



Ground Control...

to Major Lighting Teams

Traditional followspots have been in use in theatre, music shows and television for decades, but recently a new evolution in the genre has been creating waves across the live production industry. The GroundControl™

Followspot System, designed and developed by Production

Resource Group (PRG), has taken the traditionally large and unwieldy followspot fixture and completely redesigned it. The system splits the followspot, allowing the luminaire to be flown from rigging or other positions previously out of bounds, leaving the control unit on the ground. This game-changing followspot gives lighting designers far greater flexibility and is being enthusiastically embraced by lighting teams. Zerb heard from PRG and the lighting team from *The Voice UK* about the impact of these new lights.

Three elements

The GroundControl Followspot System consists of three parts. Initially, a customised PRG Bad Boy luminaire was selected for the light source. This was chosen as it was comparable in output to traditional followspots. It also had the ideal feature set for conversion, including colour wheels, large zoom and smooth dimming. However, the Bad Boy needed some modifications to make it work with the GroundControl system. PRG's Dallas-based R&D team added an onboard full HD camera, plus the servo-driven pan-and-tilt capabilities were altered to be more responsive, in turn requiring some in-house reprogramming of the motor code. Meanwhile, the development team also converted one of the gobo wheels into an additional colour wheel and replaced the fixed colours with various colour correction filters commonly used in standard followspots. They also upgraded the lamp to make the unit brighter, resulting in an output of 50,000 lumens.

The second part of the system, the GroundControl Truss Box, allows the controller to talk to the fixture and enables

GroundControl followspot setup based on the Bad Boy luminaire



DMX, camera control and video feed data to be converted and sent via a quad fibre optic cable to the controller on the ground. This key part of the system greatly reduces the likelihood of data corruption and signal interference from other power or data cables.

The final, key part of the system is the controller unit. Designed to be as intuitive as possible so that experienced followspot operators will instantly be comfortable with the new system, the controller can be situated on the ground up to 610 metres away from the luminaire it's controlling – allowing it to be tucked away in a control area, backstage, or even outside the studio, as long as it is within the distance limit. The controller includes a screen with a live feed from the camera on the luminaire, with night-vision mode to enable picking up performers when the stage is dark. The unit's movements mimic those of the followspot fixture and it incorporates controls for intensity, iris, zoom, frost and edge, as well as buttons for colour and beam presence.

Theatrical and TV tests

Earlier in 2016, the GroundControl system was used by lighting designer Nigel Catmur for *Shakespeare Live!* from the RSC – a celebration event from the theatre in Stratford-upon-Avon. The theatre doesn't normally have followspot positions but as the show was to be broadcast live on BBC2, additional spotlights were required for the TV cameras. As the theatre couldn't easily accommodate followspots without the removal of seats, Nigel Catmur, RSC production manager David Tanqueray and lighting designer Vince Herbert all agreed that GroundControl was the best solution to this problem, with Catmur describing them as "a genius concept"!

More recently, gaffer Dave Hallett has used GroundControl on the 2016 run of *Britain's Got Talent* (BGT). He describes how he was first introduced to the system: "I was sent a link to one of the demo videos when the product was first launched, and I remember them being talked about when they went on tour with U2. A few weeks later I was in PRG's warehouse in Longbridge and a demo was taking place."

Having been suitably impressed, he decided that they would be a suitable replacement for the rear spots on last year's BGT live shows. "We used two Bad Boy GroundControls as the rear spots. They aren't ideal for front followspots for TV because we use shuttering so often. If you have a line of three people in a spot you ideally want to 'cut' the light off just below their feet and above their heads to reduce spill. The Bad Boys don't have shutters – they only have an iris – so they weren't an option for the front spots."

He continues: "Also, prudence dictates that it's best to try a brand new technology in an area where its failure won't instantly plunge the presenter or performers into darkness. Losing the back spots would have been a shame, but not as much of a disaster as losing the keylight spots! As it turned out though the units worked completely fine on every show, so we soon gained confidence in them."



Developing the product

This confidence led the lighting team to discuss the GroundControl product range with PRG with a view to using them for future productions. PRG revealed that they were planning to customise their Best Boy luminaires to work with the GroundControl Followspot System. As the Best Boy units include shuttering this meant the products would be able to be used much more extensively.

