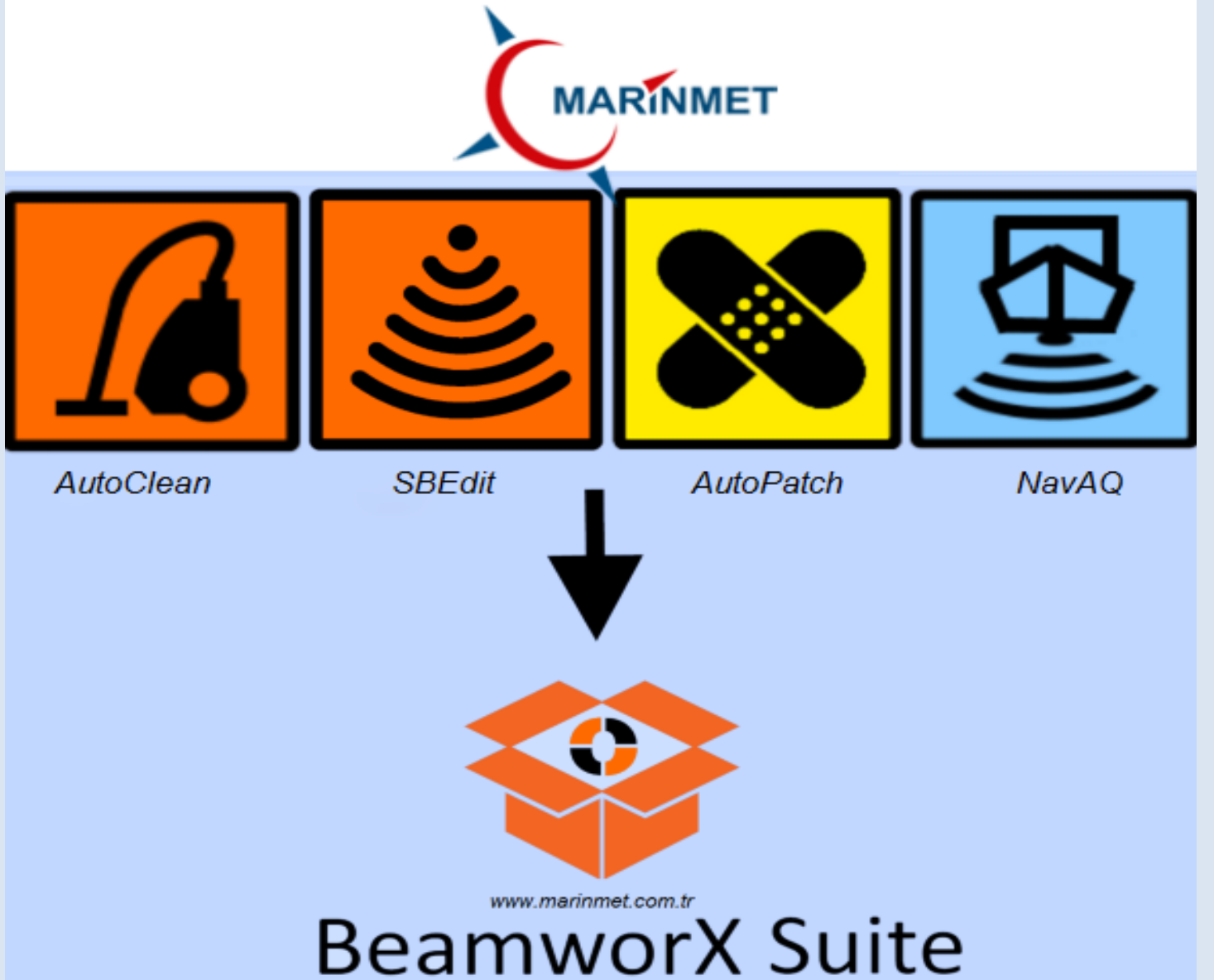


TEMSİLCİSİ OLDUĞUMUZ YAZILIMLAR

TEMSİLCİSİ OLDUĞUMUZ YAZILIMLAR



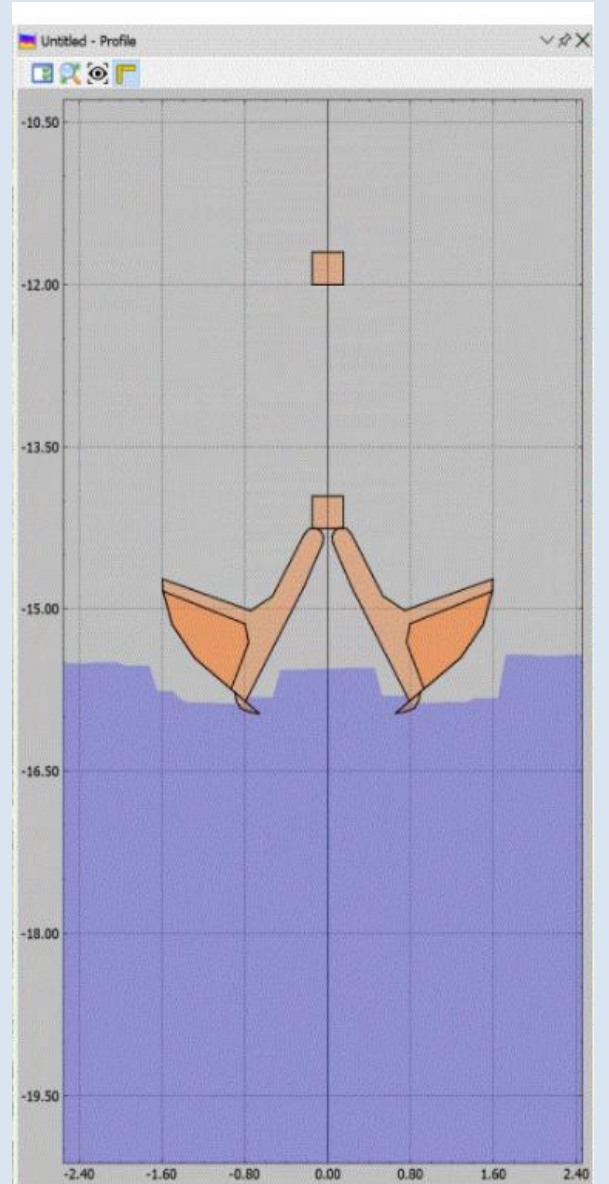
