

STRANDLIGHT

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Our Authors

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The frontiers of studio lighting technology were extended by Strand's recent fully automated installation in Hannover, West Germany. A major package contract implemented over a tight six month programme included the world's first major studio installation of Strand's Precision Automated Lighting System. In addition the DM 2.7 million (£900,000) contract placed with Strand Lighting GmbH Germany by the German production company VTO 'Verleg Teresa Orłowski', covered design, supply, installation and commissioning of studio lighting control and dimmers, self-climbing hoists, structural steelwork, electrical distribution, cyclorama and drapes, tracks, retractable seating tiers and studio accessories.

Strand responded fast to VTO's request for a fully automatic studio lighting package and from the beginning involved as their partner for design, project engineering and co-ordination, Glantre Engineering of Reading. A comprehensive design proposal with presentation drawings was submitted immediately after the initial site survey and a contract placed shortly afterwards.

The building for VTO's Medienzentrums studio complex had originally been designed as factory and office space. During construction, a lease was acquired by VTO and the design amended to incorporate two TV studios Nos 1 and 2 of 680 and 260 square metres respectively, together with ancillary office and production areas. A totally separate freestanding steel structure was introduced to carry the studio lighting and scenery loads. Further design constraints were caused by the restricted working height of 7.6 metres between the studio floor and underside of the existing concrete roof beams. It was therefore decided to install the supporting structure for the hoists between the roof beams thereby gaining an additional 90cm.

The studio lighting installation was to be based on extensive use of motorised PALS remote controlled luminaires in a basic fixed rig configuration along with a semi-saturated layout of motorised self-climbing hoists. This would permit VTO's entire studio lighting installation to be handled on straightforward productions by a single person who would be lighting director, console operator and electrician all in one. For the fullscale light entertainment productions that are envisaged, the lighting complement will need to be increased to provide follow spot operators and other personnel.

The basic PALS lighting rig for Studio 1 consists of 36 5kW Pollux fresnel spotlights, 64 2kW Castor fresnel spotlights and 36 2.5/5kW Arturo softlights. The fresnel spotlights are fitted with motorised pan, tilt and focus while softlights have controllable pan, tilt and 2.5/5kW switching. Motorisation of barndoor shutter movement and rotation was considered desirable but not essential; barndoor adjustment by pole operation was chosen as a compromise.

The remote control installation includes a controller in the main lighting control room and a portable studio floor unit which, in practice, is being most heavily used. The PALS studio floor panel is installed in an integrated lightweight mobile trolley together with hoist and main lighting control remote units. A trailing cable system was selected in preference to

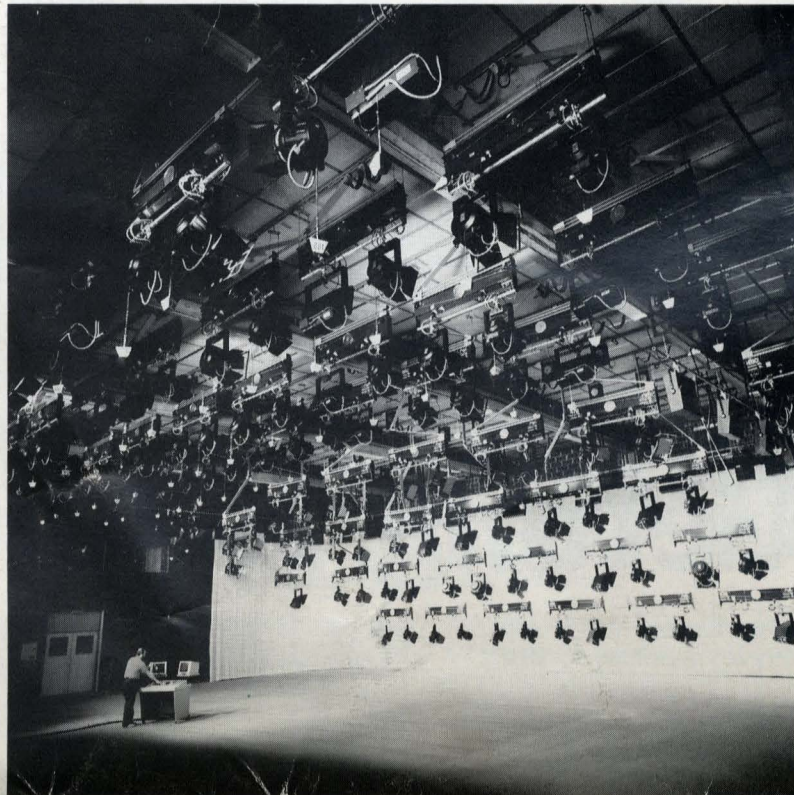
Hannover's Fully Automatic Studio Lighting System



Galaxy II lighting console with memory back up left and PALS control right



Galaxy studio remote control with integrated PALS control



Operation of hoists and luminaires from studio floor control. All lighting by Quartzcolor.

infra-red or radio remote control and a number of alternative socket outlet boxes are provided.

The PALS controller is based on an IBM Personal Computer with dedicated keyboard and serial line driver board. All the electronics are installed in a rack mounted version in the main lighting control room. Command and cue information are displayed on a high resolution colour monitor. Control software has been customised to suit the Medienzentrums installation with screen layout specially developed to mimic the studio plan, making the complete system very simple to operate.