Dave explains: "On *The Voice* [currently transmitting on its new home on ITV], we have used entirely GroundControl followspots, with two front and two back spots. This was possible because the PRG Best Boy fixture has been upgraded. This lamp was originally very capable, with good zoom, colours, gobos, iris and shuttering, but nowhere near bright enough. The lamp was upgraded to produce the Best Boy HP, which now outputs a 1500W source instead of the original 700W. This has made it bright enough to use as a keylight and therefore a followspot. We also added an additional four units for the 'Coaches' performance', where four performers are on stage at once, requiring four front and four back spots."

Screen grab from Jimmy Jib operated by Marcus Leon-Soon





Steadicam operator GTC member John Clarke in rehearsal on *The Voice UK*

Dave Davey, Lighting Director

I've been using this system for about 8 months now, most recently on *The Voice UK* for ITV and I am very impressed with the results. It's great to be able to rig a followspot in almost any position in the rig without having to worry about creating space for the truss chair and operator. To have total control of colour and intensity from the lighting console is a huge help too.

The luminaires have an HD camera mounted on the body which outputs HD SDI at 1080p. This is fed to a monitor on the followspot controller, from which the operator can see the output of the luminaire. The movement of the followspot controller on its yoke is designed to feel like a traditional followspot and the luminaire mimics these movements. The operators can also have local control of intensity, iris size, zoom angle and edge softness/hardness.

We have encountered some issues with the system. It is very possible to burn out the exposure of the onboard camera either with light bouncing off of a shiny stage floor into the camera lens or floor lights focused at the luminaires. This can largely be overcome with diligent programming but the main point here is that whilst this would still be an issue for an operator sat in a spot chair being hit by the floor lighting or reflections, the human eye can cope with a wide range of intensity that the camera cannot.

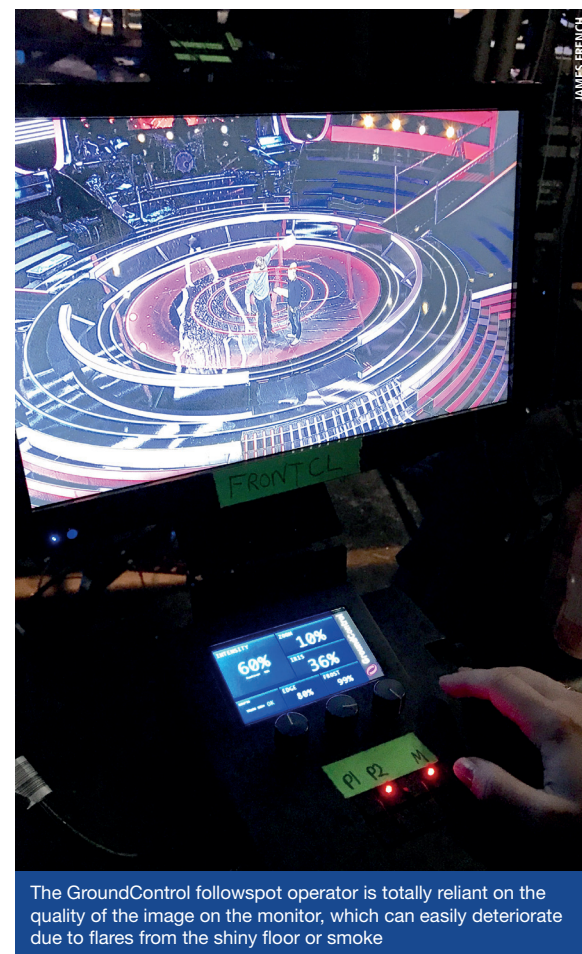
This leads onto the issue that the operators in remote operating positions lose the vital element of line-of-sight of the stage or performers. This is crucial when trying to pre-empt an artist's walk-on or a moment where several spots are trying to cover complex choreography without doubling up with one another.

For *The Voice* live shows later this spring we will position the front followspot operators on a platform behind the audience so they have line-of-sight to the stage.

Versatile positioning

The GroundControl system has made a difference to the way designers are planning their rigs. Dave explains: "The system means that the lighting director Dave Davey, with whom I work regularly, can put the followspots where he wants." For years studio followspot positions had to be either on the gantry or on followspot chairs hanging from the truss. There are disadvantages to both of these. Dave explains: "Placing spots on the gantry means being limited to the height of the gantry and this is often quite low relative to the stage, so the spot ends up at a shallow angle. This can be quite flattering, but when there's a Steadicam on stage it becomes horribly shadowy. Another snag is that these days the set often continues all the way round the studio. Having to leave holes in that set for followspot positions can further restrict spot placement as well as compromise the look of the set."

