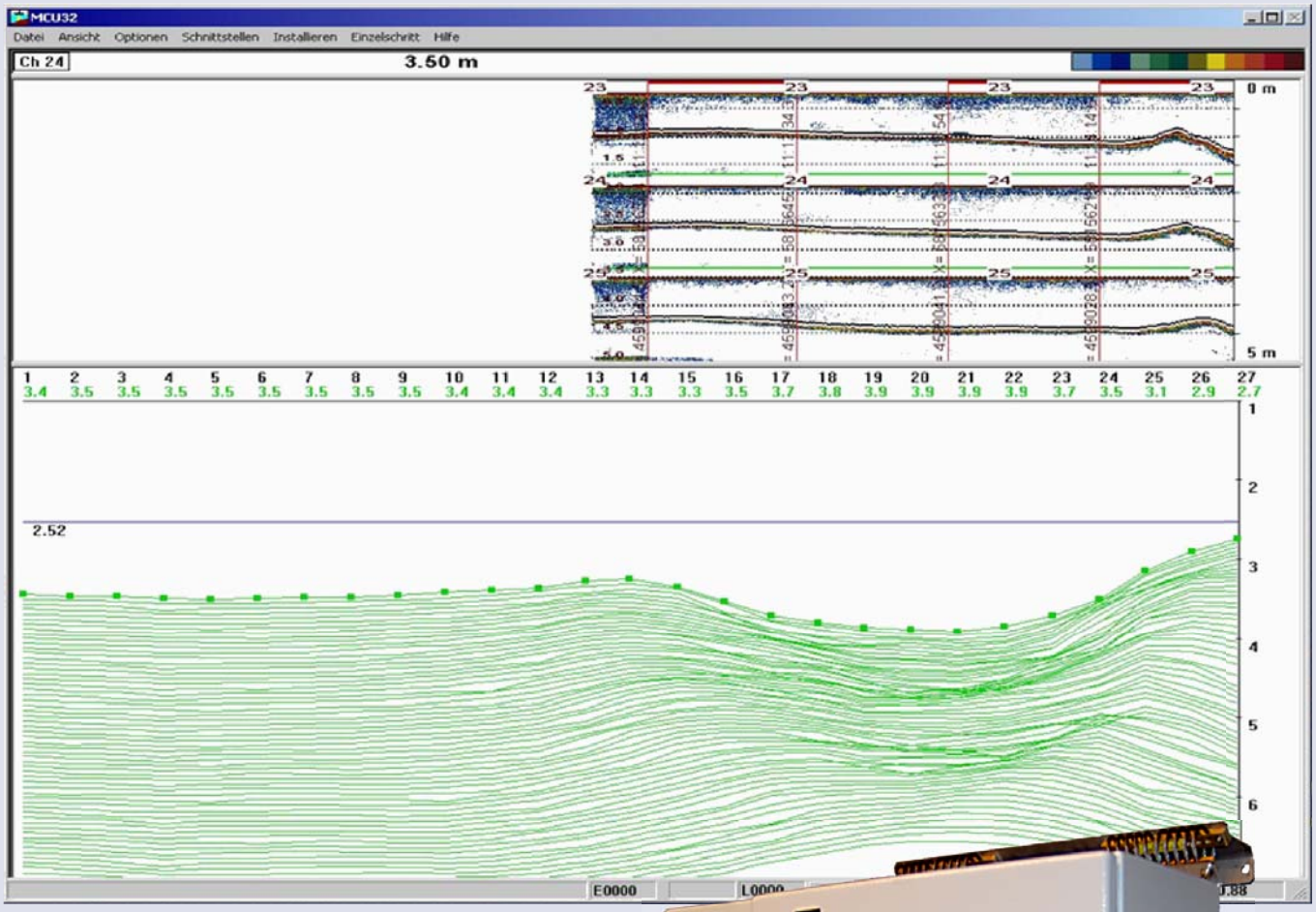
EA MCU
Hydrographic sweep system

KONGSBERG

New precision hydrographic sweep system for shallow water



EA MCU

The EA MCU is a hydrographic sweep system specifically designed for use in canals, rivers and other shallow bodies of water. Its precise depth and bottom detection capabilities provide detailed bottom imagery.

