



The New Link



A team of Belgian surveyors seamlessly adopt a new class of instrument in mid-project

Midway through a large, multi-modal transportation project in Belgium, problems arose from reliance on legacy surveying tools and methods. Adoption of the Trimble SX10 solved the issues and provided the surveyors with new options for rapid collection of 3D data

Solution

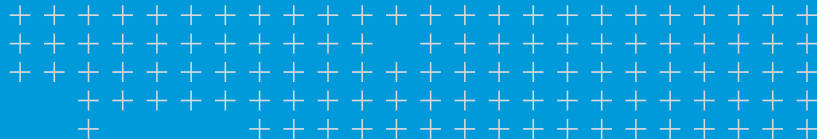
Trimble SX10 scanning total station

S Series robotic total stations

TSC3 data collector

Trimble DiNi level

Trimble Business Center office software



overview

The design, surveying, and construction of a new tramline for the bustling port city of Antwerp, Belgium, posed many challenges for the surveyors of the multidiscipline engineering and construction firm BAM Contactors. The Noorderlaan (North Line) project included 6 kilometers of track, two bridges and new car and train tunnels connecting to an existing tram station. Adding to the complexity was the excavation of a historic 14th-century battlement: the “Spanish Wall.” BAM preserved this archeological treasure, incorporating pedestrian bridges and viewing galleries into the project design.



Location
ANTWERP, BELGIUM.



THE CHALLENGE

The complex interfaces between old and new required highly detailed surveys of existing features for the design phase, and rapid as-built surveys during the construction phase. BAM Contactors began the project using a mix of conventional surveying, with their robotic total stations, while a subcontractor collected point cloud data using conventional high-end laser scanners. The engineers were not satisfied with the scanning results: the issues included large and unwieldy scans, poor registration to existing project elements, and a slow turnaround for new scan requests. To address these issues, BAM Contractor surveyors Niels Balens and Johan Egerickx searched for a better link between point clouds and other precisely surveyed data. They found it in a new class of instrument: the recently released Trimble® SX10 scanning total station.

“We had to do a lot of small on-demand scans for the engineers,” said Egerickx. “They would ask for new measurements in different parts of the station, and we could go there, set up the SX10, and perform a scan that was completely registered in resection. We delivered this to the engineers immediately.”





USING THE SX10

The SX10 isn't an adapted platform, it's a new class of instrument designed and built from the ground up. It has the functionality of, and excels as a total station, along with full scanning and imaging capabilities. The traversing for project control and conventional surveying data collection are performed on the same instrument as the scanning, so there are no problems with proper registration of scans and images. The benefits of a single-field instrument environment also reduce subsequent steps in the office software. The instrument was widely used on the project.

"Adapting to the SX10 was no problem," said Balens, "BAM Contractors use a lot of Trimble equipment and software, including the "S" series robotic total stations, TSC3 data collectors, Dini levels and Trimble Business Center office software." The features were familiar, which made learning the operation of the SX10 painless. In fact, the new features on the SX10 became favorites, Balens said. "There was no eyepiece, no active tracking, and we had not worked on a tablet with our total stations. But operating the SX10 is similar to operating our total stations. Finding yourself and the prism on the tablet view, which operates on the rod robotically, is very fast, and after a while we didn't miss the active tracking."

"During layout, the tablet balances well on the survey rod," Egerickx added. "Now when I use one of our old total stations and the small screen of the data collector, I miss the tablet."





THE DIGITAL ENVIRONMENT

A goal for BAM Contractors, says Balens and Egerickx is to achieve a complete digital environment for their projects. The adoption of the SX10 provides a key link in this desired workflow, complimented by Trimble solutions already in use: "We started with GNSS survey control using the Belgian VRS network," Egerickx said. We used to set up a base, but now we just use the network. It's great. We even use it on machine control. We also do traverses and digital level loops with our Trimble total stations and DiNi levels."

Hardware and software modernization doesn't always yield immediate benefits for enterprises, and sometimes taking a particularly big technological leap or risk comes at a premium in time and labor. But sometimes everything goes smoothly—as did this adoption of the SX10 in mid-project.

"This project had another first for us," Egerickx noted. "We did no staking for earthworks. Our [sub]contractor, Aertssen, used machine control for the earthworks and Trimble equipment, which mainly uses GNSS. Around buildings where there's not much sky, the small excavators are controlled by total stations. In past projects, when there were small earthworks or rework during construction, we would set stakes, but now Aertssen only wants a digital model. Everything happens so much faster."

Johan Egerickx,
BAM Contractor Surveyor



AllTerra Ibérica S.L.U.
C/Dublin, 1 Planta 1
Polígono Európolis
28232 Las Rozas (Madrid)
Tel.: +34 902 30 40 75
Fax: +34 916 370 074
www.allterra-iberica.es

NORTH AMERICA
Trimble Inc.
10368 Westmoor Drive
Westminster CO 80021
USA

EUROPE
Trimble Germany GmbH
Am Prime Parc 11
65479 Raunheim
GERMANY
+49-6142-2100-0 Phone
+49-6142-2100-140 Fax

ASIA-PACIFIC
Trimble Navigation
Singapore PTE Limited
3 HarbourFront Place
#13-02 HarbourFront Tower Two
Singapore 099254
SINGAPORE
+65-6871-5878 Phone
+65-6871-5879 Fax

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