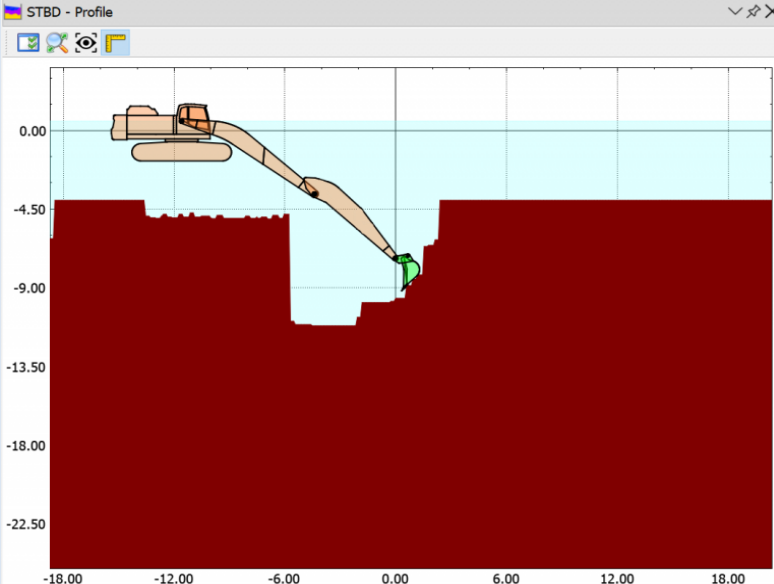
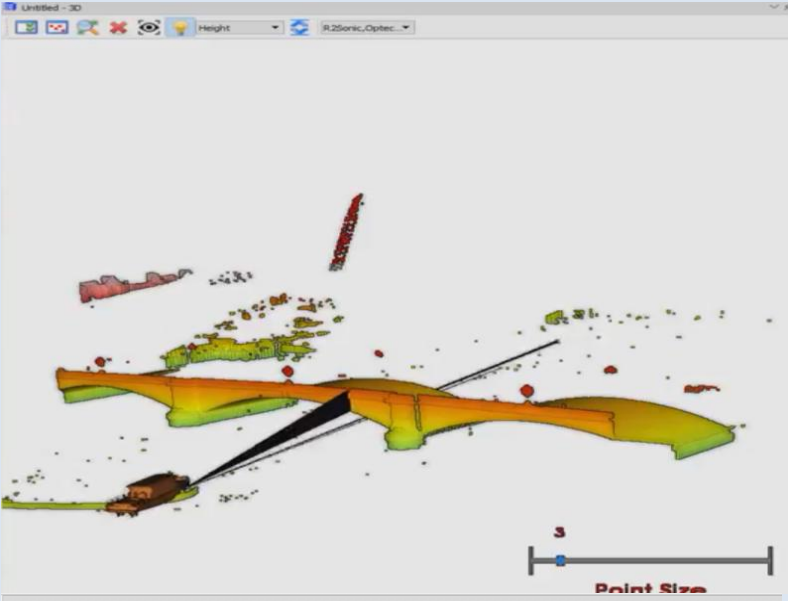
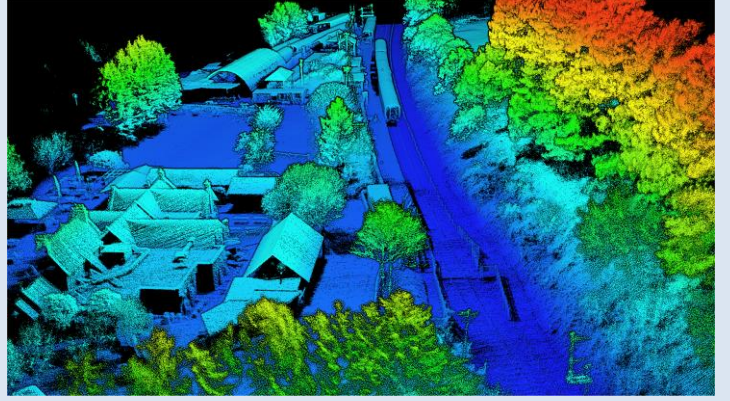
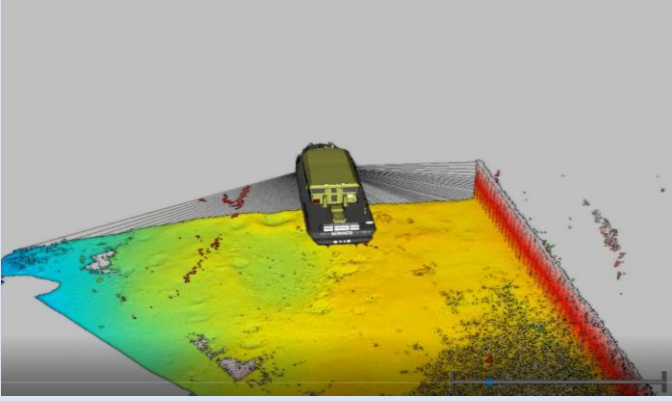
Satış ve Eğitim