This compact multichannel echo sounder, based on windows XP software, can simultaneously monitor both depth and bottom profile. All data is shown in real time using a colour-coded waterfall display which graphically represents areas of common depth using different colours. A minimum depth parameter can also be entered as a visual shallow-water warning (waterfall display data under the specified minimum depth parameter will be colour-coded red).

The EA MCU readily detects obstacles and objects on the bottom. Even when targets are covered by mud or sediment, spikes in the waterfall display and abrupt changes in baseline echogram data disclose their locations. By using 15 kHz low frequency simultaneously, sub-bottom penetration data is achieved.

The display view can be split into "n" echograms (dependent of number of installed transducers) for quality use.

EA MCU using a 36 channel configuration

A variety of uses

Primary applications for the EA MCU sweep system include detailed bottom surveying of canals, rivers and other inland or coastwise bodies of shallow water with depths from 0.5 meters. The EA MCU sweep system provides the means for:

- Detecting and locating debris or other hazards to navigation in harbors, rivers or canals so that they may be removed
- Monitoring the charted safe depth of navigable waterways
- Surveying shallow inland bodies of water, estuaries, marsh or tidal areas
- Monitoring dredging or underwater construction operations
- Monitoring silt build-up or shifting bottom topography for commercial or environmental studies

Primary features

The EA MCU sweep system has several advantages including:

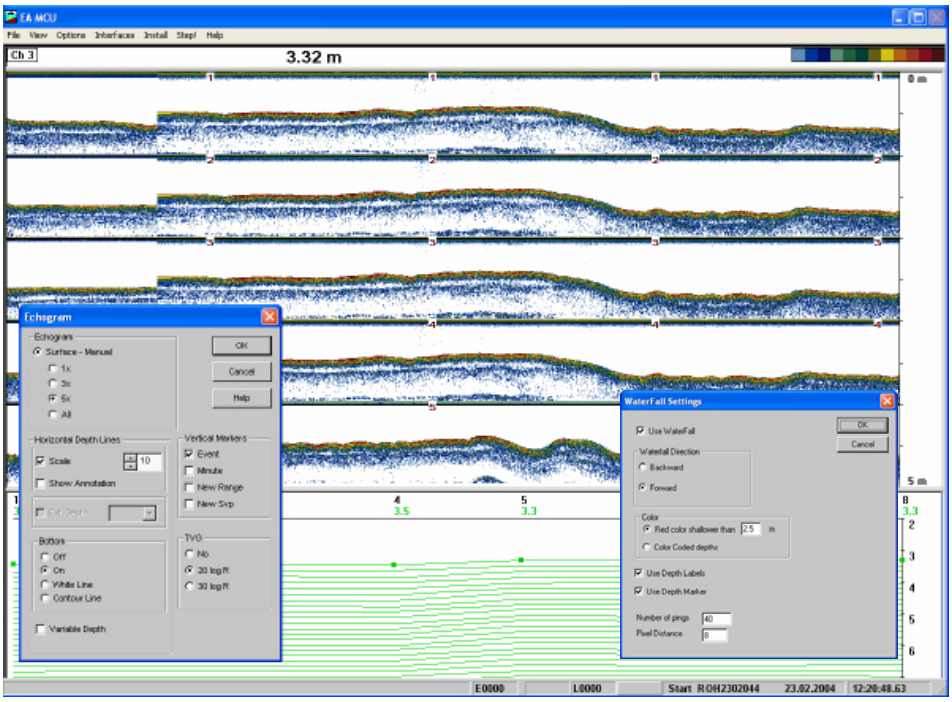
- Bottom detection capabilities specially suited for use in shallow water
- Consistent and accurate data over an entire sweep
- Replay of raw data
- Is simple to configure the x,y and z coordinates of the transducers
- Transducer mode, parameter and display settings, to be stored in the computer's hard drive
- Storing of real time sound velocity (SV) smart sensor
- Very high pingrate (64 Hz @ 4 m) guaranties hits even on very small targets
- Simultaneous transmit on all transducer
- Interference between neighbouring transducers is reduced to zero by using alternate frequencies (180, 220, 180,..)
- Available options:
  - 32 channels
  - 64 channels
  - More than 64 channels on request

