![STONEX]

Stonex X120GO

How to orientate a point cloud with GCPs

Tutorial v.1

![STONEX] Part of **UniStrong**

GCPs acquisition

To acquire GCPs with 120GO there are two possible ways:

1. Stand still about 10 seconds on a point.

2. In the GOapp, click on the *GCP Mode* icon. While scanning, as you pass above a GCP, stop on it and click the icon *Add GCP*. The software will acquire the position and a message of successful acquisition will be displayed. A yellow square will identify the GCP.
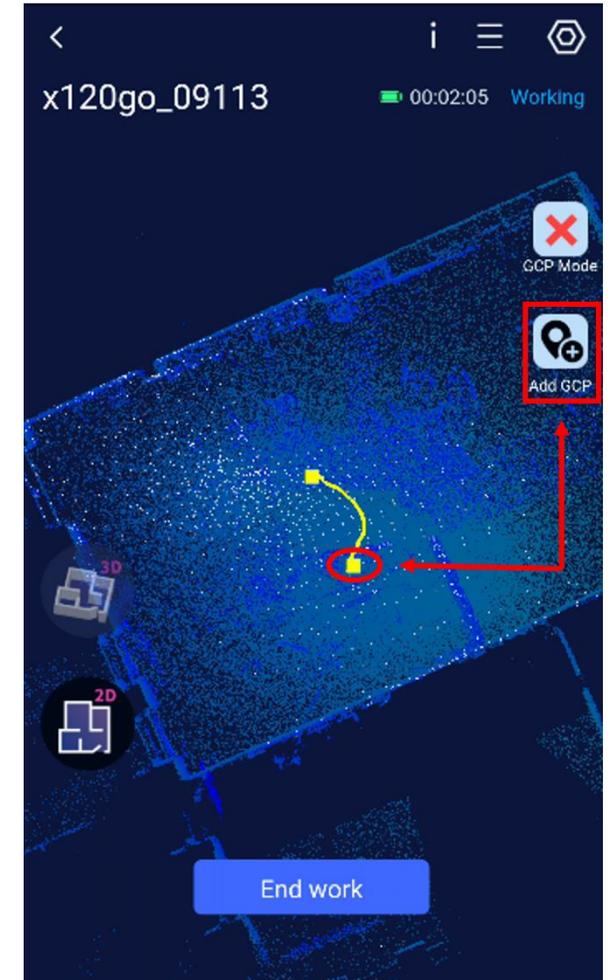
GOpost orientation

If GCPs were acquired standing still, the information about them will be obtained automatically during the processing of point cloud creation.

In the project folder, there will be a subfolder called *gcp*. Inside there will be a file called *local_benchmarck.txt*, with the coordinates of GCPs in a local coordinate system.
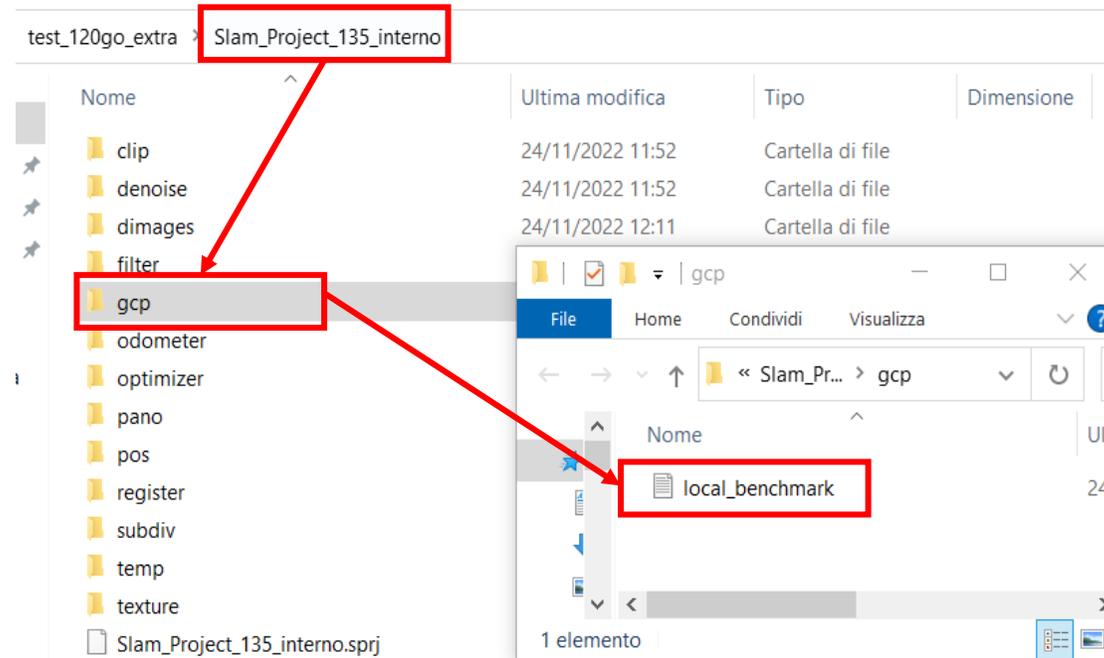
NOTE: remember to delete the first GCP, since the scanner will save the position of the initialization as a GCP, unless the initialization isn't itself a control point!

