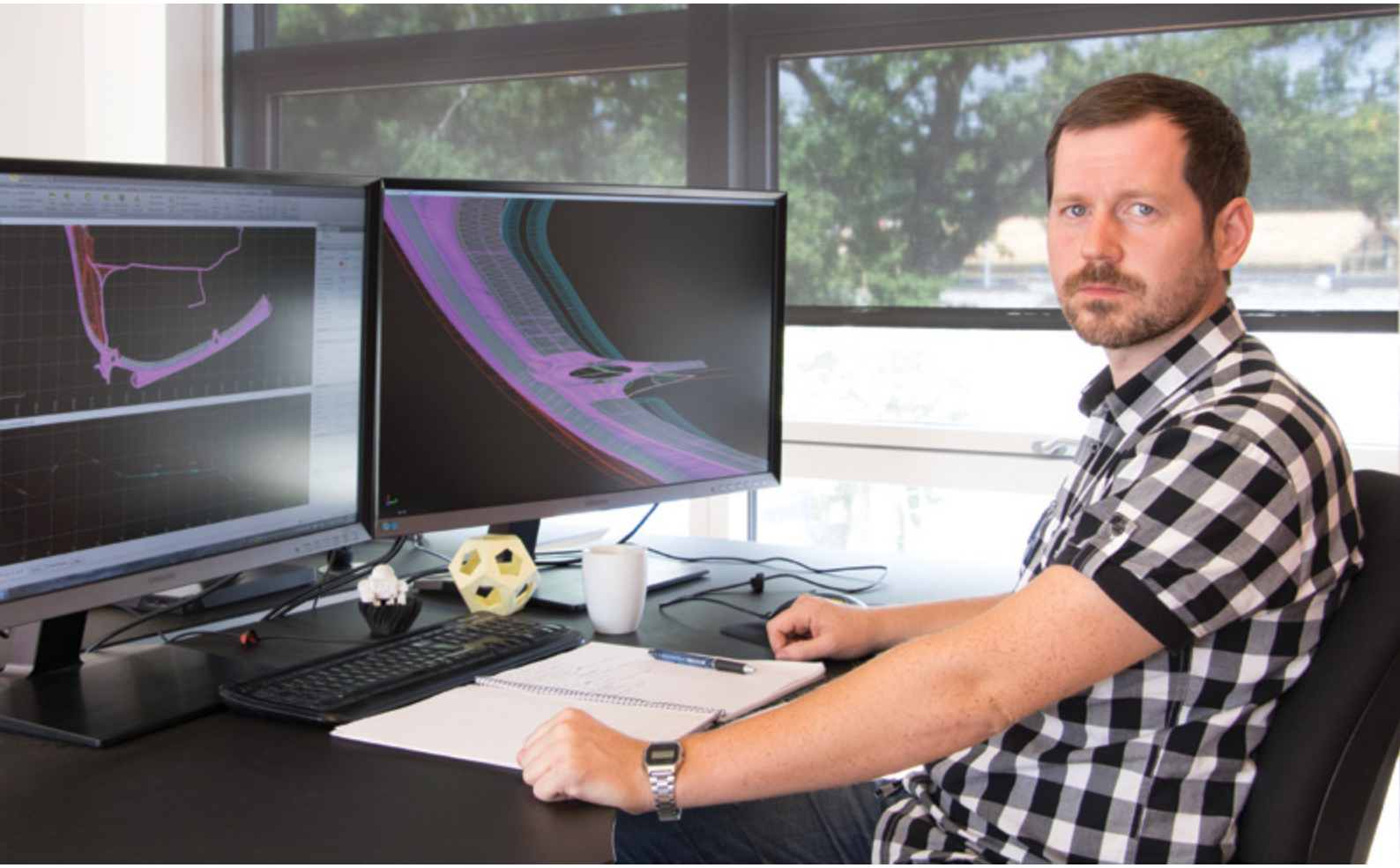
Spotland Copenhagen Malmö Port Expansion



Building Accurate 3D Models More Quickly with Business Center - HCE

Spotland, Denmark-based contractor, improves 3D modeling capabilities for surfaces and intersections for the Solrødgård site development project

Solution

Business Center - HCE (Heavy Construction Edition), Connected Community

Learn more about Business Center-HCE intersection functionality or visit construction.trimble.com

overview

Based in Denmark, Spotland specializes in technical surveying and data processing for construction and engineering projects.
The company applies 3D and GPS technologies to a variety of contracting and construction projects and has a dedicated international staff of surveyors, designers, and project managers.