While the main usage of the PALS system will be for rapid setting and focusing of studio luminaires, the controller permits cues to be stored and replayed to enable luminaire resetting or

special effects sequences to be carried out during a production. A further benefit is that for productions that repeat on a regular basis, the usual luminaire settings can be instantly recalled.

The absolute position of each function of each luminaire is recorded for every cue which is then recorded directly onto hard disc. Groups of cues may be copied onto floppy discette for backup and library storage. A single 20 megabyte hard disc stores over 5000 cues, a quantity well in excess of any conceivable user requirement!

The dedicated keyboard has cursor keys for positioning the lights, numeric keys for selecting addresses and groups and a range of command keys to record, edit and control the playback of cues. Consecutive

cues may be linked for automatic follow-on, or chased in a cycle.

The PALS sets fitted to the Quartzcolor luminaires each comprise a rectangular section steel yoke with heat shield, housing the motor drive assemblies and processor board with drive electronics. Movement of pan, tilt and other functions is provided by a DC servo motor coupled to a precision reduction gearbox. The output shaft incorporates an adjustable clutch to protect the luminaire from damage. The absolute position of the output shaft is measured by a potentiometer. Each head contains a powerful 16-bit micro-controller which decodes its own addresses, stores cue data, and controls the motors. The potentiometers are continuously monitored and the speed is adjusted with

changes in load and distance. The luminaires stop with a resolution of 1 part in 1000.

In addition to the PALS luminaires, in Studio 1 conventional Iris 4 main cyclorama lighting is provided with a quantity of Iris 2 units for the corners. Additional luminaires of various types for flexible application are provided including 60 Punchlites and 2 CID follow spots.

The 150 Kg capacity self-climbing hoists for Studio 1 are four wire type to comply with German safety regulations and incorporate 'flip-flop' folding cable trays. A three way PALS controller is fitted to each hoist. Also incorporated within each hoist are dimmed feeds for three luminaires together with hoist power and control cabling. A separate data cable handles the PALS control signals. While British studio practice has generally been to incorporate the motor control and contactors within the hoist, for Medienzentrums it was decided that these should be mounted in a separate hoist power rack installed in the dimmer room.

The hoist remote control for 72 lighting and 24 scenery hoists is a wall panel at studio floor level. This incorporates a mimic layout of the studio and all controls including a keypad for hoist selection and command. Facilities are available for group operation of hoists and for the memorisation of groups. A second control keypad is fitted to the studio mobile remote control trolley.

Lighting control for Studio 1 employs a 240 channel Galaxy II console with memory backup, two playbacks, preset masters, programmable effects and geographic mimic. The console is installed in the studio vision control room along with the integrated PALS control and electronics. A Galaxy studio remote control unit is mounted in the mobile studio trolley. The racks for the thyristor dimmers are of Strand Lighting Germany's own manufacture and in accordance with German electrical regulations. In total 12 racks have been installed, each housing 24 5kW plug-in thyristor dimmers; 240 dimmers supply Studio 1 with 48 for Studio 2. The dimmers used are PIP CS closed loop square law type with broadcast specification filtering.

Clearly, the next exciting development for automated studios will be the Strand Galaxy III generation of control systems with the capability to control and memorise all PALS functions as well as dimmer selections and levels. While it is technically feasible to incorporate hoist control as well, this would be undesirable from an operational and safety point of view.

The complete Medienzentrums studio electrical installation was designed by Glantre Engineering in co-operation with Strand Lighting's project management and carried out by a local sub-contractor. A main studio distribution switchboard is fed by a 1,000 amp 220/380V TPN supply from the studio substation and supplies dimmer racks, hoist power racks and all other ancillary services for both Studio 1 and Studio 2. Power distribution incorporates multicore cables laid on cable tray in accordance with usual continental practice. Studio primary steelwork and galleries were purpose designed to accommodate the extensive network of cable tray - an example of the hidden benefits that can arise from a package contract.

The smaller Studio 2 has only been partially equipped at present. A 48 channel Strand M24 memory system and dimmers are installed together with complete steelwork and power wiring infrastructure. A total of 15 self-climbing hoists and 30 or more PALS luminaires will be supplied at a future date.

For the main installation programme during March 1988, the site team was made up of more than 20 personnel of Strand Lighting GmbH and their specialist sub-contractors including four staff from Glantre.

This important installation in Hannover is already generating widespread interest within the broadcasting industry and could be a pointer to the future for clients who wish to adapt capital intensive rather than labour intensive studio lighting installations in order to achieve significant medium and long term cost savings.

Beam Me Up, Strand!



We introduce a completely new product to Strand Lighting - a low voltage Beamlite giving over a million Candelas.

Not every reader will be familiar with beamlights although Strand's pre-war Pagent and the Beamlite which was in our catalogue a few years ago were designed for the same purpose. But both these units used mains voltage lamps. A 1kw GES tungsten for the first and a 1kw TH bi-post cap down for the second.

The new unit uses a 1kw 24-volt internally crown silvered lamp - the Philips example is their number 7064 K/02. This lamp is the key to the very high output of the new Beamlite - no less than 1,130,000 peak Candelas.

Other manufacturers utilize separate transformers, or transformers mounted beside their units. Our rather elegant solution is an integrated design using a toroidal transformer behind the lamp but within the same housing.

Another design feature we are rather proud of is the arrangement for re-lamping. First, because of the very high amperage involved in a thousand watts at twenty four volts, lamps of this type do not

Strand's new 1 KW Beamlite.

Continued overleaf ▶