System hardware

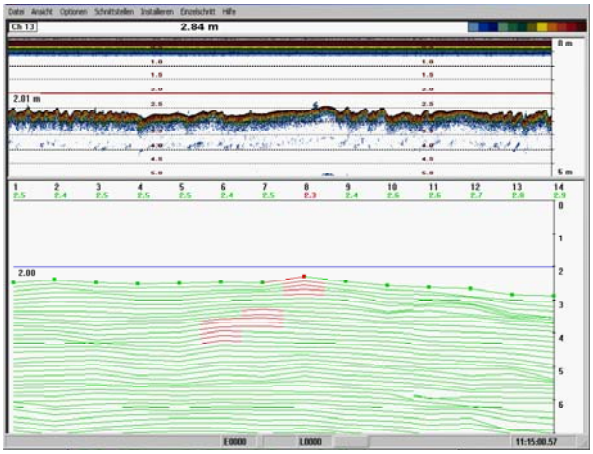
The system's hardware is based on a standard computer which communicate with the cabinet using network interface. At the heart of the cabinet we have proven Kongsberg TRX technology.

The high frequency transducers provide a 9° beam pattern at -3dB (approximately 11° at -6 dB).
The system's bottom coverage is dependent on both the water's depth as well as the distance between each transducer. For example, to achieve total bottom coverage at a depth of 5 m, the transducers must be located 0.8 m apart from each other.

The system can also handle low frequency (15 kHz) simultaneously with high frequencies. The 15 kHz transducer provide a 17º beamwidth at -3 dB. (Approximately 23º at -6 dB.)



User interface for EA MCU



A minimum depth parameter can also be entered as a visual shallow-water warning (waterfall display data under the specified minimum depth parameter will be colour-coded red).

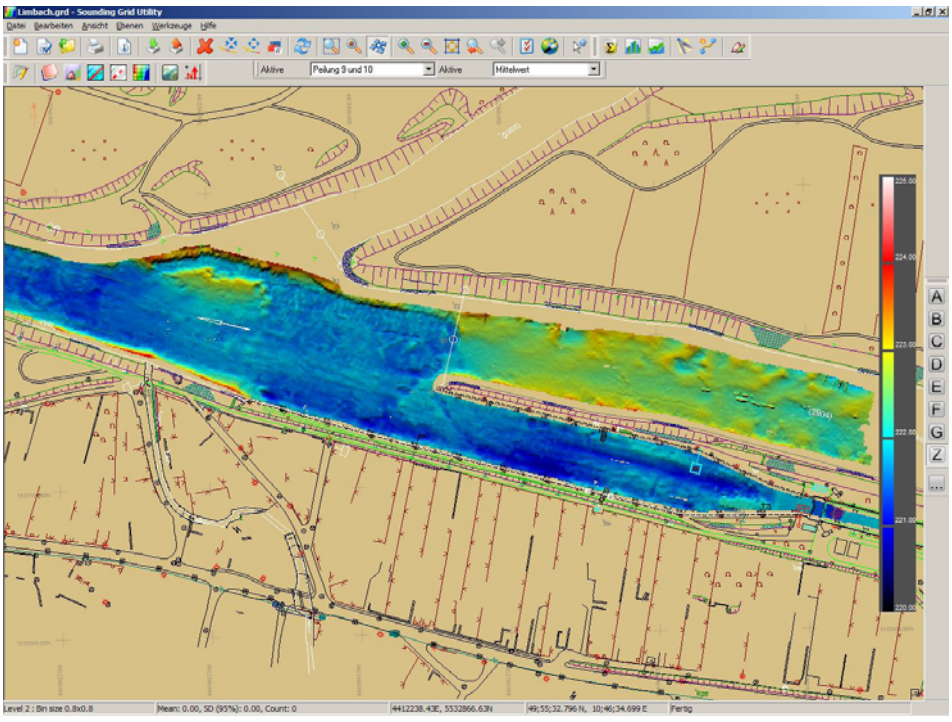
System software

The computer used to operate the EA MCU system uses Windows XP® or Vista® based software to:

- Provide input of MRU and navigation information
- Provide input of SV data. (Constant or real time from smart sensor.)
- Store and retrieve data, for example for replay, using a memory device
- Allow EA MCU and third party survey software to be run simultaneously on the same computer
- Interface depth data with a serial network (socket), for example so that it may be accessed by other survey software

Survey software

While sweeping, depth data can be simultaneously exported through a network (socket) to QINSy survey software running on the same computer used for post-processing data collection. This provides an extremely detailed image of the bottom.



