring between any of the rooms, to ensure there is no possibility of eavesdropping on private political sessions. This was a legal requirement. It is for this reason that the wireless distribution in room 301 was done using Sennheiser infrared as opposed to a radio solution – there is no possibility of the signal bleeding outside the meeting room and being intercepted. This sadly also meant that no induction loops could be installed.

Aside from the chance to upgrade

the audio and media systems in the meeting spaces, the parliament also took the renovation as an opportunity to improve the general facilities. The construction of a new visitors' entrance allowed them to separate parliamentarians from members of the public and press for security purposes, but also necessitated the implementation of a sitewide digital signage and information solution. Kilchenmann also won the contract to provide the system at the back end of 2008, designed by WSDG.

Andre Fluri was responsible for running this part of the project and described the solution he installed: "We're not using a traditional signage product, instead we have a DVI distribution system running through a PureLink 36x36 DVI Matrix. There are a total of 16 play out PCs as sources, running bespoke software, and we have a total of 29 displays located throughout the site. These are 45" LG/Philips LCDs in custom enclosures that we designed and built ourselves."

To extend the DVI signals through floors and corridors, Kilchenmann employed a hybrid fibre and Cat-5 solution using Magenta Infinea Rx / Tx units to carry the signal between floors over fibre, and Cat-5 once at the appropriate level.

The reason they opted for a DVI / PC solution was for flexibility of content. The parliament can show simple schedule information, or welcome messages but for special events full HD video and accompanying audio can also be sent to any of the displays in the network. The bespoke enclosures were part of

the requirement from the architects for an attractive solution. They contain custom-designed convection cooling, power electronics and a very small number of fans to keep them quiet.

In total, the renovation project has gone on for almost five years, Kilchenmann began work in 2007 on the conference rooms and then installed the new National Council Hall system in 2008. The digital signage system was commissioned in March 2009. Both Dirk Noy and Andre Fluri agree that the most challenging aspect of the project was integrating the new systems into the fabric of an old building.

"The cabling was quite difficult, getting it to our displays through the floor etc. Fortunately the electrical contractor did most of that," said Fluri.

"We didn't want to hide everything," added Noy. "We wanted it to be part of the architecture. There was a lot of dialogue between us as the integrator and the architect. The technology itself was not too challenging, but we only had a total period of five months for the main hall for example. So there were sandwiches of two months of installation then one month of operation. Clearly they couldn't shut down the whole parliament, so at the end of each of those two-month work periods, we had to have a complete operating system in place. We therefore left as much of the original system in as long as possible."

"Overall we are very happy," concluded Fluri. "The customer has given us very positive feedback."

Room 301 had a lot of glass for the acousticians to deal with. The Sony projector blends in nicely.



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