



ENGINEERING

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The Quarterly for BBC Engineering Staff

Please Circulate

New Digital Sound Mixing Desk



On the 16th September, BBC Radio took delivery of the all-digital sound mixing desk from Neve Electronics Ltd of Cambridge. Accepting the desk the Deputy Managing Director of Radio, Charles McLelland, said "The new desk is a major step towards the all-digital circuit from microphone to receiver. It offers greater flexibility than conventional analogue desks, and will bring even better quality to BBC Radio pro-

grammes". The following day, studio managers and other staff had the opportunity of inspecting the installation.

The desk is the result of a collaborative agreement between Neve and the Engineering Research Dept, whose COPAS digital audio processor has been further developed by Neve to form the basis of the new console.

The new desk has been

fitted into a specially designed articulated trailer which has expanding sides to improve stereo listening conditions. The desk controls can be dismantled from the trailer and connected back to the central processor via 150m of fibre-optic cable. "This will enable the equipment to be used across a wide-range of programmes" said Controller, Operations and Engineering, Russell Fletcher.

The desk is fully assignable and has been ergonomically designed jointly by Neve and the BBC, after an extended period of trials with operational staff. A large number of experimental features have been included in the design of the desk, i.e. assignability, fibre optic communication, and digital processing, mixing and routing. The control surface, with a number of novel features, provides:-

Formats
Four formats are pre-programmed into the

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Editorial

Sharp-eyed readers will have noticed that the type-face and layout of this edition of "Eng Inf" is different. New technology has taken over, and a word processor is being used to typeset the copy in place of an old mechanical composer. Although the word-processor speeds up the process of typesetting and layout, this is offset by the better justification properties and print quality of the composer. Eventually the word-processor will be able to produce better copy than this, and I hope that you will bear with us until then.

Engineering Ties

I have just ordered a further batch of BBC Engineering ties in blue or maroon. Available in 6-8 weeks from 707, HWH, at £2.75 each.

An Apology

In the production of a magazine such as "Eng Inf", it is inevitable that we will make mistakes, and not give full credit where it is due. I must, therefore, apologise to the engineers who may have made a major contribution to a project, and yet see someone else getting the credit. The fault is not entirely ours though, since we are only as good as the person who contacts us with the story in the first place. If he or she neglects, or forgets, to mention the involvement of other staff on the project, then unless we bypass the contact, there is no way of knowing who else was involved. I can see but two solutions to this

dilemma: one we omit all credit, but in the process upset everyone; or two - you make sure that you are the person to contact us with the story!

If you wish to take advantage of this offer, contact me on LBH 5432, or drop in to see me in room 707, Henry Wood House, my door is always open.

Alan Lafferty

BBC ENGINEERING SOCIETY

By Tony Berry, Chairman
BBC Engineering Society

The BBC Engineering Society is a section of the BBC Club and aims, to quote from its constitution, "to meet the needs of those with an interest in engineering and scientific matters by arranging lectures and visits and promoting social activities".

We do indeed set out to organise events which have a wide appeal and so our lectures for example, are not usually directed only towards engineers, but are very often of general interest even though they have some technical content. The programme of lectures for the coming season will comprise the following:-

16 October	85	Austin
Rover-Robot	Car Building	
12 November	85	Television
Audience Measurement		
17 December	85	National
Film Archives		
21 January	86	CEEF AX
18 February	86	Communications-past, present and future
15 April	86	Domesday Project.

Visits to organisations of technical/general interest are arranged at intervals throughout the year. In the past these have included: car manufacturers, breweries, museums, research institutions, Tower Bridge, National Theatre, a coal mine and even a farm. A number of visits are currently being planned, which we hope will include the Royal Naval Ordnance Museum at Southampton and London Airport.

Further details for all these activities will be publicised in due course, so keep an eye on Club noticeboards. Better still, join the society, so that you receive full information direct. The annual subscription is only one pound.

If you would like further information, please contact the Hon. Treasurer, Robin Caine (211 Western house, BH 4627) or me (A2004 Woodlands, TC 3701).

Transmitters Opened

The following transmitters have opened/changed since July:-

Uhf television	
Machen Upper	Gwent
Corris	Powys
Llangybi	Dyfed
Bonchester	
Bridge	Borders
Tregaron	Dyfed
Fiunary	(Mu 11)
Norwich	
Central	Norfolk
Stamford	Lincs
Bow Street	Dyfed
Vhf Radio	
Peterborough	Cambridge
Londonderry	
Brougher	Mt Fermanagh
Stranraer	W Galloway

Digital Desk Continued from page 1

desk to enable standard types of desk to be selected immediately upon switch-on. It may be configured as two multi-track desks, an OB desk, or a studio desk. Further set-ups can be configured by using the "assign" panel, then stored on the operator's own disc.

Total free grouping

Any fader can become a group master and there is no theoretical limit to the number of groups formed.

Mobility of faders

Faders, singly or in groups, can be "moved" about the desk. This means, for example, that a sixteen fader "band mix" could be set up on the central faders during the sound check. This could then be moved to the ends of the desk, whilst a "support band mix" could be done centrally. The main mix, previously set up, can then be recalled to the central position, the channel selections unchanged.

Stereo channels

Channels can be configured for stereo with common control to both legs. The "assignable facilities unit" allows fine imbalance to be corrected, but all other functions are controlled in tandem. This can be overridden by the "split" button which gives each leg its own channel strip and leaves only the fader in stereo.

Source naming

Each channel input can be labelled electronically

Laci Nestor-Smith (left), MD of Neve Electronics, presents a floppy disc to Charles McLelland DMDR, as part of the handover of the all-digital control desk;

with the aid of a four-character 15-segment display. Thus any input, its associated fader, and any processing control modules assigned to it, all bear the same label which will "follow" the fader if it is moved.

CONSOLE SPECIFICATION

The desk is based on 16-bit digital-to-analogue and analogue-to-digital converters, but at various points in the system the dynamic range capability varies. The input conversion is to 16-bit accuracy but is ranged manually (over an 18-bit range) by the use of a novel system whereby the channel fader a Iso control the input gain. A limiter prevents the analogue-to-digital converter from being overloaded.

The main mixing bus processing is to 32-bit accuracy to allow sufficient headroom for summing and the effects of extreme boosts of equal-

isation. This is truncated to 16-bits before the output stage.

A maximum of 128 mixed signals can be formed. Unless active processing is required on the combined signal, mixes are not formed until the final output stage. Thus, 'virtual' groups are created for group gain control.

VEHICLE

The Digital Control Vehicle (DCV) is articulated with tractor and purpose built trailer. The trailer was developed by Studio Capital Projects and CMA Coachbuilders Ltd, London.

The vehicle has three major areas:

Control Area

To give improved listening conditions the sides of the control area are expanded by hydraulic rams. The volume of

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