NAVAQ Single / Multibeam Echosounder ve Laser Scanner veri toplama programı:

NavAQ, Singlebeam / Multibeam / Deniz tarama ekipmanları ve Lazer Tarayıcılar için kullanıcı dostu ve çok yönlü bir çevrimiçi gezinme ve veri toplama programıdır. Esnek kurulumu sayesinde, aşağıdakiler dahil çok çeşitli görevler için kullanılabilir: Tek kurulum da; **NavAQ - AutoClean - AutoPatch - SbEdit - Raw Processing**

- ✓ Singlebeam, Multibeam ve Lazer tarayıcılar ve Hidrografik Araştırma.
- ✓ Kesici - Emici - Tarama Gemileri, Ekskavatörler, Yüzer vinçler ve benzeri vasıtalar.
- ✓ Dronlar ve Gezici araçlar ile lazer tarama.
- ✓ Hem karada hem de denizde genel konumlandırma hesaplama / görselleştirme görevleri.





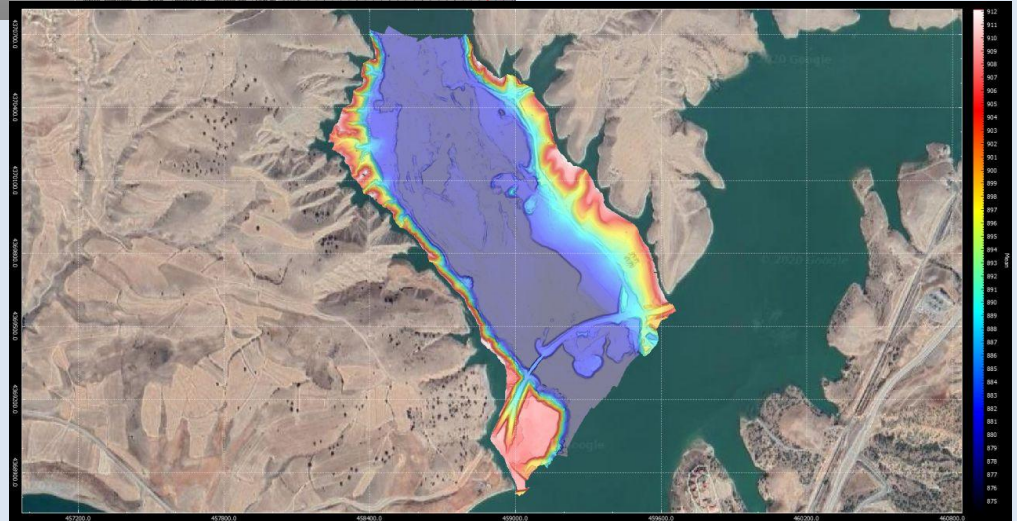
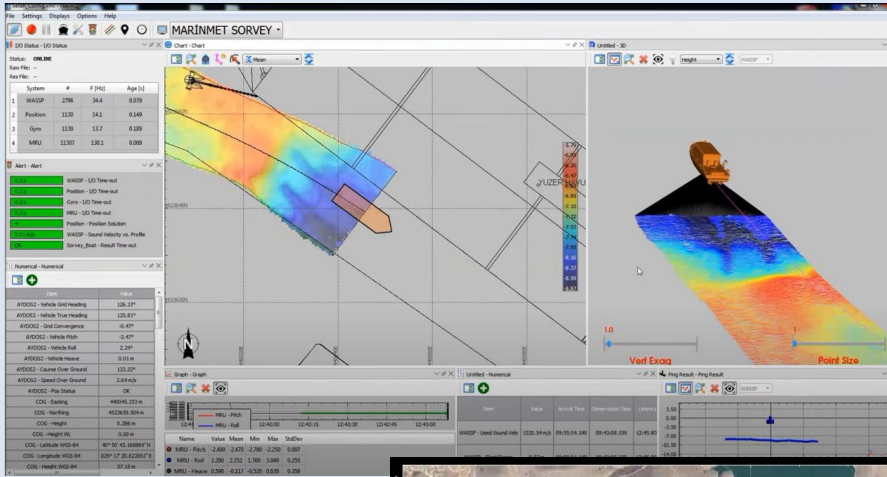
NAVAQ Single / Multibeam Echosounder ve Laser Scanner veri toplama programı

Genel Özellikler (General Features)

