SORG

Solutions to new challenges and problems: capturing complete plant situations

In this article SORG explains why they work with a Class 1 laser scanning device and how they use several hundred scan positions across all floors to capture all objects and the complete plant situation in a short time. Thanks to large range vision, reliability and high accuracy, 3D laser scanning has already proven itself in many industrial sectors – including glass.

WHY 3D LASER SCANNING

The demand for ever larger glass melting plants and the reuse of existing structures and infrastructures make the handling of so-called Brown Field projects increasingly complex. The integration of new stages, entrances, plant components, etc. into the existing systems requires a higher degree of coordination and communication effort with the client and the technical departments than was necessary just a few years ago. This makes a detailed visualization of the existing plant complex crucial.

The planning and integration of new plant parts or infrastructures or those that need to be modified, rely on existing documentation. If these are still present, they are in paper format due to the age of buildings, etc., and might include deviations in dimension or insufficient angularity. This makes the data transfer to the new plans difficult or even impossible.

Very often, additions and adjustments have been made over the years so that the existing documents are no longer up to date. In these cases, it was – and is still common – for the planning company to be on site for a longer period of time and to record the situation with conventional means, paper drawing, folding rule and laser measuring

devices. Practice shows that these inventories contain inaccuracies and can also be incomplete.

With all these new challenges and problems, common measurement methods increasingly reach their limits. With its large range vision, reliability and high accuracy, 3D laser scanning is a more than reasonable alternative to classical inventory and documentation, which has already proven itself in many industrial sectors – not least in the glass industry.

THE SCANNING PROCESS

With FARO, SORG uses a Class 1 laser device, which does not create hazards for people. When scanning, the laser beam penetrates every small gap, so the scan area is often bigger than expected. Several hundred scan positions across all floors are used to capture all objects completely. In the end, the complete plant situation is captured in a short time.

The entire system can be aligned in a 3-dimensional space. Thus, not only distances but also the location and orientation of objects can be seen.

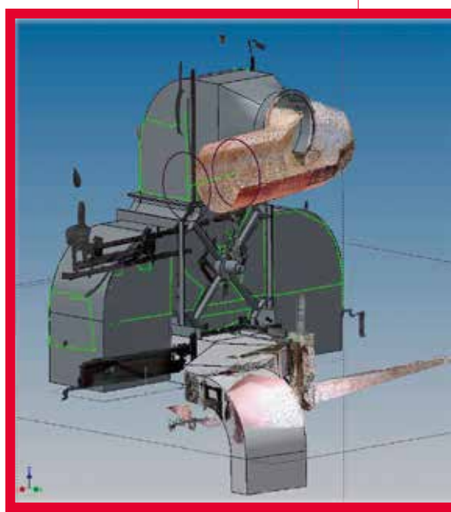
The FARO Scene program is used for processing, while Scene LT is used for viewing, measuring and editing scans.

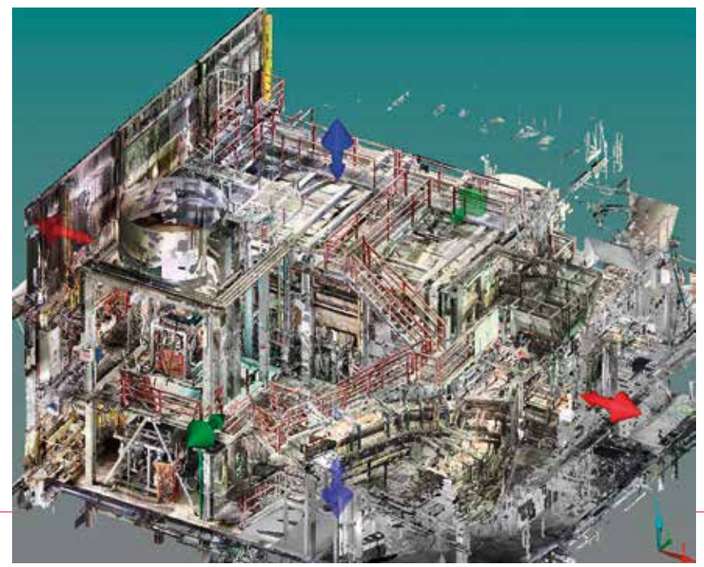
After some processes in the scan software, the single scans will be sorted and positioned to each other to show a realistic, true to scale depiction of the scanned object (point cloud). This highly detailed point cloud documents the current state.

