

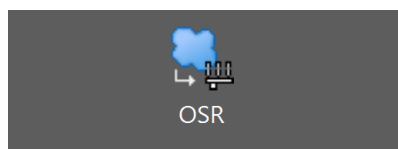
# primtech – OSR – BIM Model from 3D-Laser Scans or Photos

Through high loads on grids nowadays with unforeseeable grid and weather phenomenon, more unanticipated events occur in substations that need to be solved quickly. Equally, long offline times due to faults or extensions/retrofits are no longer sustainable. In order to react quickly and reliably to events as well as plan for extensions or retrofits, it is becoming ever more important exact documentation of existing substations in the form of a digital twin of the substation.

With the help of this twin, planning and simulating can be fast and reliable. The digital twin can be connected with various data sources like Scada-Systems or Asset-Management-Systems and must behave intelligently - switches in the twin must be able to switch, wires must be able to swing. primtech allows the creation of an intelligent substation model - of a digital twin - that fulfils these requirements. In order to fully benefit from the digitization of the digital twin, existing substations need to be digitally captured - with the help of the new primtech tool - Optical Symbol Recognition (OSR).

## OSR Tool

The primtech tool - Optical Symbol Recognition (OSR) - allows, with the help of artificial intelligence in a mostly automatic process, the creation of primtech substation model out of point cloud scans or photos of a substation.

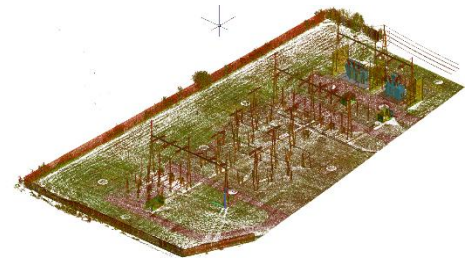


The created primtech models are intelligent 3D models and comply with the Building Information Modeling (BIM) Philosophy - so called primtech BIM 3D Models. primtech creates the models according to the detected points and the specific signature within the point clouds and then builds up assemblies - step by step - to a complete BIM model.

## Starting Point: Substation Scan

The 3D scan of a substation or photos taken from drones serve as the basis for the OSR tool. These 3D scans (e.g. Lidar scans) or photos are converted and optimized in an Autodesk ReCap project. These ReCap point cloud projects are then simply linked to a primtech project and become available to the OSR tool.

For the pre-processing of the laser scan or photo data, Autodesk ReCap or Autodesk ReCap Pro respectively is needed.



## OSR Execution

The OSR tool is integrated in primtech and can be executed as soon as the point cloud is linked to a substation. The creation of a primtech model from the point cloud takes place in steps at the assembly level - which are created from recognized equipment, steel constructions and foundation heads. After defining the conductors (wires, tubes) and their connection points, the primtech tool examines all possible positions - signatures - in the point cloud and compares these to the relevant assemblies in the integrated primtech library. These are then inserted or new assemblies are created respectively.

The Auto-Search and Auto-Apply features support the user in the fast implementation of the symbol recognition. Through the preview, the user can individually decide - based on a scoring list - which assemblies he prefers and

