

## ENSO MOSAIC

### System specifications



### WHAT IS ENSO MOSAIC?

EnsoMOSAIC is an *aerial digital imaging and image processing* system. It has been developed by MosaicMill Ltd. in cooperation with its partner companies. This remote sensing technique is an excellent tool for cadastral surveys, natural resource inventories, change monitoring and urban planning.

The cost of EnsoMOSAIC images is lower and its processing time is shorter than the traditional methods of aerial photography, thanks to short aircraft rental periods and automated data processing. EnsoMOSAIC images are taken with a digital still camera at low altitude, even below the clouds, and the location of every image is measured with a GPS during the flight. The whole process is fully digital, from image capturing to the creation of image mosaics.

EnsoMOSAIC software rectifies automatically thousands of digital images on one run applying block adjustment, and joins them into a large georeferenced mosaic. Optionally, it calculates also single orthoimages and oriented images. The output mosaic is always orthorectified and a Digital Elevation Model (DEM) is created automatically for the imaged area.

### TECHNICAL SPECIFICATIONS OF OUTPUT MOSAICS

The specifications of the output mosaic depend mainly on flying altitude and camera type and settings. The following details are commonly defined:

Ground resolution:	0.05 - 2.0 m (flying altitude 200 - 5000 m, respectively)
Spectral resolution:	Visible red, green, blue, or NIR, red, green (CIR-converted camera)
Geometrical accuracy:	1-2 pixels with ground control, 3-8 pixels without ground control points (depends on terrain and flight conditions)
Coordinate system:	UTM (WGS 84) or user-specified
Format:	Geocoded TIF, ERS or JPG

### AIRCRAFT AND PERSONNEL

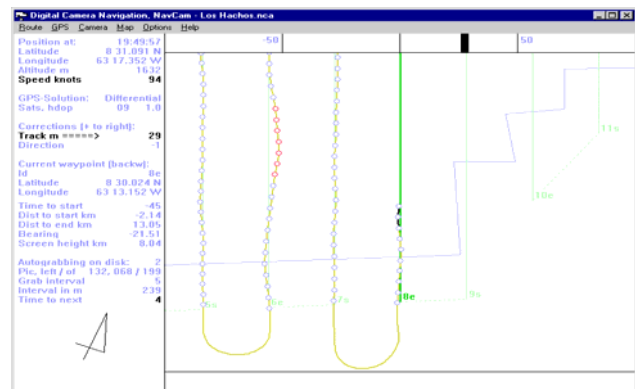


Any aeroplane or helicopter is suitable for imaging. In addition to EnsoMOSAIC hardware, no special equipment is needed. For easy system operation the camera should be installed inside the aircraft, which requires an opening in the bottom of the fuselage. Normally a pilot, a navigator and a camera-controller are needed on-board, but the system can be set to function also independently with pilot only or without operators in an unmanned aerial vehicle (UAV).

## HARDWARE AND SOFTWARE FOR IMAGING

The hardware and the software can be tailored according to the existing equipment and special needs of the client. The following defines a typical installation:

Item	Purpose	Type	Specifications
Camera	Imaging	Canon EOS-1Ds Mark III	<ul style="list-style-type: none"> <li>Digital still camera, 5616 x 3744 pixels , CMOS sensor</li> <li>Sensitivity of the sensor 100 – 1600 ASA (ISO).</li> <li>Image storage on Compact Flash cards</li> <li>True colour or colour infra-red or both</li> <li>Canon EF 24 mm, 28 mm, 35 mm or 50 mm lens</li> </ul>
Computer	Aircraft navigation, camera control	Laptop PC	<ul style="list-style-type: none"> <li>Min 32 MB RAM, 100 MHz processor, 1 GB hard disk</li> <li>Win 2000 / XP / Vista</li> </ul>
GPS	Aircraft navigation and collection of location data of the images	EnsoMOSAIC GPS-unit	<ul style="list-style-type: none"> <li>12 channels, Pulse Per Second signal in real time.</li> <li>Single or dual frequency</li> <li>Real-time differential correction optional</li> </ul>
Navigation and imaging software	Aircraft navigation And camera control	NavCam	<ul style="list-style-type: none"> <li>Flight route and real-time position of the aircraft for the navigator.</li> <li>Numeric and graphic flight data for the pilot.</li> <li>Input of background vector maps</li> </ul>
Control box	Component integration	EnsoMOSAIC Camera Control	<ul style="list-style-type: none"> <li>Synchronisation of the camera and GPS with the navigation software, compensation for the aircraft movement</li> <li>Triggering the camera</li> </ul>



## HARDWARE AND SOFTWARE FOR IMAGE PROCESSING

Item	Purpose	Type	Specifications
Computer	Image processing	Any powerful and reliable	<ul style="list-style-type: none"> <li>Min Pentium 1 GHz, 40 GB hard disk, 512 MB RAM</li> <li>High-quality monitor, min 17"</li> <li>Win NT / 2000 / XP / Vista</li> <li>32 or 64 bits</li> </ul>
Mosaicing Software	Image processing	EnsoMOSAIC Image Processing	<ul style="list-style-type: none"> <li>Automatic aerial triangulation; tie points and block adjustment</li> <li>Automatic image rectification and resampling of mosaic</li> <li>Spectral corrections</li> <li>DEM production, block export for stereo measurement</li> <li>Ortho-rectification, output of single images and mosaic tiles</li> <li>Productivity 200 - 1000 images / day / CPU</li> </ul>

## WORK WITH MOSAICMILL!

Please contact us for further information of EnsoMOSAIC imaging and image processing system. We are prepared to quote the price of the system, which depends on the number of licenses, on the size of area of operation and on the specifications of the camera and other equipment selected.

### MosaicMill Oy

Mr. Janne Sarkeala janne.sarkeala@mosaicmill.com +358 40 539 3324  
 Mr. Ismo Hippi ismo.hippi@mosaicmill.com +358 40 596 5322  
 Teknobulevardi 3-5, 01530 Vantaa, Finland  
 www.mosaicmill.com