The overlay of the recorded point cloud with existing 3D CAD models shows interference contours and deviations between reality and planning state.

Point clouds and ortho-photos can be uploaded into CAD in original scale. Thus, existing 3D models and 2D views can be compared directly with the real objects.

Besides traditional production layouts, visualization has virtually no limits. Different concepts can be easily illustrated and evaluated.





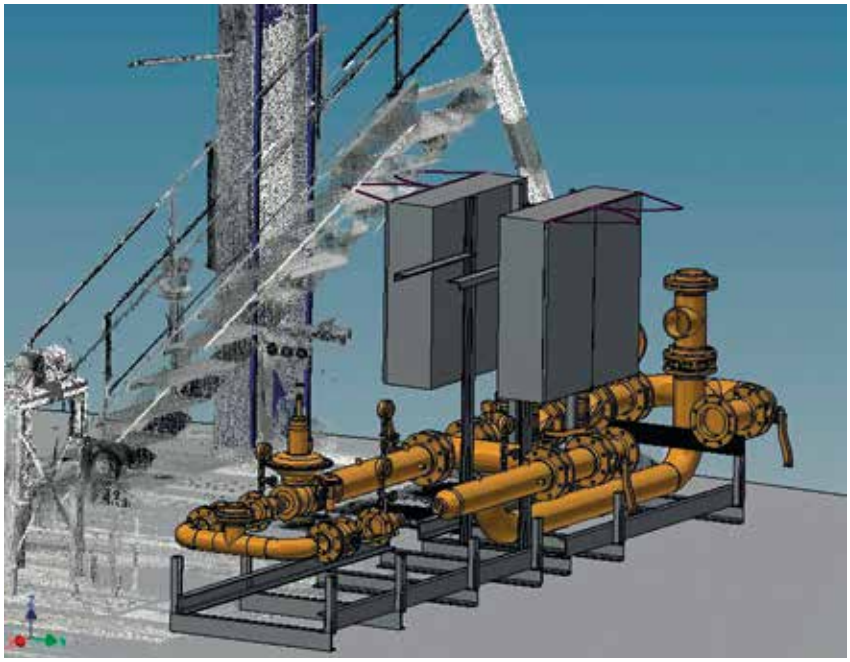
THE LATEST TECHNOLOGY WITH NUMEROUS ADVANTAGES

Cost-saving and efficient

- Saving costs due to high planning reliability
- Improved efficiency and reduced installation effort
- Evaluation processes in offices make expensive and time consuming re-measurement on site unnecessary

Fast, safe and detailed

- Data acquisition without interrupting running operation
- Shortest measurement times on site without compromise



- Largely independent of actual lighting conditions
- Contactless, accurate and highly detailed measurement
  - - even hard-to-reach areas can be detected without entering the hazardous area
- Problematic areas can be detected and solved in the planning stage, collisions can be avoided during construction time

Easy, multi-variant and useful

- Scans can be useful in the calculation phase, serving for documentation, supporting discussions with panoramic views and giving the feeling of being on site
- A variety of evaluation methods, specially tailored to the customer's requirements
- Scan and CAD data can be put together quickly and uncomplicated in almost all formats in Navisworks
- 3D Laser Scanning can be used for the measurement of batch houses and also in many other industrial sectors

SORG RANGE OF SERVICES

- Availability of scan results shortly after measurement
- 2D layout comparison to identify deviations and make changes
- Export of sectional and project views
- Variance analysis
- Scene 2Go Web Share: free scan view, access to 3D documentation as well as analysis and exchange of project data ■