Screen dump from QINSy software with EA MCU input

Technical specifications

EA MCU sweep survey system

Display echogram range:
- Minimum: 1 m
- Maximum: 150 m
- Modes: Manual

Display waterfall range:
- Minimum: -5 m
- Maximum: 150 m
- Echogram modes: 1x-3x-5x-all view and waterfall
- Waterfall direction: Forward or backward

Ping rate: 64 Hz@4 m, 30 Hz@10 m
Measurement resolution: 1 cm
Measurement accuracy (with correct sound velocity):
- 15 kHz: 10 cm
- 120 kHz: 2 cm
- 200 kHz: 1 cm

Variable sound velocity: 1400 to 1700 m/sec
Language: English (Other languages on request)

Minimum specification PC

- Pentium M: 1GHz
- Internal RAM: 256 MB
- Display resolution: 1280 x 1024 pixels
- Operating system: Windows 2000/XP
- Minimum hard disk size: 40 GB
- CD ROM: Read/Write

Interface

Data output (NMEA 0183) serial line or ethernet:
- Simrad D#
- $--DBS, $--DBT and $--DPT NMEA formats
- HYMAS (German WSV-format)

Data input (NMEA 0183) serial line or ethernet:
- Latitude and longitude from GPS (DGPS)
- Any format on serial line (ASCII)
- Motion sensor data
- Sound velocity profile data
- Real time SVP smart sensor.

Annotation

- Event marker operated from menu, by remote toggle switch or serial
- Ethernet

Data storage

- Raw data

EA MCU cabinet

Operating frequencies:
- Option to have 2 separate frequencies, e.g. 15/200 kHz

Single beam centre frequencies:
- 15, 33, 38, 120, 200 or 210 kHz (Options on request.)

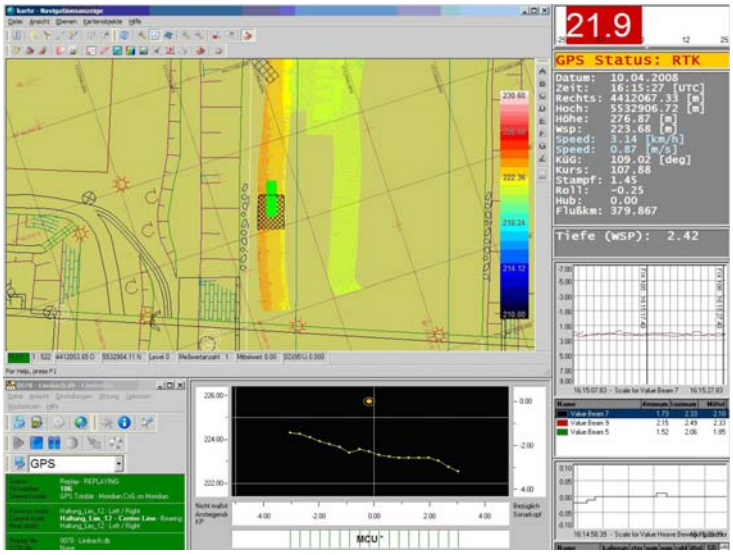
Power output, standard transducers:
- All frequencies: Variable up to 10W
- 15 kHz: 1000W

Supply voltage:
- 230 Vac, 50 - 60Hz

Operation temperature: -30 to +70 deg C
Storage temperature: .–20 to +65 deg C
Humidity: 15 to 95% (non-condensing)
Degree of protection: IP44

Physical dimensions

EA MCU cabinet:
- Height: 712 mm
- Depth: 257 mm
- Width: 561 mm
- Weight: Approximately 35 kg



Screen dump from QINSy software with EA MCU input

A car located and retrieved using an EA MCU

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