- ✓ Very Easy to operate, minimum training required.
- ✓ All interfaced sensor messages are logged in its original format into the **NavAQ** log file (bwxraw) for further processing. This gives the users the extra security that when the real-time results are not satisfactory a full reprocessing including decoding can be done.
- ✓ Positioning and bathymetry results are computed and visualized in real-time and directly stored in the result log file (bwxres).
- ✓ The raw and result files that are generated, seamlessly integrate into our other products **AutoClean** and **AutoPatch**.
- ✓ Flexible geodetic coordinate conversion routines are available for most existing Coordinate Reference Systems, including geoid models. Also supports fully user definable transformations and projection and an EPSG database.
- ✓ **NavAQ** supports an unlimited and unrestricted number of 'vehicles' and sensors.
- ✓ Supported System types include Positioning, Attitude sensors, Auxiliary sensors like tide/draft/angle/range etc, USB, SBE/MBE Echosounders, Laser/Lidar Scanners, Sub-Bottom, USBL, manual layback.
- ✓ **NavAQ** can calculate the absolute position and attitude of interconnected objects using relative or absolute angle encoders/inclinometers. This is used for excavators but also for a multibeam transducer that is mounted on a pan/tilt unit.
- ✓ Extensive Survey Line Planning module, Cross- and Wingline generation, KP calculation, CAD Import.
- ✓ Advanced display management, dockable views, multi-monitor. Display types include Chart View, 2D and 3D Views, Numerical, Alerts and more. Chart View supports AIS Targets, S-57 ENCs, Cad, TMS (Google Maps), WMTS and more.
- ✓ Easy setup, changes can be made without leaving the program and even while being online.
- ✓ Interfacing of sensor data via TCP/IP server/client, UDP, serial. Drivers are available for most industry-known systems. User definable input and output drivers to support custom ASCII/NMEA strings.
- ✓ Unlimited remote client displays for bridge or super-intendant office.
- ✓ Export of Raw and Result Data to ASCII/XTF/S7K/Raw Dump/GSF.

1. Multibeam Echosounder - Batimetrik yazılım (Çok Işnılı Sonar)

- ✓ **NavAQ** interfaces to most multibeam systems available on the market including Kongsberg EM, Teledyne, R2Sonic, Norbit.
- ✓ **NavAQ** excels in the calculation and presentation of real-time multibeam data. Its calculation engine supports all features of modern multibeam systems including: separate TX/RX locations, full ray-tracing, multi-sector and pitch/roll/yaw steered beams. This ensuring that for every Multibeam Echosounder the most accurate results are available.
- ✓ Easy setup, when systems interface their own position and motion sensors (e.g. Kongsberg EM) it is possible to have a one-cable-solution with only a single device added to the **NavAQ** configuration.
- ✓ **NavAQ** also supports interferometric systems like PingDSP, Edgetech 6205, Kongsberg Geoswath, Bathyswath to its full resolution. Every sample is treated as a beam, whether it are 300 beams or 6000 beams per ping, **NavAQ** will calculate the real-time footprints.
- ✓ Presentation of multibeam results and backscatter is done in 2D chart, swath and 3D Point Cloud display.
- ✓ The quality of the multibeam results can be carefully monitored in the displays using grid overlap quality indicators.
- ✓ Full support for multi-detection flags as used by Teledyne, Norbit and Kongsberg.
- ✓ Supports transducers that use a special mounting with pan/tilt units and other rotators.
- ✓ The online created Raw and results files can be further edited and reprocessed in **AutoClean**.



