



Presenter Esther Maycock signs programme content for listening-impaired viewers in Red Bee Media's Signing Studio 2.

A high-definition Signing Studio for Red Bee Media

ATG Danmon is one of the world's most successful providers of high-end reliable and easy-to-operate integrated systems for broadcasters and programme makers.

Active in Europe, Asia, Africa and the Middle East, ATG Danmon is part of the Dan Technologies Group which operates from offices in the United Kingdom, Germany, Denmark, Norway, Sweden, Vietnam and Dubai.

Radio broadcasting long ago proved its worth as a highly accessible source of information and entertainment for listeners with impaired vision. Television is increasingly performing a similar role for partially or severely deaf viewers. The most popular option is sign-language delivered by a presenter superimposed into part of the displayed image, often incorporated in daytime news bulletins. In Britain, programmes containing sign-language overlays are often transmitted at night for capture to personal video recorders.

During the summer of 2005, ATG Danmon was asked to equip a Signing Studio for Red Bee Media at the Broadcast Centre in London's White City. The installation was built in 2003 to cater for the future needs of the media industry.

Red Bee Media is the largest playout and channel management business in Britain, providing services to a number of broadcasters including the BBC, UKTV, Channel 4 and FIVE. Red Bee Media has over 1,400 staff and annual revenues in excess of £1,200 million, and is rapidly expanding overseas, opening offices in France, China, Singapore and Australia in 2007.

The first in-house signing studio (now designated Signing Studio 1) proved a highly successful resource. By the summer of 2007, it was operating 18 hours per day. Red Bee Media had meanwhile begun playing out the BBC's HD trial and decided that the time was right to invest in a new facility able to serve

emerging high-definition channels as well as the increasing amount of SD activity.

Camera and prompting

Signing Studio 2 is located adjacent to Signing Studio 1 and has an identical floorplan which consists of a 5 x 2 metre control room with a double-glazed window looking through to a 5 x 5 metre studio. A Sony HDC-X310 camera with Fujinon XS-17x5BERM zoom lens located in a corner is angled towards a blue cyclorama, making maximum use of the available floor area. Green, black and white backgrounds can also be used if required.

The presenter is chroma-keyed, resized and superimposed over a stationary, moving or black back-ground. The HDC-X310 camera was selected on the basis of its quality and stability as well as its compactness. It is normally used in fixed position on a Vinten Vision 100 fluid pan and tilt head supported by a Vinten two-stage tripod with lightweight spreader.

The camera communicates with the control room via a studio wall box equipped with an SC fibre camera connector, four video BNCs, four audio XLRs and a data port.

A BDL Autoscript WinPlus prompter with 12 inch flat screen in mounted immediately in front of the Sony camera. The signing presenter also has eye-level view of two 30 inch Philips LCD panels showing source programme or programme-plus-presenter.



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An additional panel provides an alternative view of the prompt script to the presenter's right. The studio effectively has three staff: technical operator, prompter and signer. For pre-recorded content, Red Bee Media employs deaf signers working from a subtitle feed which is converted into a script to feed the teleprompter. For live news, hearing signers are employed to perform simultaneous translation. The prompt operator sits just out of shot in the studio.

Lighting

The lighting rig was installed in co-operation with Broadcast Lighting Systems. A Balcar fluorescent lighting system on a modular grid was chosen for its proven reliability, high optical efficiency and low operating temperature. Black carpet tiles prevent stray reflection from the floor. Lighting is controlled via CPC DP27608 software running on a PC in the control room, individual settings being monitored on a 19 inch LCD immediately in front of the operator. The lighting grid also provided a useful structure from which to suspend a Unicol bracket holding one of the LCD monitors.

Control room

Two Custom Consoles 20 U equipment bays on castors are located behind and slightly to the right of the control room operator. The equipment bays are grey-spray finished MFD to blend in with the blue control room walls. They accommodate two Sony DVW0M2000P Digital Betacam VTRs plus an HDW-D1800 with Digibeta/IMX playback and an HDW-M2000P

with Beta-SP/Digibeta/IMX playback. The VTRs are ancillary to Red Bee Media's predominantly server-based activity, allowing tapes from clients to be ingested to disc or simply processed straight back to tape. An Omneon MediaDeck disc server with a total 6 terabytes of storage shares the VT pod and can source from or feed the main Red Bee Media server network. In-pod picture monitoring can be performed using a Teletest triple-LCD monitor unit.

