

ENSO MOSAIC

System specifications



WHAT IS ENSOMOSAIC?

EnsoMOSAIC is an *aerial digital imaging and image processing* system. It has been developed by Stora Enso in cooperation with the Technical Research Centre of Finland. This remote sensing technique is an excellent tool for natural resource inventories, cadastral surveys, 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 computerized data processing. EnsoMOSAIC images are taken with a digital still camera at low altitude, even below the clouds. All the image processing is done by a standard PC. The whole process is fully digital from image capturing to the creation of image mosaics.

The EnsoMOSAIC software rectifies thousands of digital images on one run applying block adjustment, and joins them into a large georeferenced mosaic. The location of every image is measured with the GPS during the flight. The digital data facilitates flexible printing of mosaic maps in any scale or importing the data into a GIS (Geographical Information System) for further processing. Output mosaic is always orthorectified and Digital Elevation Model (DEM) is created automatically from the imaged area.

TECHNICAL SPECIFICATIONS OF OUTPUT MOSAICS

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

Ground resolution:	0.1-2.0 m (flying altitude 350-5000 m, respectively)
Spectral resolution:	Visible red, green, blue (Canon) or NIR, red, green (Canon converted)
Geometrical accuracy:	1 m with control points and orthorectification, 3-10 m without control points (depends on terrain and flight conditions)
Output media:	CD-ROM and paper prints
Coordinate system:	UTM (WGS 84) or user-specified
Format:	Geocoded TIF, ERS or JPG

AIRCRAFT AND PERSONNEL

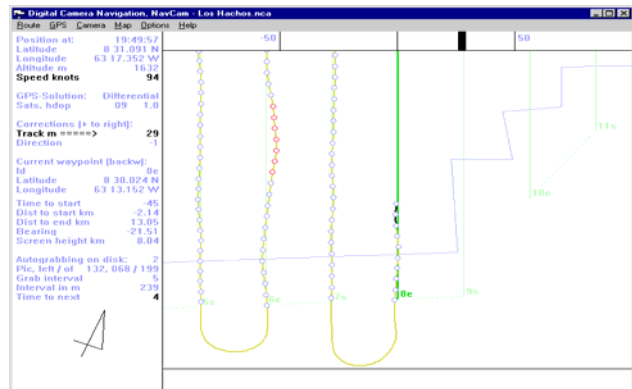


Any aeroplane or helicopter is suitable for imaging. In addition to EnsoMOSAIC hardware, no special equipment is needed. For easy system operation the camera should be installed inside the aircraft, which requires an opening in the bottom of the fuselage. Normally a pilot, a navigator and a camera-man are needed on-board, but the system can be set to function also independently without operators. Data processing requires basic computer skills.

HARDWARE AND SOFTWARE FOR IMAGING

Hardware and software can be tailored according to the existing equipment and special needs of the client. The following defines a typical installation for true colour imaging:

Item	Purpose	Type	Specifications
Camera	Imaging	Canon EOS-1Ds Mark II	<ul style="list-style-type: none"> Digital still camera, 4992 x 3328 pixels, CMOS sensor Sensitivity of the sensor 100 – 1600 ASA (ISO). Image storage on IBM Microdrive or Compact Flash cards True colour or colour infra-red or both Canon EF 24mm or 28 mm 2.8 lens
Computer	Aircraft navigation, camera control	Laptop PC	<ul style="list-style-type: none"> Min 32 MB RAM, 100 MHz processor, 1 GB hard disk Win 2000 / XP
GPS	Aircraft navigation and collection of location data of the images	EnsoMOSAIC GPS-unit with Garmin 15	<ul style="list-style-type: none"> 12 channels, Pulse Per Second signal in real time. Operation with standard GPS accuracy Real-time differential correction of co-ordinates possible
Navigation and imaging software	Aircraft navigation And camera control	NavCam	<ul style="list-style-type: none"> Flight route and real-time position of the aircraft for the navigator. Numeric and graphic flight data for the pilot. Input of background vector maps
Control box	Component integration	EnsoMOSAIC Camera Control	<ul style="list-style-type: none"> Synchronisation of the camera and GPS with the navigation software Triggering the camera



HARDWARE AND SOFTWARE FOR IMAGE PROCESSING

Item	Purpose	Type	Specifications
Computer	Image processing	Any powerful and reliable	<ul style="list-style-type: none"> Min Pentium 1 GHz, 40 GB hard disk, 512 MB RAM High-quality monitor, min 17" Win NT / 2000 / XP Preferably networked With DVD RW
Mosaicing Software	Image processing	EnsoMOSAIC Image Processing	<ul style="list-style-type: none"> Automatic tie point and control point measurement. Automatic image rectification and resampling of mosaic Spectral corrections DEM production Ortho-rectification, output of single images and mosaic tiles Productivity 200 - 1000 images / day / computer

WORK WITH STORA ENSO!

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

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