

THE RECYCLED TELEVISION STUDIO

Bob Anderson attends the re-opening of TC6

Despite ever increasing competition, despite Government threats of privatisation, despite press reports that staff morale is at its lowest ebb ever, despite rocketing prices and a fixed licence fee, BBC Television is still flourishing and still determined to continue with its duty to serve the viewing public and, above all, to continue to make and broadcast quality programmes. Most are made at Television Centre in London where some 10 studios of varying sizes are available, and organised into a comprehensive television factory. TVC first opened way back in 1960 and, like all factories, has grown and altered in response to the demands made on it. A regular routine of refurbishment deals with each studio in turn on a ten to 15 year cycle. Two years ago the largest studio, the 10,000sq.ft TC1, was re-equipped. In 1992/3 it was the turn of the 8,000sq.ft TC6. L+SI was invited to report on the re-opening.

Producer Choice

The modern BBC is a severely cost-conscious organisation, but enthusiastically and professionally eager to accept the challenge of the new strategic policy embodied in the expression 'Producer Choice'. Producer Choice means that the creative teams making programmes for the BBC can buy their resources in the open market. In the old days administrators allocated a BBC studio for each programme, and a notional standard cost was automatically deducted from the producer's budget. Now the producer can compare the costs of all available studios, electronic or video, both inside and outside the BBC, and choose the best suited to production needs. As a consequence, the managers of TCS have to make their facilities as attractive as possible so that they can compete effectively in price, and so make a fair return on capital expenditure. TC6 is the first studio to be renovated under these considerations.

The Problems

One very important job had to be tackled immediately. Fire protection containing asbestos had to be removed safely. Then decisions had to be made about new technology. The BBC broadcasts in the PAL analogue 625 colour system with NICAM stereo sound, but wide screen and digital standards may be authorised before too long, so should they be anticipated?

Digital techniques are also becoming available for many other purposes offering improved reliability and stability, hence reducing the maintenance load. So, should these be considered? Lighting control has used digital techniques since 1968 but would the extra cost of digital dimmers make sense? Motorised scenery and lighting rigging systems have long proved their worth but needed safety improvements and overhaul unless something better could be found.

Decisions

The BBC is very experienced in answering the unanswerable. Consultation with production staff suggested objectives. Then,



The lighting and vision control room in TC6: the Galaxy console is at the right with the channel mimic and BBC studio mimic monitors above and optional Pulsar effects control on the side desk. The lighting director sits at the central position with vision balance operator and system engineer at his left.



TC6 - in full working order.



All systems go.

comparative cost analyses, reliability predictions, work scheduling forecasts and many other factors all had to be combined to produce an acceptable action plan, a budget, and an opening date. Some of the decisions that may be of interest to L+SI readers were as follows:

The video system uses serial digital technology for quality and reliability - a significant step into the future. Six Thomson Sportcam CCD Cameras, and a 24-channel Thomson digital mixer are the core of the picture origination system, supported by a dual-channel Questech Charisma Digital Video Effects unit with Cleo Option 3, a Rank Cintel Slide File and an Aston caption generator. Pictures are monitored after conversion to PAL format and recorded on local Panasonic D3 video recorders backed by S-VHS machines. All monitors in the production control room are colour.

The audio system is a Calrec Q Stereo 60/8 analogue mixer, digital technology being too expensive here. Lighting control is fully digital using DMX to link a Strand Galaxy Nova to ADB digital dimmers, saving some 2,000 wires between control and dimmer rooms. The luminaires and hoists remain as before, offering proven facilities standard at TVC, but were thoroughly reconditioned. Audience seating is based on a construction kit system, rigged to meet each requirement. The studio control rooms, usually on a floor above the studio in the BBC, were moved to the ground floor. A self levelling resin was used for the studio floor.

The Lighting Rig

The BBC has always embraced the need to provide studio lighting to the highest standards. Lighting directors are well trained and well paid and studio equipment is of the highest quality. The saturation rigging system - special pole operated multi-purpose luminaires permanently rigged in every position that they may be needed - was long ago proved to make good artistic and financial sense.

No surprise then to find that the existing 202 short motorised lighting hoists and 96 scenery hook winches were retained and that renovation to replace worn parts, carried out by Metreel of Nottingham, was found sufficient. The controls, already fitted with overload and slack rope protection, now send indication of these faults to the control panel to speed remedial action. The 188 multi-purpose luminaires (the Lee-Colortran version) and an allocation of more specialised lamps were also renovated, this time in-house. Age, and the complications of removing asbestos and replacing acoustic treatment required replacement of all studio wiring.