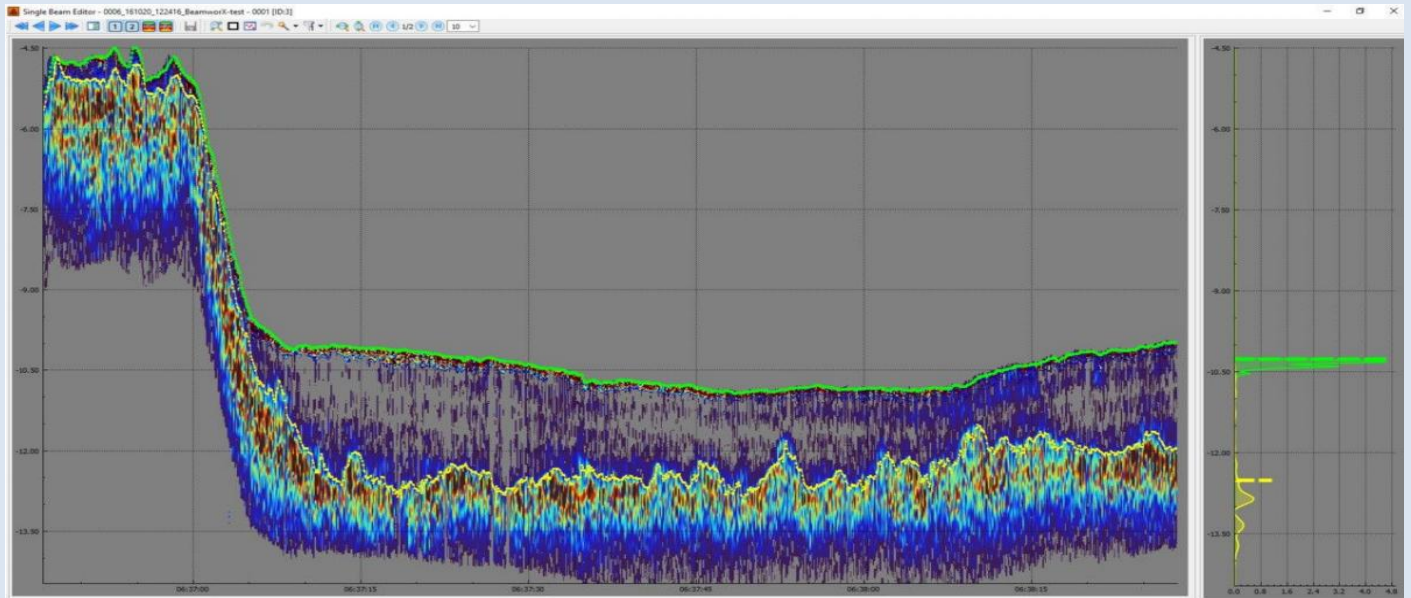
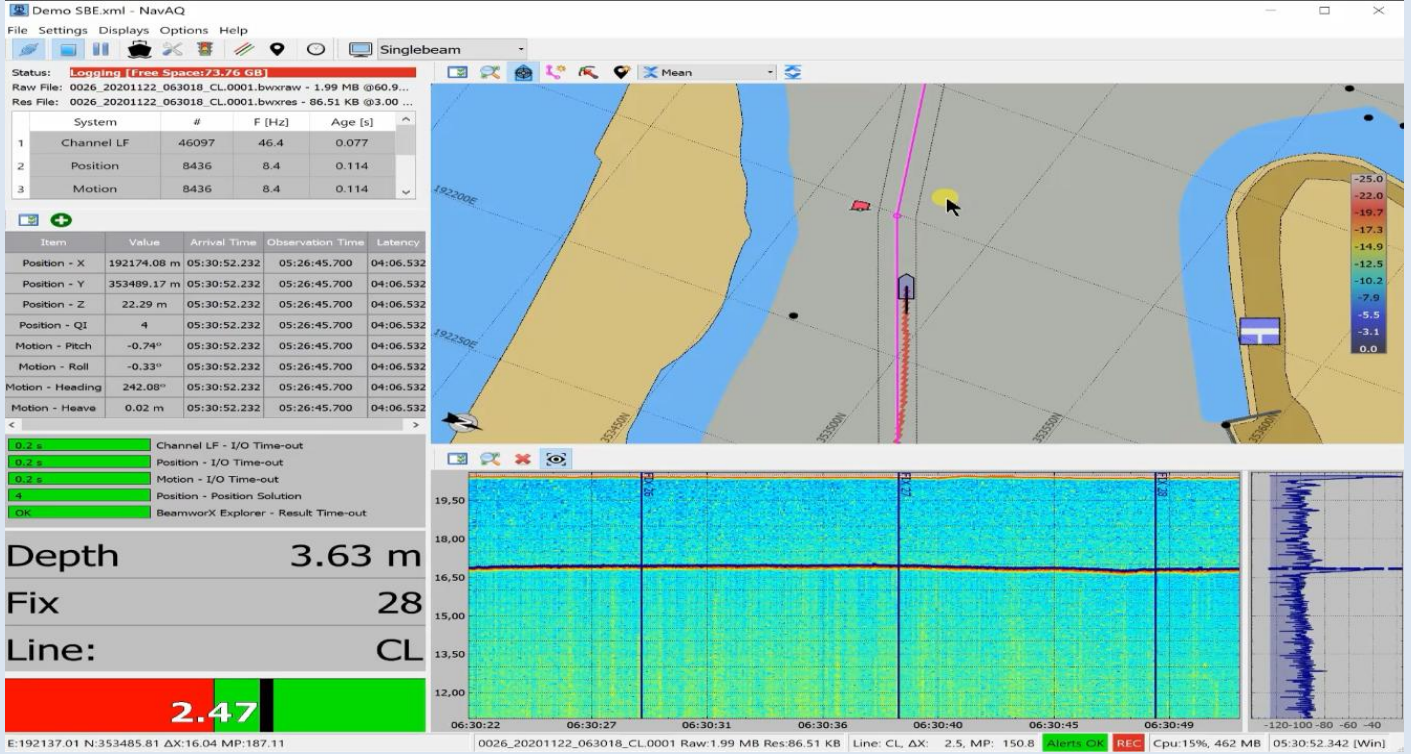
BeamworX
Hydrographic Software & Consultancy



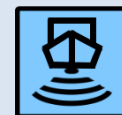


2. Singlebeam Echosounder - Batimetrik yazılım (Tek Işınlı Sonar)

- ✓ **NavAQ** supports all industry-known single beam echosounders including Kongsberg EA, Teledyne Odom Echotrac, Echologger, Innomar, CeeScope. Other systems can be interfaced via generic input driver or NMEA messages.
- ✓ Whenever available the full raw backscatter data is decoded and recorded for real-time and post-processing visualisation.
- ✓ The extensive line planning functionality will aid the operator in setting up a survey line plan.
- ✓ When supported by the system, user definable Annotation message can be send from **NavAQ**.
- ✓ In its simplest form **NavAQ** can be configured to use just three input strings, one for the position (e.g. GGA), one for the heading (e.g. HDT or VTG) and one for the Depth (e.g. DBT/DPT). But of course a more complex configuration with multiple sensors and alongside a Multibeam echosounder is also possible.
- ✓ The computation of the final footprints can use either the Height of the (RTK) GPS or heave and tide.
- ✓ The online created Raw and results files can be further edited and reprocessed in **AutoClean/SBEdit**.
- ✓ Export of raw or result data to XTF/S7K/User Definable ASCII.