GOpost orientation

If GCPs were acquired through the app, when you download the data in your PC, in the project folder there will be a .txt file called *gcp*. When you import the data in the GOpost software, check if the *gcp.txt* file is called as an input file. When the point cloud is created, in the subfolder *gcp* there will be a file with coordinates of GCPs called *local_benchmark.txt*.
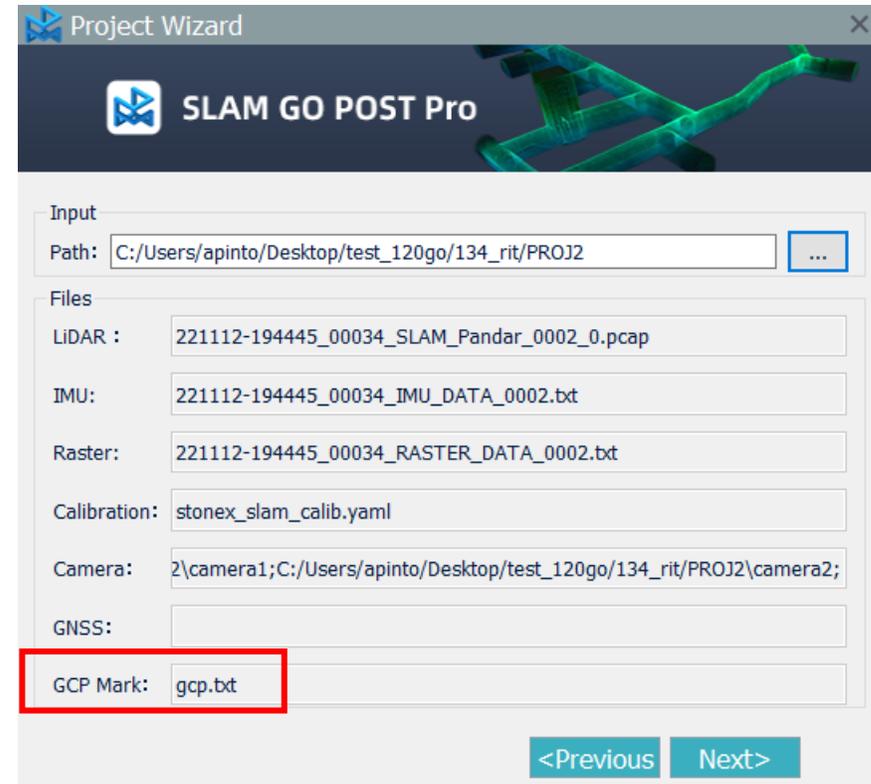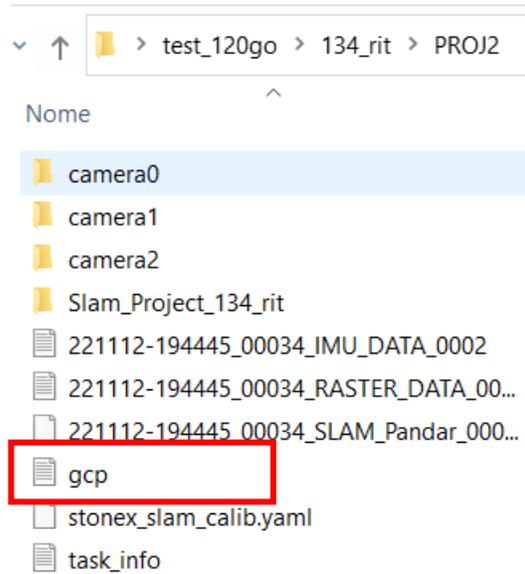
If you have acquired GCPs coordinates with GPS or total station, create a .txt file with the following

