



Precision Control

by Phil Bishop

In 2012, the United Kingdom experienced the wettest summer in 100 years. This had a massive impact on the construction industry. Among the many jobs where extra hours – and extra machinery – had to be put in to catch up was the site preparation works for the 865 Million Euro (1.2 Billion USD) Jaguar Land Rover engine factory in Staffordshire. BAM Nuttall began its 6.9 Million Euro (9 Million USD), 22-week earthmoving contract in April, but the weather was so bad that in one week just one afternoon's work was accomplished. With the help of Leica iCON GPS machine control the contractor was able to keep the tight deadlines despite the weather.

"It was a dreadfully wet summer," recalls project manager Steve Beech. "The ground was such that

when it was raining we couldn't traffic the heavy plant. We just had to stop work. We had all the drivers chomping at the bit and just wanting to get out and drive. Management needed to stay patient and wait until the ground was ready to take a pounding."

BAM Nuttall's job was to create a level platform for Jaguar Land Rover to build two large halls – one for production and one for assembly – each about 120,000 m² (144,000 yrd²). This was a huge cut-and-fill undertaking, moving a million cubic meters of spoil, including 150,000 m³ (200,000 yrd³) of topsoil that was up to 60 cm (24 in) thick.

The location of the new plant is the i54 business park, a joint development by Wolverhampton City Council, Staffordshire County Council and South Staffordshire District Council, close to Junction 2 of the M54 and just three miles north of Wolverhampton city center.





■ Leica iCON GPS 60 on the roof of the pick-up: the project manager can drive around the site, checking heights.

To cope with the addition of the Jaguar Land Rover plant in the park, the motorway junction is being remodeled to give direct access. BAM Nuttall constructed an embankment on the south side of the junction and stockpiled spoil for a future north side embankment. The embankment on the south side used 150,000m³ (200,000 yrd³) of engineering fill material, mostly sandstone rock crushed down, and all Class 1. The stockpile for future use for the north embankment amounts to 200,000m² (260,000 yrd³). This currently sits within the bounds of the i54 park site until required.

In order to make up for all the time lost to rain, when work could go ahead it was all hands on deck, with a sizeable array of plant put to intensive work. Primary excavators were five 45-ton tracked Komatsu PC450s, supported by a fleet of 18 Komatsu articulated dump trucks moving to and fro on a just-in-time basis. Various crawler dozers worked to spread and level material, including a Caterpillar D10 with a rip-

per on the back for tearing sandstone, and Komatsu D61s and D65s.

All the equipment was supplied and operated by Shropshire-based Hawk under subcontract, with 30 machines on site at peak. While BAM Nuttall does still own more plant than most major contractors these days, its kit is mostly cranes and smaller machinery, not the kind of earthmoving machinery needed for a job like this. With all this machinery on site, working long hours and weekends to catch up, it was important to minimize the scope for human error. It was also not a good idea to have surveyors walking around, setting up total stations near the bustling machinery.

For these reasons, Hawk's excavators and dozers were fitted with Leica Geosystems GPS machine control equipment from authorized Scanlaser distribution partner. Steve Beech explains: "You upload the Moss model into the software that controls the

Machine Control Systems Save Fuel and Material



Neil Williams, engineering & infrastructure manager for Leica Geosystems, says that the UK construction industry is still at the early adopter stage when it comes to machine control technology, at least compared to its northern European neighbors, and Scandinavia especially. Prior to 2008, he says, the productivity

gains that it offered prompted larger UK earthworks contractors to adopt the technology, particularly on road construction schemes.

Now, however, he says, its take-up is being driven by the cost savings on materials and fuel, and by the site safety benefits, eliminating an interface between pedestrians and heavy plant.

machines. The sensor on the dipping bucket tells the excavator operator how far to go down or dozer driver how far to go up."

Explaining the benefits, he says: "It's a speed thing. You don't have to rely on the setting-out engineers. You also don't have as many people on site on foot, so it's a health and safety benefit. When you've got 30 pieces of plant over the site, you don't want people on foot." He adds: "I wouldn't do a muck shifting job without it now." Hawk also used the iCON supervisor's kit. This technology enables site managers to drive around in their vehicle and check all levels without getting out. They can do volume calculations while touring the site, too.

And with the Leica iCON telematics system, all information relating to levels can be relayed back and forth between the site equipment and a remote head office.

Key to getting the job done, Beech says, was efficiency, maximizing equipment uptime and not having trucks sitting idle waiting for something to do. It all relies on having "muck shifting people who understand muck shifting," he says. "It's really quite an art."

Hawk Contracts general manager Frank Jones acknowledges the part played by machine control technology on the project. "I think the GPS played a major part in health and safety on the site and we were more efficient," he says. But, as always, the real secret was plain old hard work. Technology is great, but it cannot be expected to do everything – at least not yet. "It was a good team effort on both parts, BAM and Hawk," Jones says. "We worked bloody hard to get the job done and put the hours in. Everybody was to the pump." ■

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■ Height check: Leica iCON CC60 in the pick-up.