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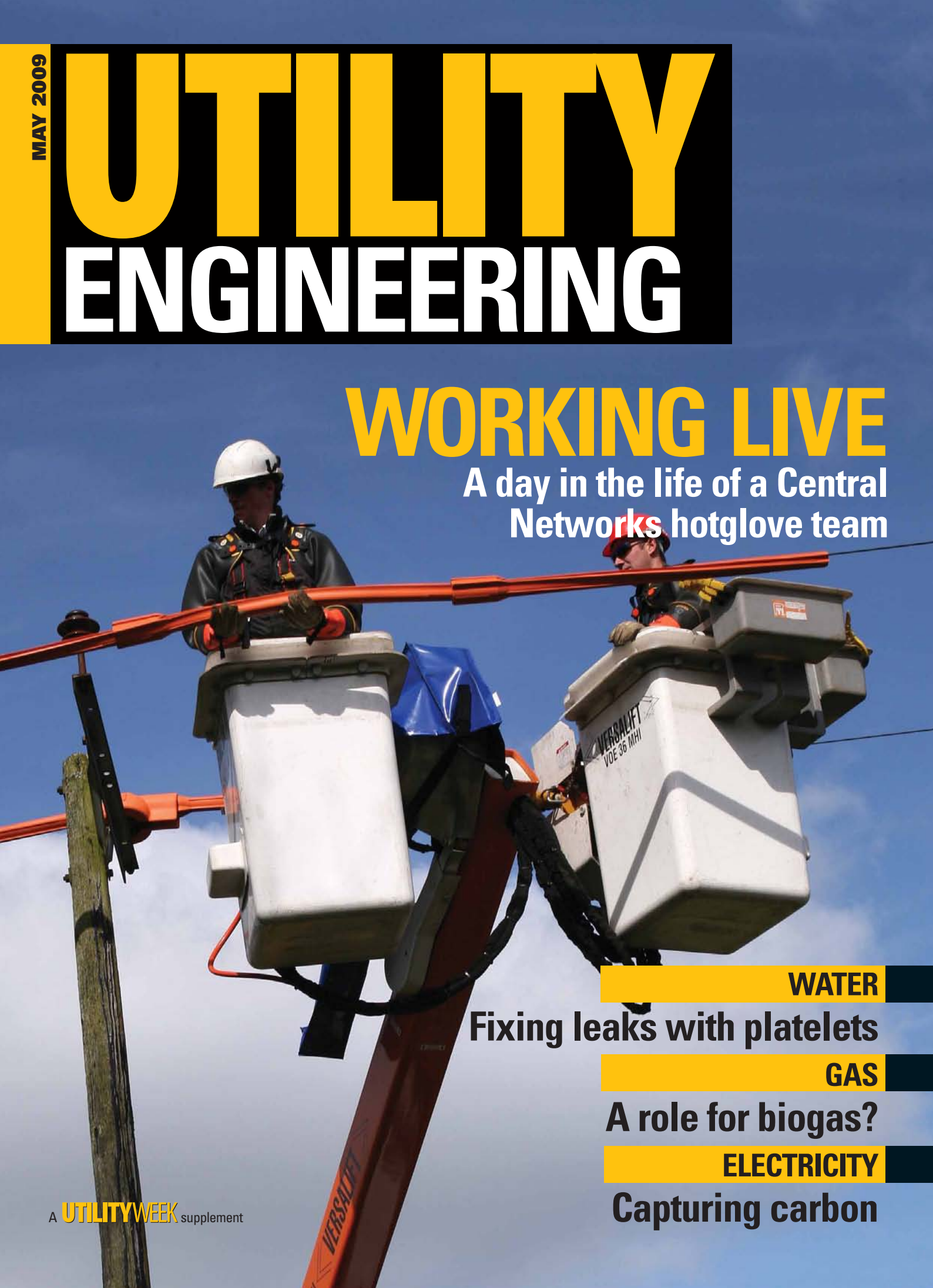
UTILITY ENGINEERING



WORKING LIVE

A day in the life of a Central Networks hotglove team

WATER

Fixing leaks with platelets

GAS

A role for biogas?