format: **point name, easting, northing, height**.

The separator can be either comma or space.

Please be sure to save the points in the order with which you acquired them during the scanning.

```
PtID,East,North,Height
105,-43.9739,27.9214,-0.1931
103,-45.4290,0.6931,0.8562
104,-44.6201,-17.3495,0.7759
102,-19.1088,-0.2728,0.1708
101,4.8659,0.0752,-0.1866
106,-0.2861,28.7795,-0.0462
107,-13.7712,19.4766,-0.1862
```
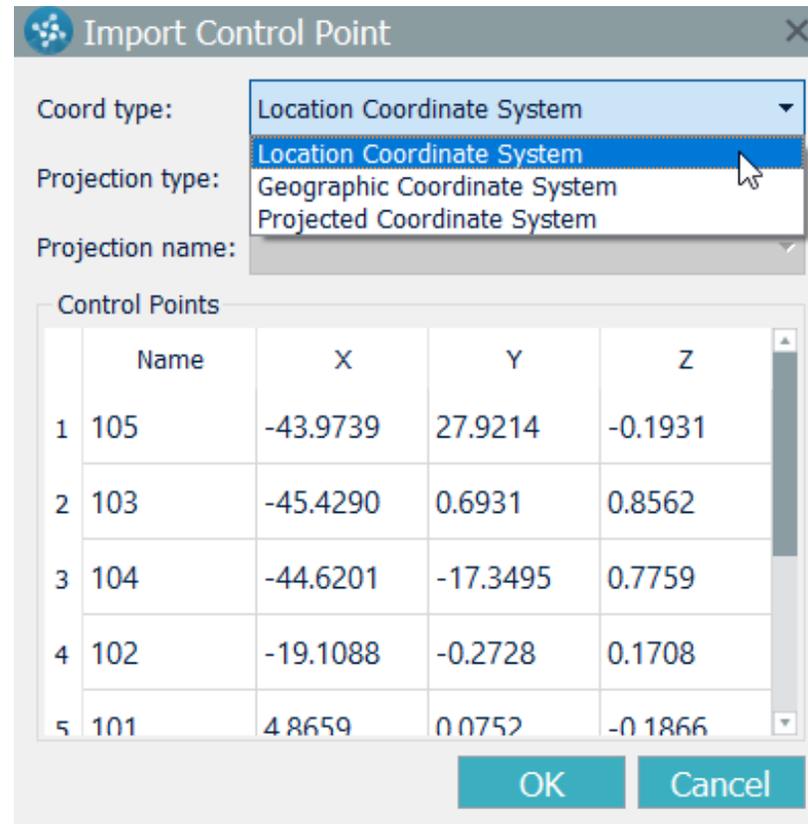
Gopost orientation