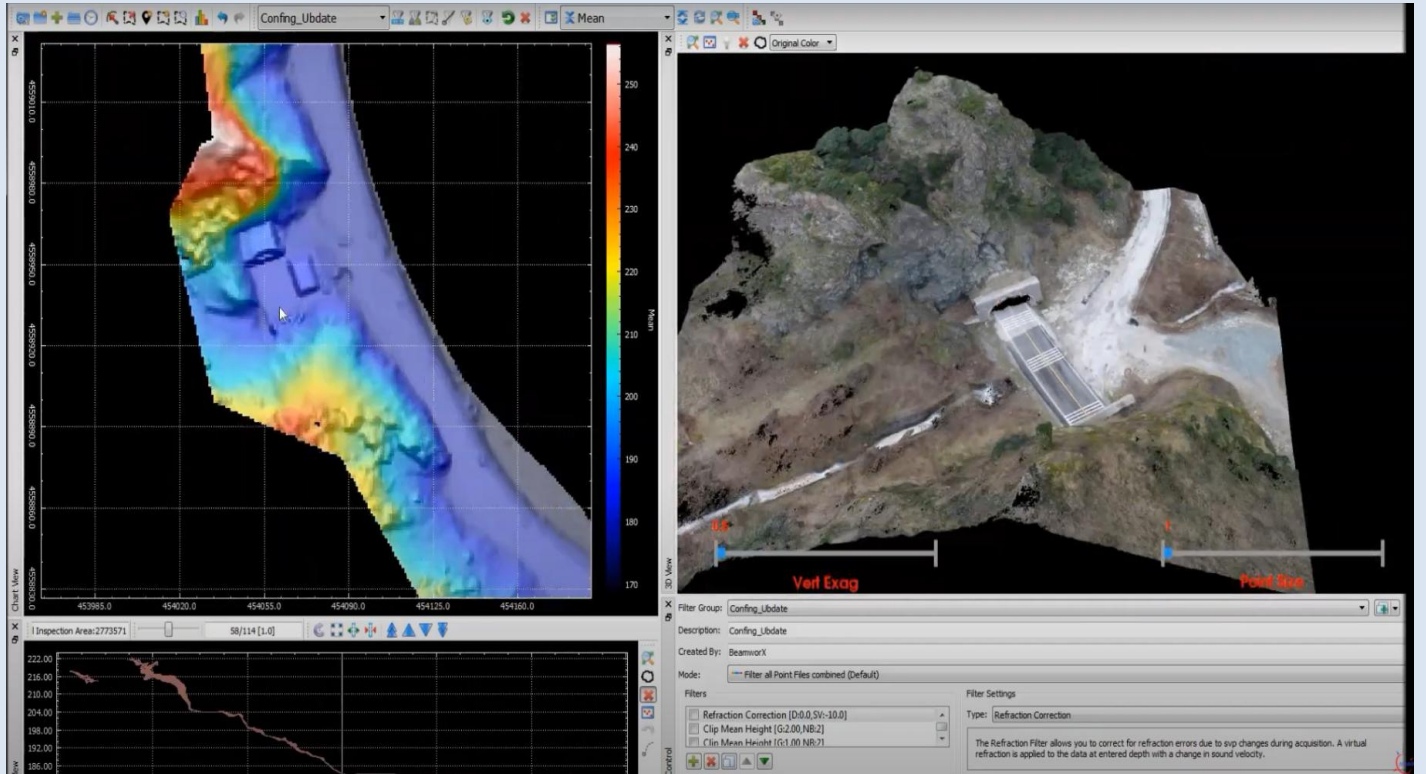
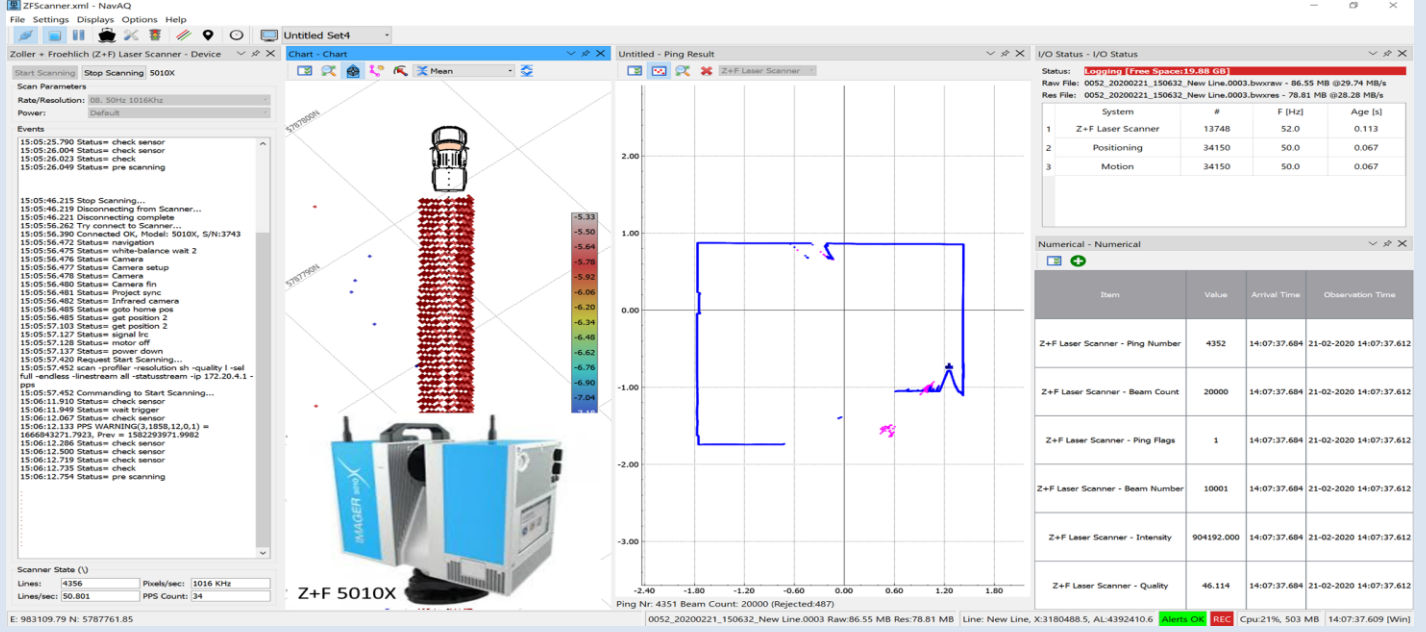
NAVAQ Singlebeam veri toplama ekran görünümü