ELECTRICITY

Capturing carbon

A UTILITYWEEK supplement

Dean Stiles joins a Central Networks' hot glove team

LIVE LINE WORKING

Live working on electrical installations although widespread in North America is still the preserve of a select few in the UK. Central Networks, part of Eon, has nine hot glove teams that handled 1,152 jobs last year.

Live working is an expensive method requiring specialist equipment operated by trained, experienced and dedicated teams. But despite the cost, it offers Central Networks many benefits. "It about optimising the availability of the network without impact to customers," says Neil James, restoration and repair manager, for the Central Networks Gloucester Distribution Centre.

The company is contractually obliged to provide good customer service and reduce the number of customer interruptions which led it to look at alternative methods of working. Live working is an approach that many other distribution network operators have used to reduce the number of interruptions during pre-arranged work, Neil James says. Last year, live working accounted for savings in customer minutes lost of 7,573 minutes and customer interruption savings of 4,510 minutes.

Live working is carried out on a variety of tasks including tension insulator replacement, pin insulator replacement, conductor repairs, binder replacement, pole and cross arm changes, jumper connection and disconnection, installation of plant, flying sections, and temporary ABIs to minimise outage areas, tree cutting within the live zone and installation of bird flight diverters.

Neil James took *Utility Engineering* to meet one Central Network's hot glove teams: linesmen Andy Bynon, Brian Houghton, and Mike Wigmore. Also on site was Dave James, hot gloves project manager to explain Central Networks' approach to hot glove working.

The team was handling a routine termination that involved removing a redundant pole and a temporary switch fitted to enable a replacement transformer installation. "A big chunk of our work is moving equipment to suit landowners; poles in awkward places and the like. Often it's their own supply but we still need to minimise any disruption to supply," Dave James, says.

Part of the reason for this increasing demand to "hide" the power supply is people moving from urban to rural locations where overhead lines are more common but seen by new residents as inappropriate. "It's causing us a lot of work, and a lot of expense I guess," he says.

The job began much earlier with a written justification for live working. Regulation 14 of the Electricity at Work Act 1989 asks a number of specific questions in order for us to justify that the work can be carried out using live working methods. "It's necessary in all circumstances that a live-line justification be carried out to determine whether the work can be carried out," Dave James says.

"The approach is very different in North America where hot glove working is more of a tradition than here. We never started off doing that but we are going more that way even although health and safety regulation here does limit the range of activity for hot glove work," he says.

In this particular case, it would take far longer to complete the relatively simple job using shut down and traditional working, says James. It would also take a substantial number of customers off supply.

Before any work commences a member of the live working team undertakes a feasibility study to determine whether the work identified can be carried out using live working techniques. The team informs the job owner of the outcome, however, the team has the final say as to whether a job can be done using live working techniques.

Key tasks and responsibilities for a live line working team are to:

- ensure safety on site, including that of third parties, while work is undertaken
- liaise with the distribution control engineer when live working is undertaken on the high voltage network
- carrying out a tail-board conference on the day of the job to determine the procedure for the job. This procedure is specific to the site and the work to be carried out
- complete the work following the correct codes of practice, method statements, and specifications that apply
- advise the distribution control engineer of the condition the system in when work is completed.

A minimum of three people are required for hot working on overhead lines: two in the to carry out the task and control the working platform with a third on the ground as a dedicated observer. There are specific responsibilities for live working attached to the live working project manager and live working teams, Dave James says.

The live working project manager must:

- ensure safe working conditions for the teams
- perform advance site safety inspections
- ensure work instructions, plans, etc are adequate for the tasks undertaken
- ensure work is performed in accordance with the prescribed standards, procedures, rules and regulations
- ensure employees are competent, through proper instruction and training, to work safely
- ensure a sufficient number of staff are allocated to carry out the work safely
- carry out regular safety audits on sample jobs

Hot stick techniques are another method used by the company. Hot stick work involves the use of rods tested and approved to a higher rating and designed to be used in closer proximity to the work zone, but still outside the safety clearance zone. This approach to working allowed

"A big chunk of our work is moving equipment to suit landowners; poles in awkward places and the like. Often it's their own supply but we still need to minimise any disruption to supply."