Once the processing of your scanning data is done, right click on *Control Data* and click *add Data*.
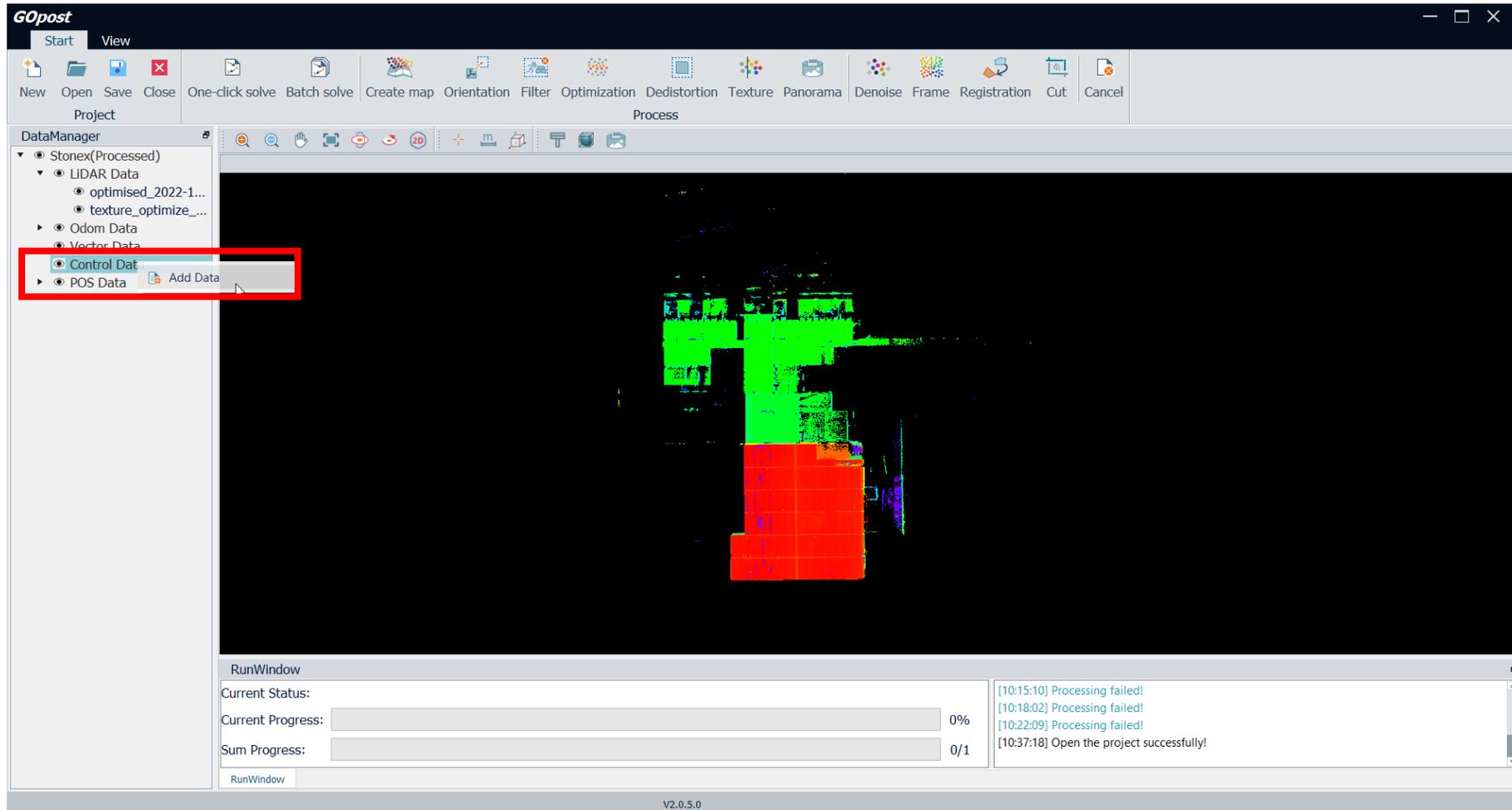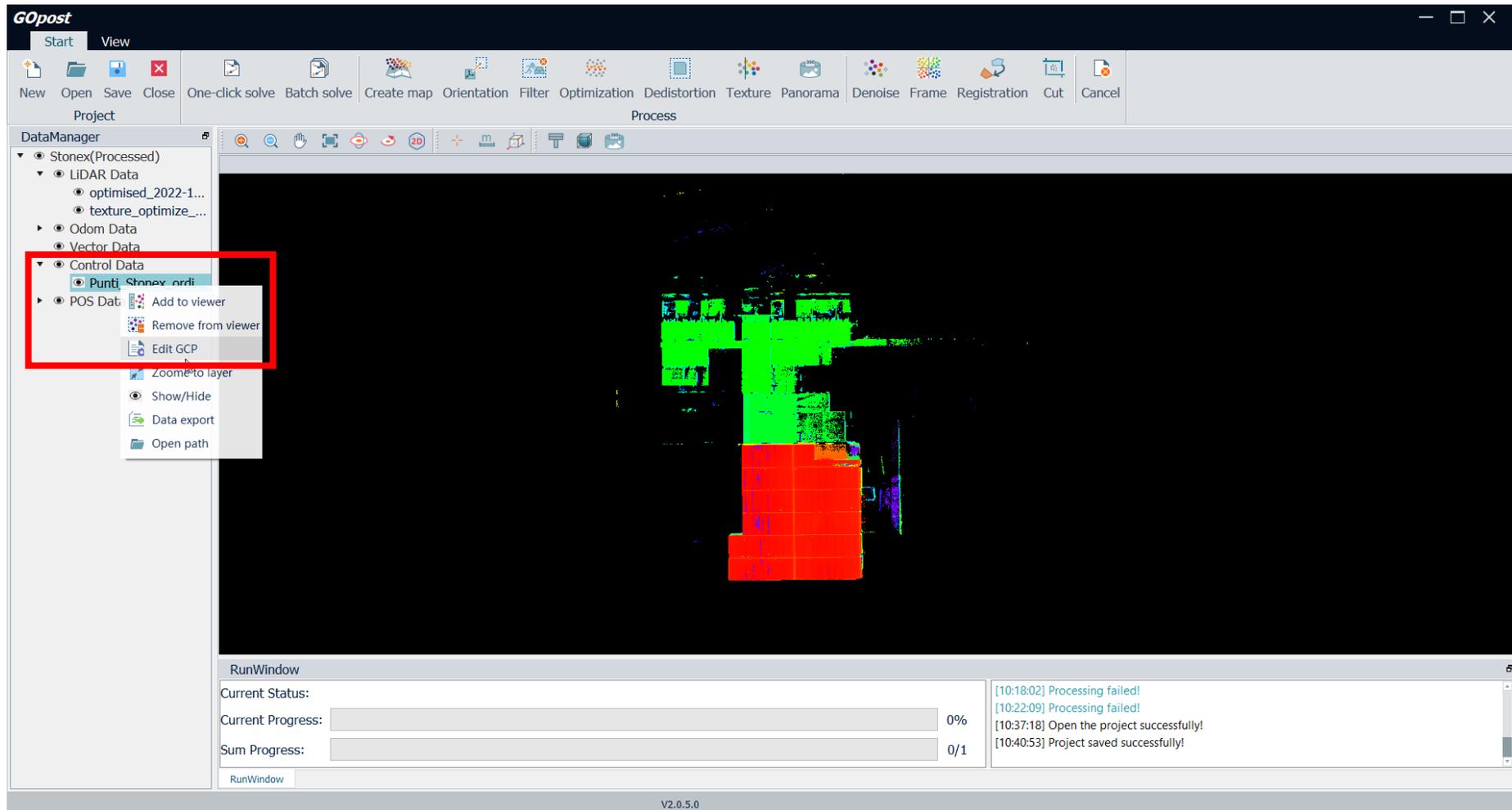
Select the file you just created with your GCPs. Than the import control point window will open. Here you can set the coordinate type, the projection type and name. You will see also a preview of the point you are importing. Click *OK* when done.