"On the other hand, putting climbing spot operators above the audience gets around the issues inherent in using gantries but brings problems of its own. Chief among these are the Health and Safety/Working at Height considerations. These operators work in a small, restrictive and often uncomfortable position, over people much of the time, and they can be up there for 10 to 12 hours a day. They are required to wear full body harnesses at all times and often their breaks are curtailed because they have to be up and in place before the audience members takes their seats. While the rest of the crew is able to nip for a 'comfort break' at any time, the climbing spot operators often have to limit their water intake to manage their breaks – clearly not ideal! The production is also required to have a rescue plan in case an operator becomes unable to get themselves down, which adds further complications."



The GroundControl followspot operator is totally reliant on the quality of the image on the monitor, which can easily deteriorate due to flares from the shiny floor or smoke

Rebecca Oliver, Followspot Operator



From an operator's point of view the GroundControllers (GCs) are pretty simple to use and smooth to operate. But compared to a conventional followspot, everything feels just a bit different.

Once you've got your head around the interface touchscreen menu, you can set the fixtures up as you like to use them. This is partly personal preference but also needs to work alongside the console.

Instead of having a followspot where we are the only ones manually/mechanically manhandling it, we now have a modified moving light that does all the same things all the other moving lights in the rig do. This fixture is shared, and can be controlled by us (the spot operators) but also the console operator via fibre and DMX, allowing the fixture to be more flexible.

In a TV studio setup where the distance of the rig to the stage is fairly close and people use all the stage, we have discovered that a good amount of space is required around us, as the control needs to do nearly a full 360° in pan movement and also needs a full tilt range.

So far on *The Voice*, where we are using the GCs as front spots, we have not had many opportunities to test the possible advantages of having a Best Boy or a Bad Boy as a followspot. We've had occasions where the console has taken control of particular aspects of the light, whilst still in our control – such as the dimmer – if it fits in with the rest of the lighting state, though we are still required to be 'On'.

We have set them up primarily as followspots, so nothing fancy, whilst we get used to the different ways we can use them. The front

spots are all key lights, so are set up exactly the same or as close as possible to each other, in colour, zoom, edge and focus. This is essential for continuity and seamlessness when walking between other spots or key lights. We control the intensity level whilst the console deals with the colour. This is generally a smoother way of making changes and matching colours, compared to changing gels on a conventional spot.

We are still learning, and have yet to explore all the parameters these fixtures have to offer as followspots.

My main negative – which I hope will improve in time – is you rely totally on a fairly low resolution 17" monitor fed from a camera attached to the head. Without any other view of the stage, this dramatically reduces our ability to see what's going on with the spot, and generally in the studio. Certainly in light entertainment, many of the stages we look at from the height of the rig have very busy video floors. This seems to be a struggle for the camera/monitor to resolve consistently. Add the sharp bright beams of any other light, coupled with smoke, and you have yourself a very difficult picture to work with. Also, the scale of what you are looking at has shrunk, a little like wearing blinkers. This doesn't help with being ready for whatever comes next. There is a camera zoom function but, if you use this, your target point, i.e. sight, becomes redundant as it doesn't zoom in accurately with you. Also, you lose sight of anything in the periphery. Particularly on live TV shows you really need to be able to see the whole stage to be aware of any spontaneous movement.

We have discovered that any fast movement of people on stage is a struggle for the moving light. There is a definite delay between the operation of the GC and the fixture actually performing. Whilst we can pre-empt a choreographed piece, live TV happens by the second and real people tend to go wherever they choose. An operator has a split second to react with a manual followspot. This movement happens very quickly, but with the remotely controlled moving light there is the slight delay of the signal getting to the fixture. Once that has reacted, the person on stage may already have moved again – and so have we but the fixture is still catching up! If this goes on the light can end up so far out of sync it becomes very obvious on camera.

The GCs clearly have a lot of potential for different ways of operating, but also some limitations and we are still getting used to them and working out how best to use them.

