

aTom

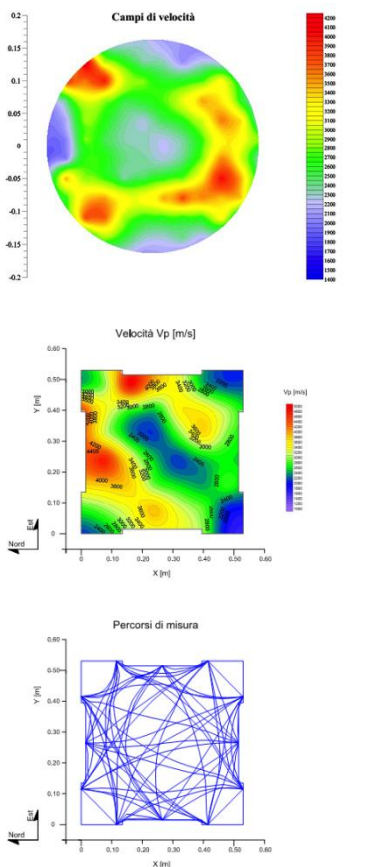
TOMOGRAPHIC ELABORATION SOFTWARE

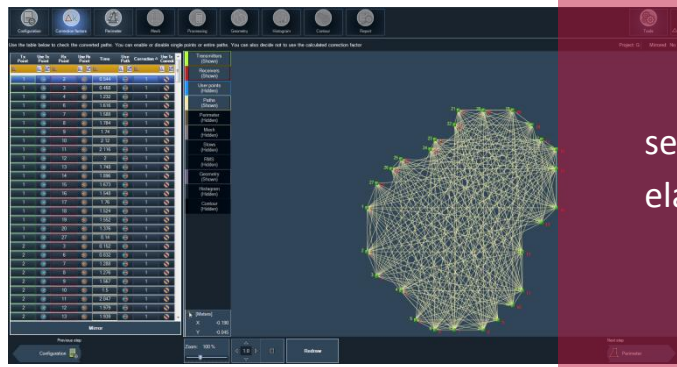


▶ WHAT IS ATOM: aTom[®] is the software developed by Adding & Solgeo srl, that performs tomographic elaboration starting from ultrasonic, sonic and seismic data.

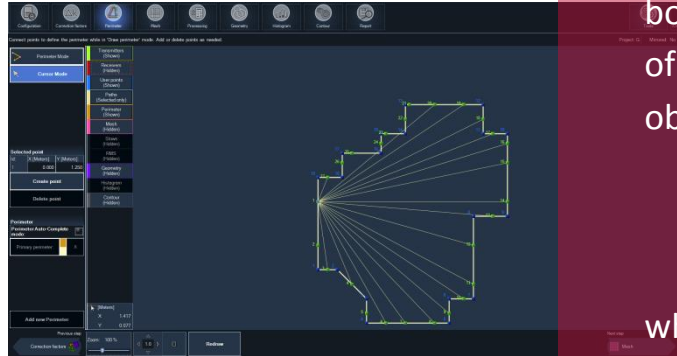
▶ METHOD: the tomographic method allows to get the maps of the velocity distribution of the waves along the plane section taken into account. The starting point is given by the measure of the propagation times along an high number of paths, which, with different inclinations, are mutually intersected in the area bounded by the positioning geometry of the transmission and the reception points.

▶ PRINCIPLE: the velocity fields are derived from an iterative calculation algorithm, known as SIRT (Simultaneous Iterative Reconstruction Technique). This algorithm is based on the gradual reduction of the deviation between the times of flight measured and the times elaborated with the “ray-tracing” algorithm, which reconstructs the trend of the paths as a function of the velocity field. e tomographic method allows to get the maps of the velocity distribution of the waves along the plane section taken into account.

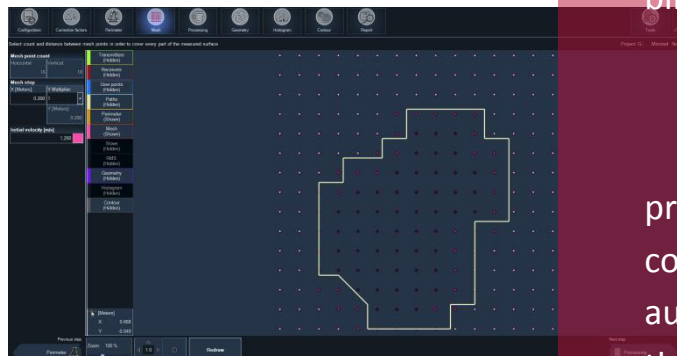




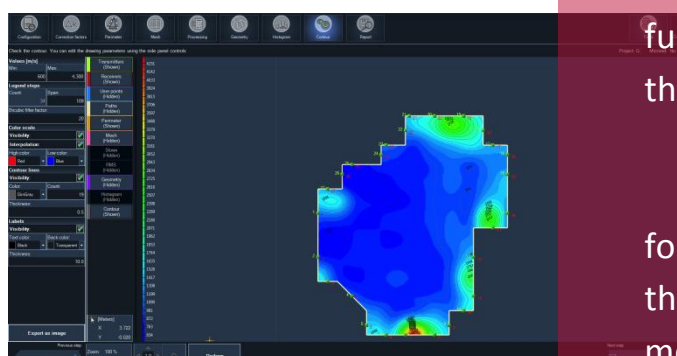
▲ The preliminary analysis of the data permits to select the measure paths which will be used in the elaboration, excluding any possible outlier.



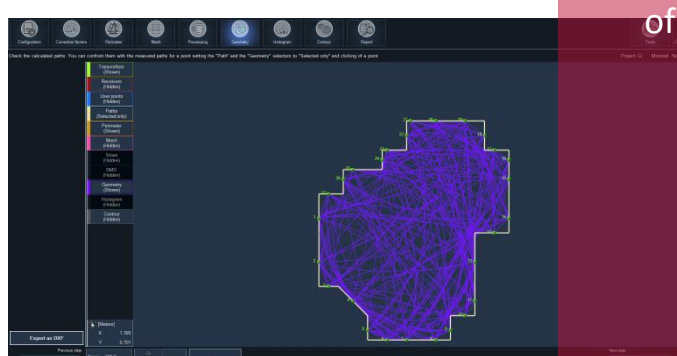
▲ The area of the section that has to be processed, is bounded by a perimeter that is defined by the geometry of the source, by the receivers, and by the shape of the object investigated.



▲ The section is discretized by a rectangular grid in which nodes are determined the velocities, considering bilinear variation along the mesh.



▲ The elaboration is performed iteratively with a procedure so that, at each iteration, the velocity values correspondent to each nodes of the grid are automatically updated. With this operation, the trend of the paths is derived as a function of the velocity field; furthermore, the times of flight from the transmitter to the receivers, are computed.



▲ The results of the elaboration are presented in the form of color tomograms, which shows the variations of the velocity field, associated to the representation of the measurement paths as they are tracked by the procedure of ray tracing.

Try aTom on: www.ultrasonictomography.com