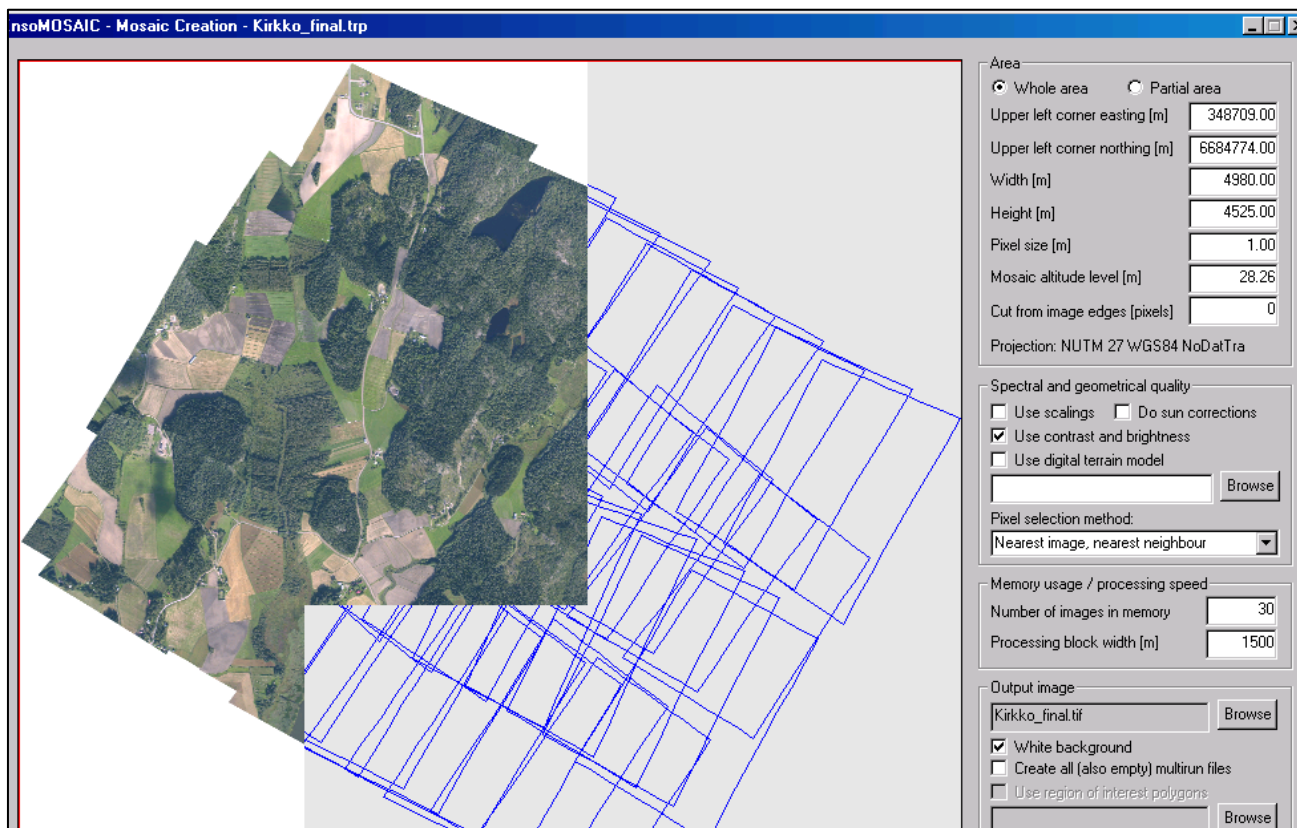


ENSOMOSAIC

Automatic Image Ortho-Rectification and Mosaicking software



WHAT IS ENSOMOSAIC SOFTWARE?

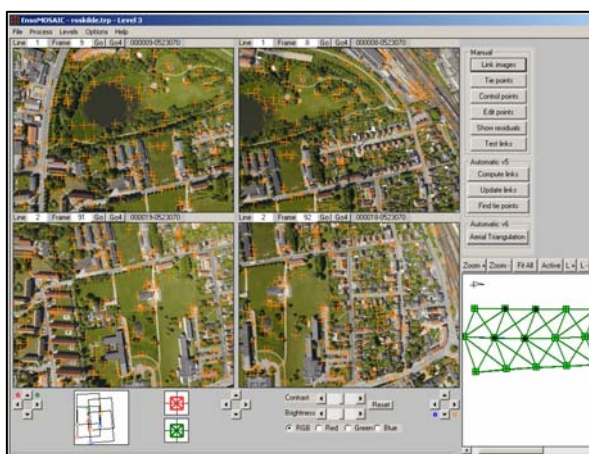
EnsoMOSAIC software is designed to automatically produce ortho-mosaics of airborne digital images and scanned aerial photos. It is capable to process small, medium and large format images collected with any flying platform from unmanned aerial vehicles (UAV) to aircrafts specific for aerial photography.

EnsoMOSAIC software rectifies thousands of digital images on one run applying bundle block adjustment, and joins them into a large ortho-rectified and georeferenced mosaic. EnsoMOSAIC creates also a Digital Elevation Model (DEM) for external applications, and can process imagery collected at any flying scheme, including non-parallel flight lines and linear targets.

INPUT DATA

EnsoMOSAIC requires that digital images have GPS coordinates recorded in the aircraft or estimated with maps. Camera (or aircraft) exterior orientation parameters are not required but if they exist the rectification process is faster. Most common image formats are accepted.