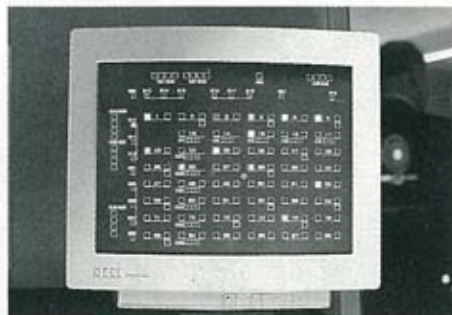
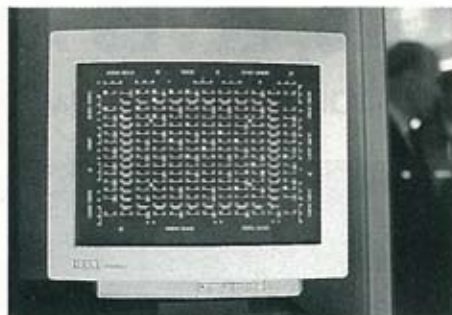
Dimmers

The essence of the saturation rig is that every lamp should be instantly available and adjustable. No time should be wasted in repatching or finding extension leads. Each of the 202 motorised lighting hoists has a circuit for its multi-purpose lamp and two more for add-ons. Then add generous wall sockets for cyc lighting and specials and you need 648 dimmers. The BBC specified digital dimmers to take advantage of reliability and fault reporting and ADB offered their Eurodim 2 system to win the contract.

Eurodim dimmers accept DMX data and fire the thyristors without intermediate analogue conversion. Duplicate DMX inputs and decoding, built-in multi preset back-up, a wide choice of dimmer laws, partial mains compensation, broadcast quality filtering, residual current detection and plug-in dimmer modules are provided. In addition, micro-processors in the dimmer racks monitor supply voltage, phase current, dimmer load current, circuit breaker trip and rack temperature and report to the control desk and to a dimmer room data logging computer which analyses and keeps records of all faults.

Lighting Control

The chosen installed control system is a Strand Galaxy Nova, following a long history of satisfactory use of Galaxys elsewhere at TVC. The Nova offers all the usual Galaxy facilities, including integral back-up and control of



The electronic studio mimic: The DMX Data Display (top) developed by the BBC development group for a PC486 computer, shows all the 648 dimmed sockets in the studio. Each 'square' can show five states of brightness or warn of a dimmer fault. Diamonds show houselights. To increase clarity the operator can zoom in on any quarter of the display as shown below.

colour scrollers. Output is on two DMX cables each handling about half the dimmers. To allow flexibility, and because other types of control boards can offer advantages for chases, effects and pop-lighting, there is space in the control room for locating up to three portable effects boards alongside the Galaxy operator. Two more DMX cables connect these to the dimmers where the outputs are combined on highest precedence logic. To simplify operation a 3x2x512 LSC Softlink DMX patch unit allows renumbering of the add-on controls to match the studio system. This also provides back-up for the main data links. The DMX system can also be patched to sockets on selected hoists in the studio to control moving lights and other DMX protocol effects direct from the control room.

A notable innovation pioneered in TC6 is replacement of the traditional BBC mimic diagram with a VDT display giving the same information. It can be disorientating working in a control room with no view of the studio lamps and effects, other than through the cameras, so the BBC long ago decided to fit a scale plan of

the studio near the console with a pilot lamp for every dimmed socket so that the lighting team could see at a glance which lights were on and where, and their approximate brightness. This required thousands of lamps and wires and, to be readable, the mimic had to be 1m or more square. In TC6 BBC software designers have provided a system to replace this with a high quality colour VDT graphic presentation showing the same information obtained from the DMX link, plus fault status. This locates alongside the Galaxy monitor. Digital data about lamp brightness is returned from the dimmers and kept in step with the lighting operation. Warnings of faults are updated every eight seconds and full details can be accessed either on a fault status page, or on a similar display in the dimmer room or on a paper print out.

Another BBC TC6 innovation is to link the Strand Galaxy hand-held remote control to the lighting designers radio talkback instead of using the less reliable infra-red system. The lighting director can now choose whether to use speech to ask the console assistant to make adjustments, or to take direct control, or both at once, since the system automatically separates speech from data.

Comfort

Essential to the Producer Choice concept is that one aspect affecting this decision will be that they will want a pleasant, as well as an efficient environment. This was one reason for moving the control suite to studio floor level. The previous route up and down the studio stairs wasted time and was very tiring for those, like the lighting director, who had to make the journey dozens of times a day. The new control suite, the usual separate production, sound, and lighting and vision rooms are spacious, ergonomically laid out and pleasantly decorated in a modern commercial style.

Credits


After much re-organisation recently, BBC television now runs its own affairs and this includes project management and engineering: Television Engineering and Project Services is a 'fully trading business unit within the BBC internal market'. All work in TC6 was co-ordinated by this team, together with BBC Building Design and Management Services who provided the Project Architect, Environmental Services Consultant and Building Works Supervisor. Philip Drake Electronics was chosen for the installation of the serial digital component vision system and Calrec for the audio and communications. ADB and Strand Lighting carried out the lighting contract.



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