3. NAVAQ Yazılım Lazer Tarama ve Drone Ortofoto

- ✓ NavAQ supports a large number of laser scanner manufacturers: Riegl, Z+F, Velodyne, RoboSense, Sick, Optech Polaris, Carlson Merlin, Livox. vs
- ✓ Laser footprints are calculated in real-time, scan rates of 1 million points per second or more are supported.
- ✓ Supports multiple simultaneously operating scanners.
- ✓ Visualization in 3D point cloud display for quality inspection.
- ✓ Co-operative operation of multibeam and laser data.
- ✓ Seamlessly integrates with **AutoPatch** for calibration of the scanner mounting angles.
- ✓ Fast re-processing of scan data with pos-processing trajectory (e.g. SBET, ASCII) in **AutoClean**.
- ✓ Export of processed laser points to various formats including Las/LAZ/GSF via **AutoClean**.



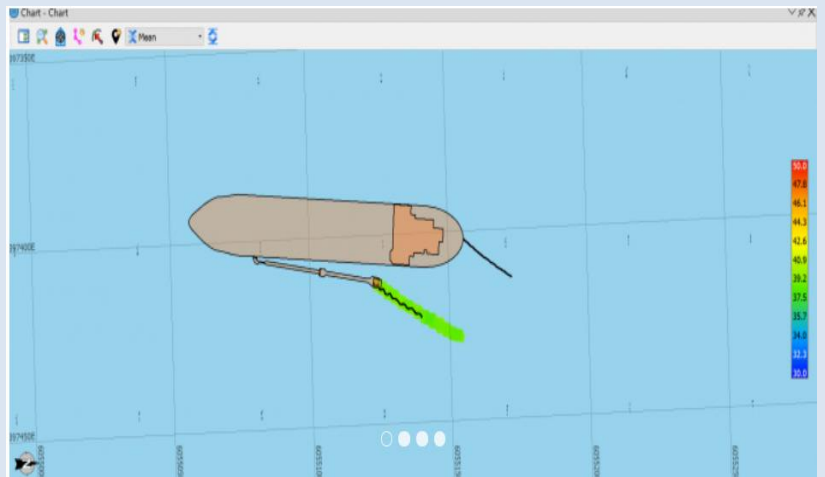
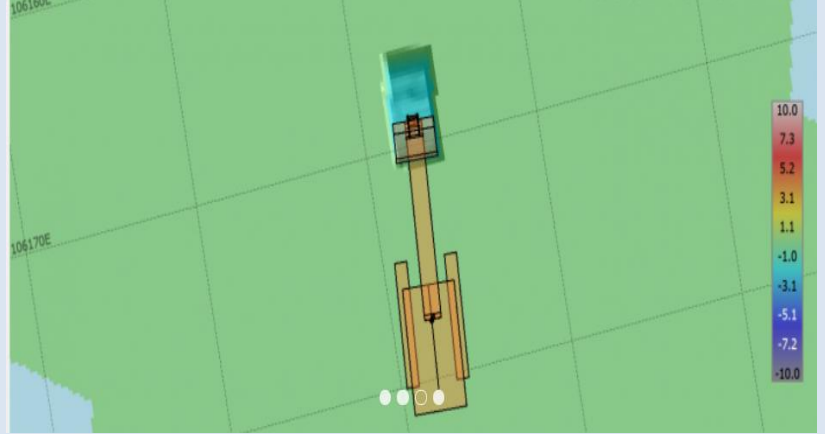
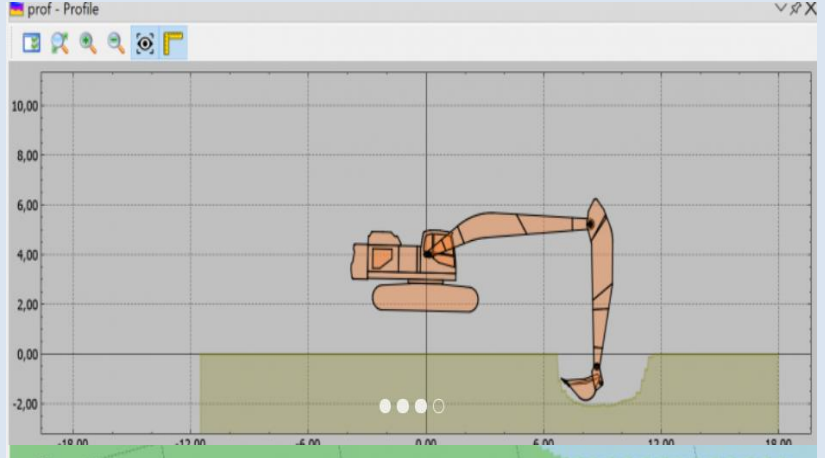
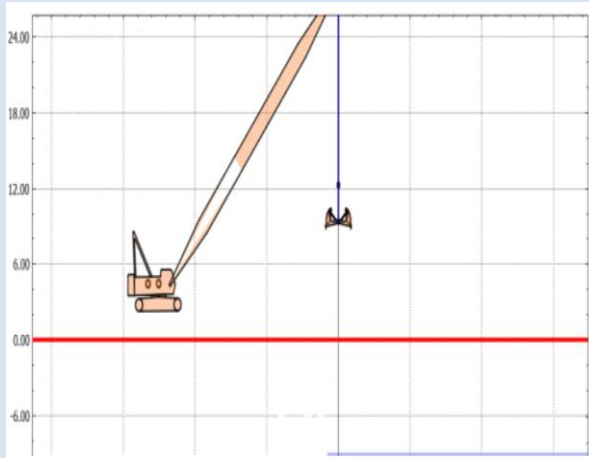
NAVAQ Ekran görünümü