Location
Copenhagen, Denmark

CHALLANGE

Spotland was looking to build more accurate and high-quality models for roadways, intersections, and new development projects. Happy with the success of using several machine control solutions, Spotland decided to make the next step and looked at building a more connected jobsite.

Denmark-based Spotland is an international land survey company that specializes in data modeling, visualization and technical survey. The company delivers new roads, sewer systems and sports facilities, among other things, with civil engineering work, supply work, harbour construction, sheet piling work and surveying. Spotland has approximately 34 employees and is owned by Barslund. In business for more than 30 years, Barslund is a leader in civil engineering and is a preferred partner for major public and private developers in Denmark and Sweden.

Ingi Gudmundsson, BIM Engineer for Spotland, explains that the organization was looking for a way to improve modeling capabilities and to enhance the quality of its 3D models used by machine control. The team also wanted a more efficient way to share information across the jobsite and to reduce rework.

SOLUTION

Spotland adopted several Trimble solutions, including Trimble total stations, rovers, GCS900 Grade Control Systems, Business Center - HCE and Trimble Connected Site technology to manage data flow across the projects and back to the office.

Today, Gudmundsson and the team use Business Center - HCE to create high-quality, constructible, 3D models that can be read by the GCS900 machine control systems in the field. Design files including CAD files and survey points are loaded into Business Center - HCE, and Gudmundsson then uses the software's 3D visualization capabilities to generate multiple surface views, plans, corridors, and images to work from.

From here, he preps the data and creates 3D surface models for construction. Business Center - HCE is integrated with Trimble Connected Community, which facilitates file sharing and data visualization capabilities. Models are then shared through Connected Community and read by the on-machine grade control system. Gudmundsson uses jobsites in Business Center - HCE as an overview of design revisions; he also likes the ability to review what's loaded into each machine design.

"By using Business Center we're able to include a lot more information in our models, and by doing it centrally we are aiming for better quality and efficiency," said Gudmundsson. "Before, everything was done locally so the surveyor needed to make all the models and then they had to drive out to the job site and deliver them."

Gudmundsson recently used the intersection feature in Business Center - HCE for Spotland's work on the Solrødgård Site Development project. The project includes the establishment of wetland signalized junction, roundabout, bridges, path connections, connection to the Climate and Environment Center, recycling and treatment plants.

The project also includes the conversion of an existing bike path. In addition, the scope of the work includes developing sewerage and drainage work, various cable works and planting and digging of ponds and streams.

Gudmundsson explains that previously intersection modeling presented a major challenge. "Where you have a cross section on the main road, and then you have a different cross section on the secondary road, it's often problematic to make the models meet and to make the models fit with each other," said Gudmundsson. "In the past, the surveyor and designer did their best to roughly line up the models, but it was often left to the operator to freestyle intersections."

The intersection functionality within Business Center - HCE allows users to select various properties for each road leg of an intersection and apply those directly to the model. Each connection can be adjusted manually or loaded from a template. Users can change the lane width and slope as well as the shoulder width and shoulder slopes. Once one road leg is set, users can copy the properties and place them into each other leg. Gudmundsson likes that he can also change in the incoming and outgoing radii and can add turn lanes, curb heights, and walking paths quickly and easily. He estimates Business Center - HCE saves at least four hours for every design revision on a medium-sized project site with five to ten machines.

Benefits

Benefits of using Business Center - HCE:

- 50% acceleration in building 3D models and intersections for the Solrødgård Site Development project and several others
- Time reduced for modeling intersections from two to three days, to about one day
- An estimated four hours saved for every design revision on a medium-sized project site with five to ten machines and Trimble Connected Community
- Models are delivered to machine operators in real time using Business Center - HCE and Connected Community. Time saved from driving files out to the job site and loading them into machine control
- Potential savings of thousands of dollars in survey and modeling costs - eliminating the need for professional surveyors to track progress on every project

RESULTS

My department has been celebrating this intersection functionality; we were very surprised at how well it worked and we are looking for more opportunities to use it. There's a lot of potential there," said Gudmundsson.
"I can do a model of the intersection from the basic corridor. That way I can see if all the slopes are correct before we go in and build it."

Gudmundsson explains this functionality is important because starting with a higher quality model, there's less rework and operators can build to the design faster. The technology enables him to develop a corridor from a flat cross section drawing with profile information in a single day, compared to two or three days with a traditional design package.

"I tend to get a lot fewer calls from the operators and surveyors assigned to the job when I build really good models. On the right projects, we are going to save a lot of money by using the intersection tool. I'm teaching several of our guys to use Business Center - HCE because it's much faster and accurate than other design packages when it comes to 3D constructible models, which will save us both time and money for other projects"

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