David James

Strict health and safety limits hot glove work.

an increased range of activities to be carried out, however, in recent years, due to the restrictions of working from the pole and the physical effort involved, the comparable benefits have become quite small and have been restricted to minor operations such as jumper cutting.

Hot glove working involves staff working within safety distance zones and actually handling live conductors. The methodology combines the use of hot stick techniques to complement hands-on working. The range of work that can be carried out using hot glove techniques is extensive.

The justification for hot glove working is based upon the generic safety case. The technique requires careful consideration of all the safety aspects of the work to be carried out, the procedures and equipment used, and due to the nature of the work all staff undergo extensive training by world-renowned trainers from Canada who have been carrying out this type of work for over 30-years. And every five years all hot glove personnel undertake refresher training, Dave James says.

The UK is a long way behind North America, with live working still the exception not the rule for most companies. But the obvious advantages of the method when carried out with appropriate procedures and checks, suggests the technique will become more widely employed and for a wider range greater range of tasks.

Pictured left to right linesman Brian Houghton, Andrew Byron and Mike Whigmore.

Our day out saw the hot gloves team handing routine maintenance but part of their work is fault repair. Fault reports are fed to the Gloucester Road Distribution centre's computer system from the main control terminal in Tipton but on the morning of the visit no faults were logged.

Central Networks has adopted a proactive stance towards fault management and has undertaken a project to date fault history. "Using this information we are able to patrol the network and identify what's causing problems then carry out work to replace any equipment causing problems," Neil James says. "Taking these proactive measures is a way of removing future faults," he says.

Central Networks allows public access to its fault system through the Internet with customers able to view an interactive map displaying live information about the network. "This is part of our aim to keep customers informed about problems. They can toggle the map between faults taking place now, and planned work for which a power cut is necessary," Neil James says.

Central Networks is the only distribution network operator offering such a service that shows the number of customers currently without power and detailed information about each incident including faults and planned work supply interruption, Neil James says. Estimated restoration times are based on current information and are updated as more information becomes available.

"Information is automatically updated every five minutes and we try to make sure this information is as up-to-date as possible. In some cases, we need to allow time for our engineers to reach the site, carry out some investigations and then feed information back to our office staff. In such cases we will update this page as soon as possible," he says.

Many thanks to linesmen Andy Bynon, Brian Houghton, Mike Wigmore, hot gloves project manager Dave James and restoration and repairs manager Neil James for patiently allowing us to disrupt their day. ■

Dean Stiles is a freelance journalist

WHERE ARE THE LINESWOMEN?

It is not surprising given the length of experience of the hot gloves team Utility Engineer met that it was an all-male group. But this will change as the next generation of apprentices work through the system.

A linesman's career is attractive for young women, like Eon's latest apprentice recruit, 21-year-old Jessica Morgan. She is on a four-year electrical apprenticeship with Eon training to become an overhead linesperson for Central Networks, carrying out construction, maintenance and repairs on the power distribution system. Jessica started her apprenticeship in September last year and divides her time between the Central Networks base near her home in Gloucester and Eon's Engineering Academy at Tipton in the West Midlands.

Neil James

Like her more experienced colleagues she enjoys the great outdoors. "It's work but it doesn't feel like it to me," she says. "I love it because it's not office work. I work outside and get to see beautiful landscapes. I get to experience every kind of weather known to man while on top of a pole and if the weather is bad I find it more exciting as it's a challenge."

"It's great that more and more women are taking on roles and activities that have traditionally been seen as a male environment," says Neil James. "She, like her colleagues, will receive first class training and support and, once qualified, she'll be an invaluable member of our team. I'm sure there'll be opportunities for her to progress, and with ambition, hard work, and support she will have a rewarding career."