A Sony MVS-8000 combines the roles of vision mixer, DVE, editor and HD router. It is equipped with an up/down converter, editing keyboard and mix/effects controller and routing control panel. The MVS-8000 was chosen both for its compactness and its exceptional scalability including the ability to upgrade simply by installing additional option boards. The HD/SD version supports 30, 29.97, 25, 24 and 23.976 frame/s progressive scan. Fine sizing and positioning of the overall signing image are handled using the DVEs within the Sony MVS-8000.

The main sync pulse generator is a DK Tech PT5300 SD VariTime unit with dual independently timeable black-burst outputs. This is augmented by a PT8611 HD tri-level sync generator, PT8612 quad HD-SD test signal generator and PT8639 SDI test signal generator. Video monitoring centres on a 42 inch Barco LCD panel fed by a 12-source Miranda Kaleido RCP picture multiplexer. Two 17 inch JVC CRT picture monitors are located to

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HD Signing Suite control room.



*Andy Eisner and
Hugo Allen,
Red Bee Media*



the left of the Barco LCD. A Tektronix WVR7110 rasterising signal monitor is used for signal quality assessment. This is equipped with dual HD passive-loopthrough inputs as well as embedded audio and SD monitoring options.

An Eyeheight safeEyesMDi multidefinition safe-area cage generator is used to ensure that the signing presenter remains visible on 4:3 as well as 16:9 receivers. An Eyeheight legalEyesMDi legaliser is used to prevent stray highlights, for example, generating out-of-gamut colour components which might cause signal distortion further downstream.

The VT clock is a Courtyard CY260HD HD-SDI unit with timecode/stripe generator, audio tone generator and control keyboard. This is equipped with three HD-SDI video outputs.

Video signal distribution is via an Axon modular system centred on an HD-SDI reclocking amplifier, dual channel HD-SDI to SD-SDI/composite downconverter, HDS10 HD-SDI/SD-SDI downconverter and SD-SDI/HD/SDI upconverter. Axon fibre converters were also installed, linking to Red Bee Media's central control area.

Audio

Studio acoustics were obviously not an issue given the images-only application. In the control room, two Genelec 8040A active compact monitors are used for near-field sound monitoring. These are mounted on ATG loudspeaker brackets and fed by an ATG LS-CD volume control and cut/dim unit. The Genelecs need no introduction, being practically the industry standard for television sound monitoring in studio control rooms and mobile production vehicles. An Axon HAS10 is used for HD/SD-SDI audio processing in combination with an HEB20 embedder and

SDB15 extractor. Talkback is via a Composite Video CMLS2 master station and CMLS1 single-circuit loudspeaker station. Audio distribution is via BES jackfields, a Ghilmetti patch panel, and ATG/Bryant Krone frames.

Workflow

Constructing a new facility is almost always easier than upgrading an existing installation as factors such as workflow interruption are less applicable. Timescale from concept to commencement of Signing Studio 2 design was about one month followed by three months from design to completion including three weeks on site.

As with Signing Studio 1, Signing Studio 2 proved a routine and straightforward project with no complications. JCI (Red Bee Media's service partners in the Broadcast Centre) performed the necessary changes to air conditioning and power supplies.

The future

Signing Studio 2 has proved itself as reliable and easy to operate as Signing Studio 1 and is fully meeting its design goals. As for the future, human signing may be superseded a few years from now by data-driven avatar graphics on the basis that these would make more efficient use of bandwidth and be easy for viewers to switch into or out of view.

In reality, there are two strong reasons why signing studios will continue to be used in preference to animated graphics. Firstly, a skilled human signer communicates using a combination of mouth, hand and finger movements, which would be impossible to replicate using present-day avatar technology. Secondly, human signers often become familiar figures to their audience in much the same way as any skilled programme presenter. Red Bee Media's Signing Studio 2 looks set to become, sooner or later, just as intensively used as Signing Studio 1.

Design team

Key people involved in the design on the Red Bee Media side were Project Manager, Hugo Allen, and Technical Manager, Andy Eisner. The ATG Danmon installation team included Project Director Dave Whitaker, Systems Engineer Jon Brewer and support technicians at ATG Danmon's headquarters in Letchworth, Hertfordshire.

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