Gopost orientation

In *Control Data*, right click on the file of the GCPs and click on *Edit GCP*.

Gopost orientation

In GCP Edit window you can see the preview on the left of the Reference control point, while on the right (called Matching control point) you can see the GCPs saved in the *local_benchmark*.txt.
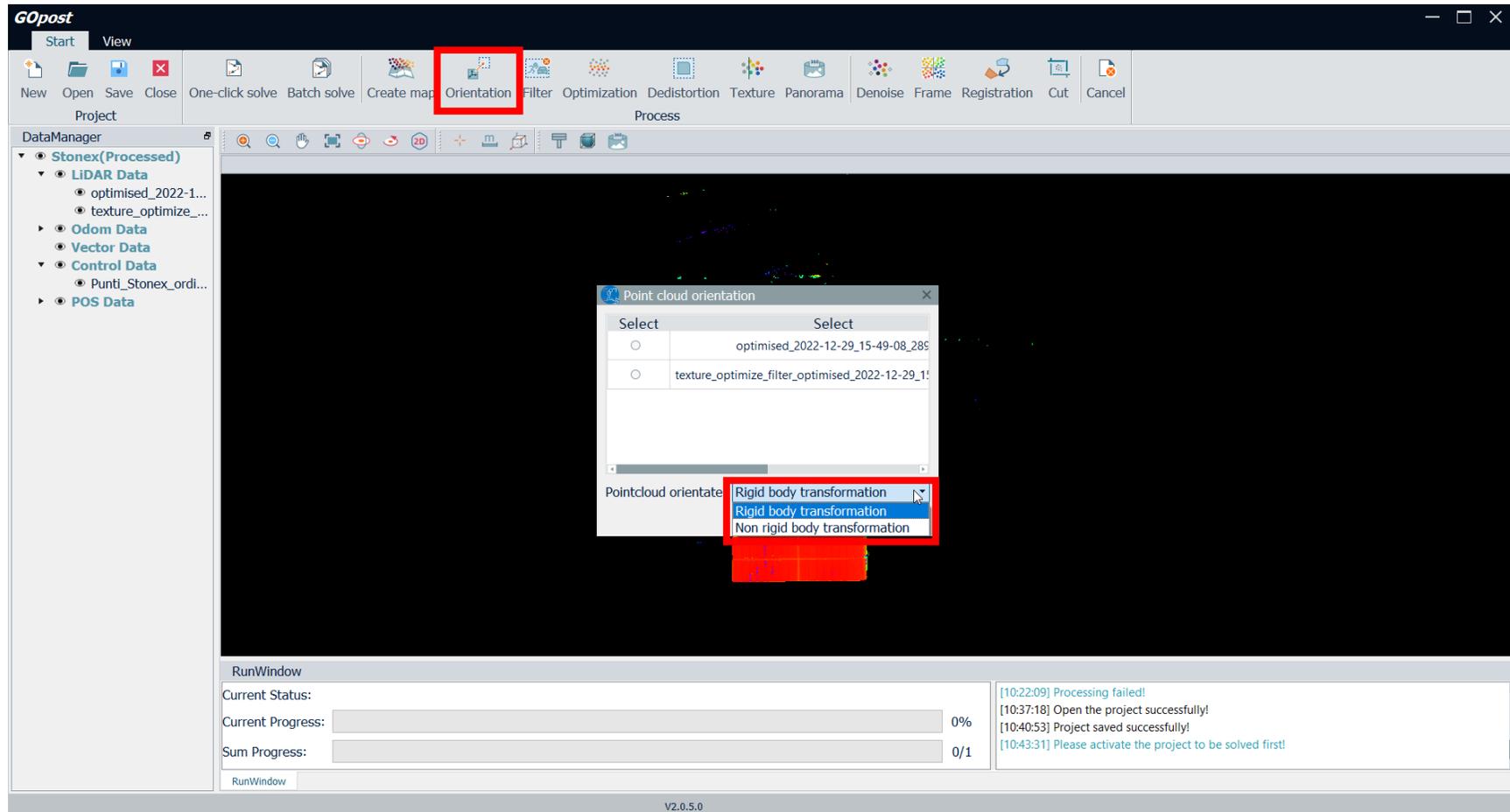
Gopost orientation

Here you can check if the order of the GCPs is coherent, or you need to add or remove some control points. To do so you have to manually modify one of the two GCP file. In this case the point 8 was not present in the Refence system, so it must be deleted from the file. Once all is done, click *OK*.

Gopost orientation

Now you can click on *Orientation*. In the window tha will open select the cloud you want to orientate, and choose between a Rigid body or a Non rigid body transformation. Once done, click *OK*.

Gopost orientation

When the process is done, you can find, inside your project folder, in the *gcp* subfolder, the orientated point cloud (.las format), the IMU position file oriented and a report with the accuracy of the process.