

# Leica Geosystems **TruStory**

## Cloister renovation: Scanning the arched roof with Leica 3D Disto



### ■ Company

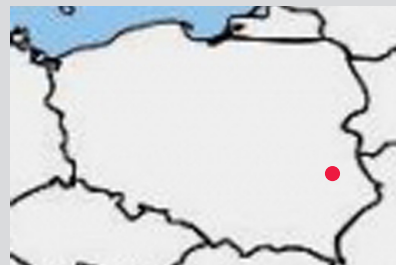
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### ■ Challenge

Measurement of Cloister's complex arched roof in order to design and install fire protection aluminium elements.

### ■ Location

Lublin, Poland



### ■ Solution

Using the room scan function of 3D Disto for scanning of Cloister's arched roofs, walls and floors with specified intervals

### ■ Result

- The scanning of the entire Cloister took 9 hours (10-15 min per arch) – significantly reduced time compared to traditional methods
- One man operation – significantly reduced costs
- No interference with other works at the cloister
- Direct measuring results allowed quick decisions about the design of metal elements

The XVIII-century Cloister Wzytek in Lublin, Poland requires the installation of fire protecting aluminium elements of the total area of 450m<sup>2</sup>. The measuring task wouldn't be so challenging if there wasn't several dozens of complex roof arches to be measured. The arches from 1730 are not just simple sectors, but they are composed of two or three arches with different radius lengths (so called "basket arches"). The aluminium elements have to fit precisely to the arches and any changes to the construction of the arched roof are not permitted by a heritage conservator.


For this type of project the company EUROBUD bought a 3D Disto. The

most important function for this job was the scanning application which relies on automatic measurements of the construction's vertical profile. The operator defined the start and the end scanning points and determined the measuring interval (distance between the section points). The 3D Disto automatically measured the consecutive points in three dimensions (X, Y, Z). For the arched roof, the operator applied the interval of 10 cm and for walls and floors it was increased to 25-50 cm. After scanning, the operator manually measured a few more points. On average, the section of each of the arches comprised 50-70 points and it took 10-15 minutes to measure each of the arches, including the tool's set up. Within one day the operator measured all surfaces that

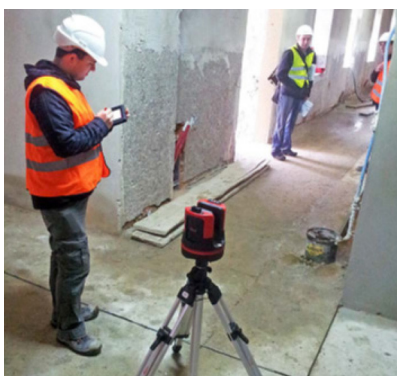


- Great measuring accuracy ( $\pm 1\text{mm}$ )
- Scanning function for automated measurement of arched roof
- Easy data transfer and simple editing of data
- Integral camera for documentation (simplifies evaluation)

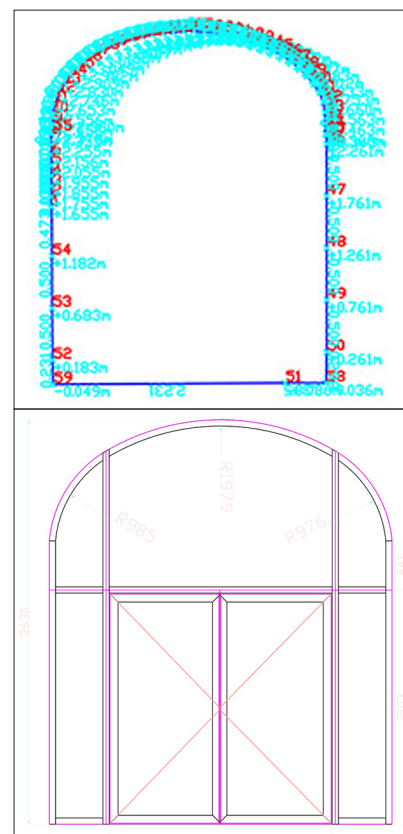
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The operator used the  icon to capture pictures of the viewfinder with previously measured points (displayed as red dots). The pictures were later used to identify points while editing data in project software. Directly after measuring a point it was possible to do the first calculations. Using only one click on the control unit information bar, the operator received information about the points' heights, their respective position, and perpendicularity of walls, floor level, right angles and areas of measured sections. Already at this stage the 3D Disto allowed

Subsequently, the company EUROBUD exported data in CAD-DXF, DXF-2D and DXF-3D formats which were later used for preparing the drawings of the aluminium elements.



The EUROBUD engineer, Michal Lis was responsible for measuring of Cloister's arched roof.



An example of scanning result and the design of metalwork

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