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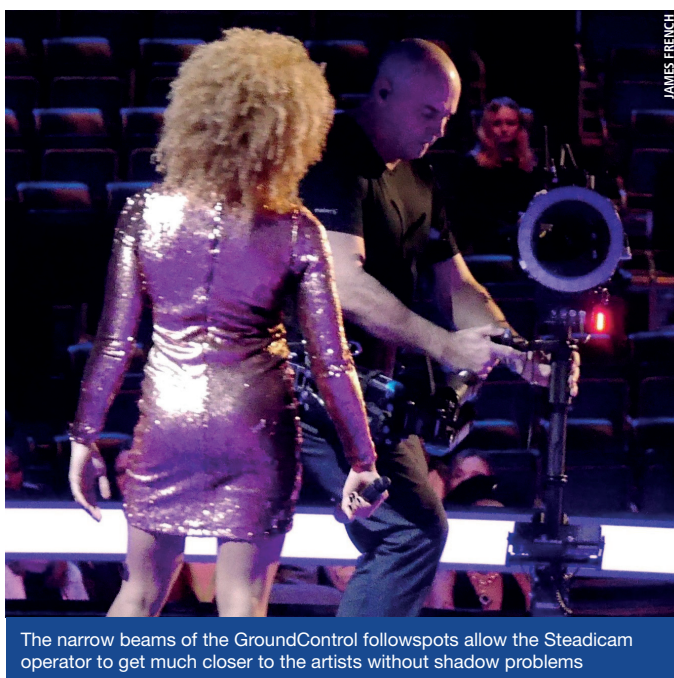
STELLA PRO 5000



STELLA 1000



STELLA 2000



The narrow beams of the GroundControl followspots allow the Steadicam operator to get much closer to the artists without shadow problems

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As a Steadicam operator working on the current series of *The Voice*, I have welcomed the recent addition of the new remote spots. The lighting team mounted the new spots in the grid, as opposed to the gantry. This steeper angled beam has greatly reduced shadow issues when working in close proximity to acts.

John Clarke

“Another, less immediately obvious, consideration is the amount of space in the rig a followspot seat takes up. The spot seat itself is big and needs a space allowed for the truss ladder as well. There's a minimum size of truss that is suitable for people. All these things take up space that could be filled with other lights. And it's not only horizontal space required. A followspot operator sitting in a truss seat needs to be able to see the stage, so they can't have another moving light directly in front of them. A back truss spot will therefore require at least 4 feet of vertical space to operate in.

“Hanging a moving light gets around pretty much all of these things. It can be placed anywhere in the rig in the same way as any other moving light. We run a fibre from each GroundControl head back to the controller unit, which can be up to 2000 feet away. The controllers can therefore be anywhere convenient. The operators can all be in the same place, where they can have a decent size monitor with which to set intensities. They are then at liberty to nip off when nature calls and get the same breaks as the rest of the crew. The lamp can be hung from a smaller truss in a smaller space, and because the camera is next to the lens, it's only the lens that has to be clear of other lamps.

“We have also just done *Children in Need Rocks* at the Royal Albert Hall (RAH). This had a very high lighting rig and two GroundControl back spots rigged from a truss at about 17 metres. There wasn't space for

a hanging spot chair, so we wouldn't have had controllable back spots without them. The fibre from the lamps was run up to the roof of the RAH, across the roof and down to the gallery – it worked beautifully.”

The differences that GroundControl is making across the TV and live event industry are many and far-reaching and Dave suggests: “I can absolutely see this sort of thing becoming the norm over the next few years. I don't think it'll be long before the 'young people' coming into the industry look askance at us oldies talking about people climbing up to followspots in the grid!”

Development of the product is still ongoing and PRG have been very responsive to feedback from lighting teams. Dave explains: “PRG's product development people have been great at giving us what we've requested. They wrote us a software version where the shuttering of the Best Boys is easily accessible from the control unit and this has made a really big difference. We're in fairly regular conversation making requests that the user interface is tweaked in some way. Not everything is possible of course, but it has made a real difference to feel that things are being changed to make our lives easier in the studio. My thanks to Chris Conti in the US, as well as to all those at PRG XL Video in the UK, who have been pushing on my behalf!”



He sums up: “It's not that often a technology comes along that is a true 'game-changer'. I think the GroundControl spots are one of those. They're not suitable for all situations, but in the majority of cases they make things better and safer, and also add more creative options to the show.”

Fact File



See more about the GroundControl followspot system:
www.prg.com/uk/en/our-technology/prg-products/luminaires/groundcontrol-followspot-system

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