



CASE STUDY

Use of Machine Control

Overview

Flannery are a leading supplier of machine guidance and control technology within the UK plant marketplace and have been working with this technology on projects in the UK for over 15 years.

Our experience means we fully understand the importance of working collaboratively and would expect early engagement with the design team. As well as contractor engineers and other stakeholders. This allows us to understand site and data requirements in terms of monitoring and evidence.

Such is the importance of supporting our machine control capability we have recently developed a Digital plant team.

This team are responsible for providing engineering support to our customer bases.

This enables us to work with our clients to ensure consistency between digital models and ensures that these models are uploaded correctly onto our equipment and there is integration within the relevant technologies.

For example working with surveying equipment, machine survey data and telematics to provide consistent data back to the Building Information Model.

Technology

Conx from **Leica** is a system which allows the dozers and excavators to be part of a computer network where data can be shared, and messages sent and received. If an engineer's drawing is updated, in the past, he would have to inform the site and work would stop until the engineer arrived with the new drawing information. With this system, the engineer can update the drawings remotely.

Engineers' design drawings have been uploaded onto computers and transferred onto various machines while Leica 3D positioning instrumentation continuously tracks the actual position of the blade or bucket and compares this to the design data in the drawing.

Any discrepancies are automatically corrected via the machines' hydraulics to ensure the machine is working accurately and efficiently.

The site team always have an idea how far away they are from either formation levels or finished levels, which again helps relay progress back to the client accurately.

Case Study

Works Manager Mr. W Edwards works for an earthwork's contractor has been managing multiply sites simultaneously for the past 12 months. Despite the construction sites being in different parts of Scotland, he has had little need to be on site all the time.

The contracts are diverse in nature, miles apart geographically and programs are tight, being able to accurately measure progress on multiply sites remotely using specialist construction equipment supplier Leica's "Conx" site management system.

The project involves removing of rock material from the site to pre-determined minimum depths to allow roads, foundations and an underground services to be installed for new Substations .

Conx is being used on the project to relay excavation progress to head office. Leica's 3D GPS instrumentation on two of the machines measure the line and level of the excavation while a Leica base station on site ensures GPS readings are accurate to approx. 20mm.

Benefit

The main advantages of using the equipment is that a single engineer can check the accuracy of earthworks and excavate the ground without constantly returning to site to check progress against drawings.

Any problems on site can be surveyed and instantly reported to client . The client can then work up a strategy or design to overcome the obstruction, armed with the exact coordinates of its location.

Having the actual data relayed in front of you also gives you the knowledge from which to make decisions and can improve the accuracy of excavations by ensuring there is no over- or under digging.

Ultimately, this has a positive effect on project cost and efficiency. Print-outs provide quality assurance of the work carried out and ensure a smoother handover at the end of a job.

To complete all the excavating rock being crushed on site and replaced to form a subbase – again monitored, measured and checked using Conx and 3d Positioning.

"From a management point of view, using this site management system this has shaved a couple of weeks off the program," comments Mr. Edwards.

Summary Benefits

- Do the Job Right the First Time
- Greater Predictability/ Control of Job Costs
- Less Wear and Tear (Maintenance)
- Greater Equipment Utilization/ Flexibility
- Greater Productivity
- Lower Operating Costs
- Improve Operator Performance/ Shorten Training Window
- Excavate with Confidence
- No Re-staking (Pegging out Engineers)
- Fine Trim Work with Compact Equipment
- Greater Data Integration Between Crafts

Conclusion

"For me, working remotely means that I can control a number of jobs and respond to all their needs much more efficiently than if I had to get into a car and drive to each site.

Machine control is a must this has helped us work more efficiently. We are pleased with the performance of this system and the tangible financial benefits that it brings; it has however also improved the quality and accuracy of our final product which we have been able to demonstrate to our clients in the field." Mr. Edwards.