THREE PROCESSING STEPS



1. Aerial triangulation

Pyramid images and feature matching are used to automatically locate up to hundreds of tie points by image. Block adjustment and blunder detection are carried out on each pyramid level. Tie point accuracy is increased when working towards the most detailed level, where sub-pixel accuracy is reached.

In addition to the GPS observations for each image, initial exterior orientation and ground control may be used in the process, but are not required.

EnsoMOSAIC - Bundle block adjustment - roskilde.trp

30 / 30 images OM + 1876A tie points 0 control points

Adjustment ending parameters		Standard deviations for weighting	
Max. no of iterations	50	Air-GPS X [m]	2
Max tiepoint correct [m]	0.05	Air-GPS Y [m]	2
Max image pos corr [m]	0.05	Air-GPS Z [m]	3
Max ima ang corr [sec]	5	Control point [pixels]	0.5

Antenna offset (from camera)		Manual tiepoint [pixels]	
Right [m]	0.8	Manual tiepoint [pixels]	1
Forward [m]	1.9	Automatic tiepoint [pix]	0.5
Upward [m]	1.2		

Remove gross errors
 Stabilize block (single lines)

2. Elevation model

A Digital Elevation Model (DEM) is calculated by interpolating between the tie points. Alternatively, an external model may be used.

3. Mosaic resampling

The final step is to calculate the ortho-mosaic by defining area, spectral corrections, pixel size and resampling method. Several methods for selecting output pixels are available including bilinear interpolation and histogram matching.

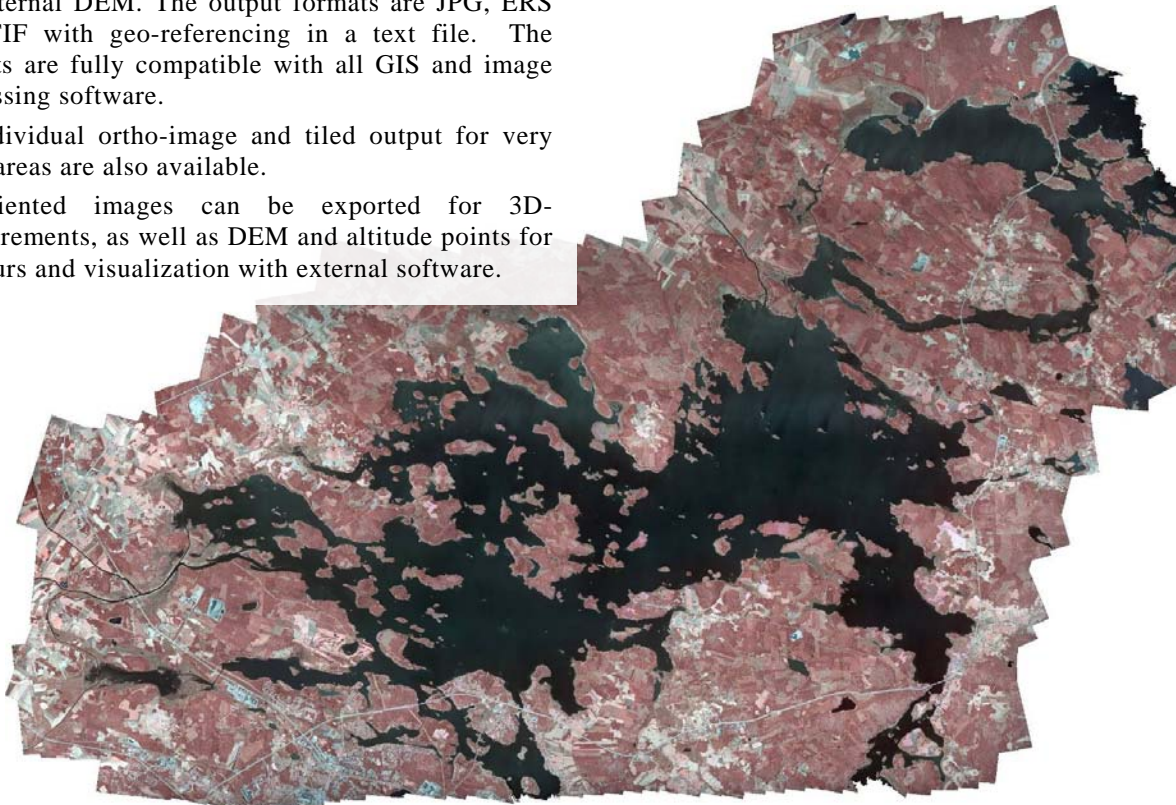
The entire process is automatic. Manual input is needed only if ground control points are included, and in exceptional cases such as low image overlap or taken over water bodies.

OUTPUT FROM ENSOMOSAIC SOFTWARE

The output mosaic is always orthorectified with the internal DEM. The output formats are JPG, ERS and TIF with geo-referencing in a text file. The outputs are fully compatible with all GIS and image processing software.

Individual ortho-image and tiled output for very large areas are also available.

Oriented images can be exported for 3D-measurements, as well as DEM and altitude points for contours and visualization with external software.



HARDWARE AND SOFTWARE FOR IMAGE PROCESSING

A standard PC with Windows NT/2000/XP/Vista is used for processing with preferably minimum 1 GHz processor and 256 MB RAM, for small format images. Scanned aerial photos and large format photogrammetric camera images require more than 2-4 GB RAM in order to efficiently process up to 1 GB images. Standard desk scanners provide sufficient scanning resolution to obtain 0,3 – 0,5 meter ground resolution.

WORK WITH MOSAICMILL!

Please contact us for further information of the possibilities of the EnsoMOSAIC software and imaging and image processing systems.

MosaicMill Oy

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