

## TriSpector-1060

This document gives our evaluation of the TriSpector-1060. It is based on evaluation of the sensor performed by Stiftelsen Adopticum in a project financed by Kempestiftelsen. For more information about the sensor, please feel free to contact Adopticum.

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The TriSpector-1060 laser triangulation smart sensor combines the fast and accurate 3D-vision sensors from SICK with the possibility to run applications of its own, without an external PC. The sensor can scan objects, line by line, and analyses the data internally by using a suitable available AppSpace applications or your own tailor-made AppSpace-applications uploaded beforehand. The sensor can thus become its own independent measurement system.



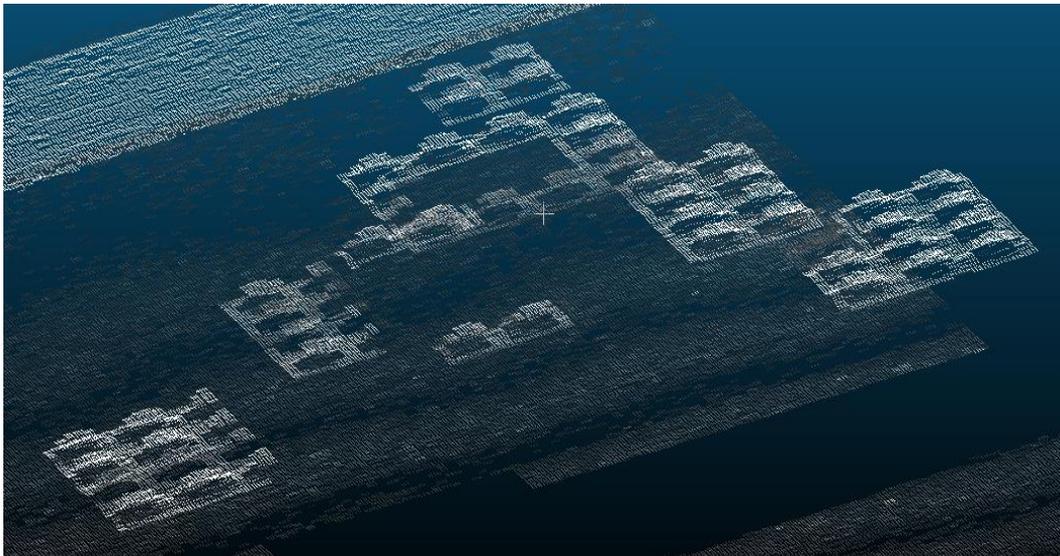
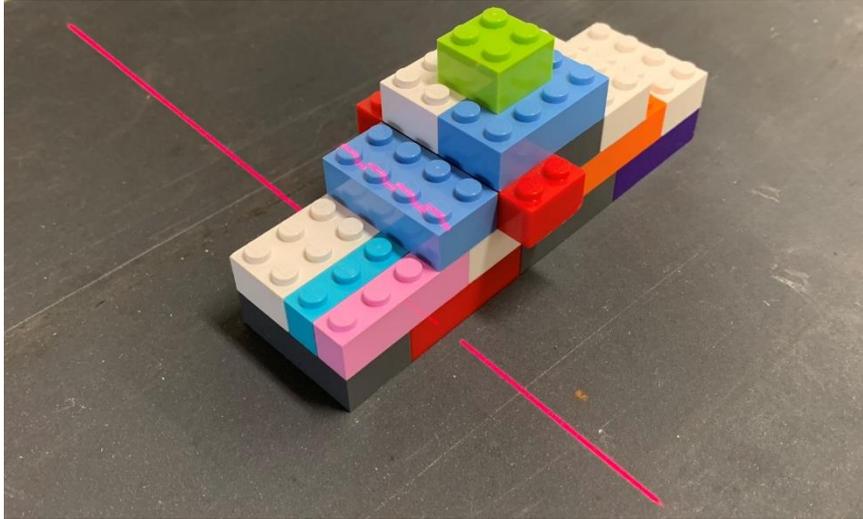
The objects, usually transported on a conveyor with an encoder connected to the camera, are passing through a laser line allowing the camera to measure the objects. The camera creates images with 3D-data, including X-, Y- and Z-coordinates and the light intensity at the surface of the objects for every point (see figure 1 below). This model measures the objects with at least mm-precision, with a speed of up to 5000 profiles/second.

As a pre-calibrated camera and laser system the TriSpector simplifies calibration and setup effort and time, with alignment still needing to be handled in the applications. When developing your own AppSpace applications you have access to the API including many image and 3D data processing tools. With these tools you can develop tailor-made solutions that fit your needs. AppSpace license is needed, as well as Lua programming knowledge for developing your own solutions. The TriSpectors can also be combined with HALCON for access to more machine vision tools or for connecting to existing systems using HALCON.

The measurement area and camera need to be covered from other light sources, like sunlight, with overlapping wavelengths with the laser light so that the measurements aren't affected. A housing for the camera might also be needed if it is to be used in outdoor applications.

Limited range can be a problem, but several sensors aligned together can be used for measuring bigger objects, even if it means a higher hardware cost and the alignment of the sensors must be handled. The sensors' prices are above 70 000 SEK for one sensor. The AppSpace license also comes with a pricetag.

The TriSpector-1060 can thus be an independent measurement system for your own applications using the sensor's available set of 3D-data and image processing tools to solve all kinds of measurement problems where high speed and mm-accuracy are needed.



*Figure 1: Above: A lego test object, for well-known measurements on mm level. Below: A scanning from a TriSpector-1060 of the same lego test object.*