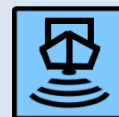


4. NAVAQ Yazılım Deniz Tarama ve Vasıta konumlandırma operasyonları

NavAQ can be installed on board of hoppers, cutters, excavators and wire cranes for the monitoring of the dredging process. **NavAQ**'s versatile computation engine calculates the 3D position and attitude of complex chains of objects like suction arms and excavator buckets in real-time. Visualisation is done in various displays including top and side views. The DTM grid model including a design layer is constantly updated to aid the operators. User definable ASCII log files can be used to keep track of the activities.



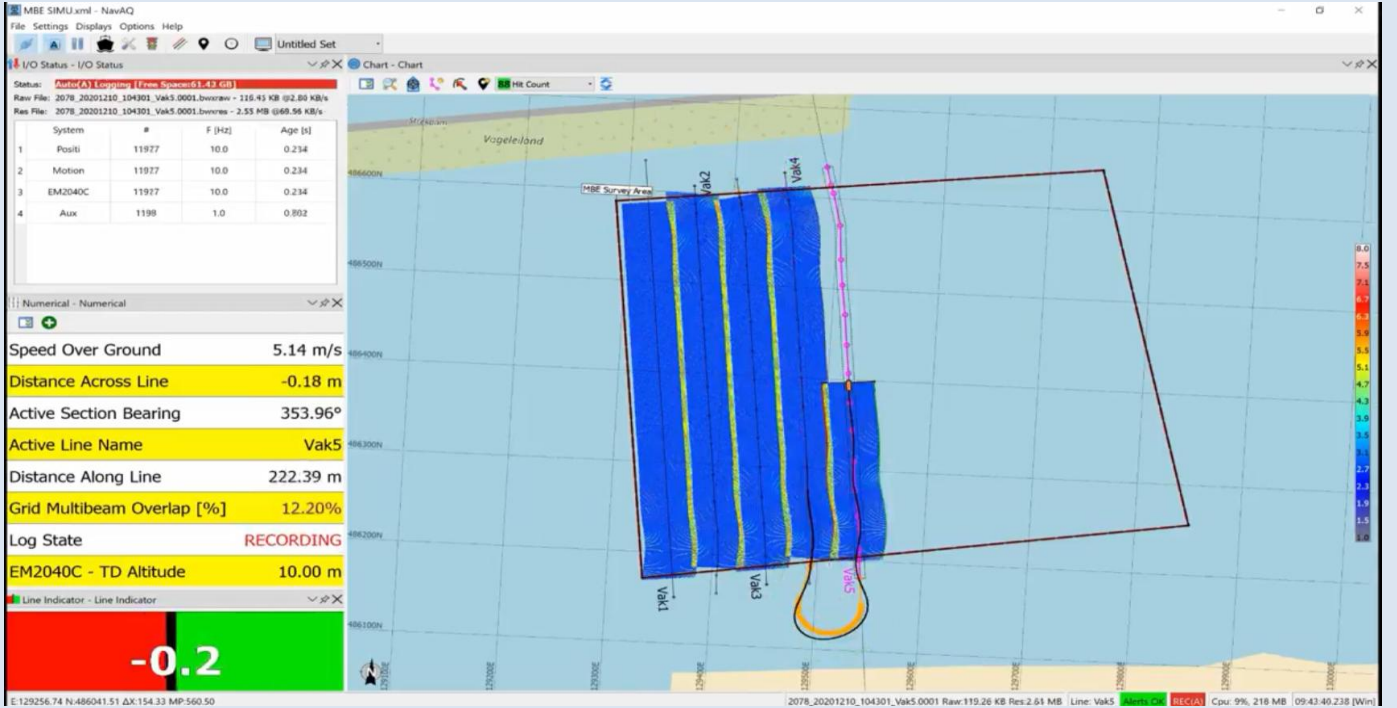
NAVAQ Konumlandırma ve Tarama ekipmanları izleme ekran görüntüleri



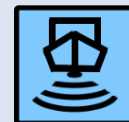


5. NAVAQ Yazılım ASV / USV İnsansız Deniz araçları

NavAQ can be used for hydrographic survey with unmanned vehicles. The software can run either directly on board of a local computer or on the operator station (data by radio-link). The NavAQ program is lightweight by nature and can therefore even run on very small single board computers with Windows 10 IOT. For example on board of a Pico-CAT. NavAQ can control the steering of the vehicle with NMEA commands or send an a-priori route plan via a MavLink file.



NAVAQ ASV / USV İnsansız Deniz araçları Alım ekran görüntüleri



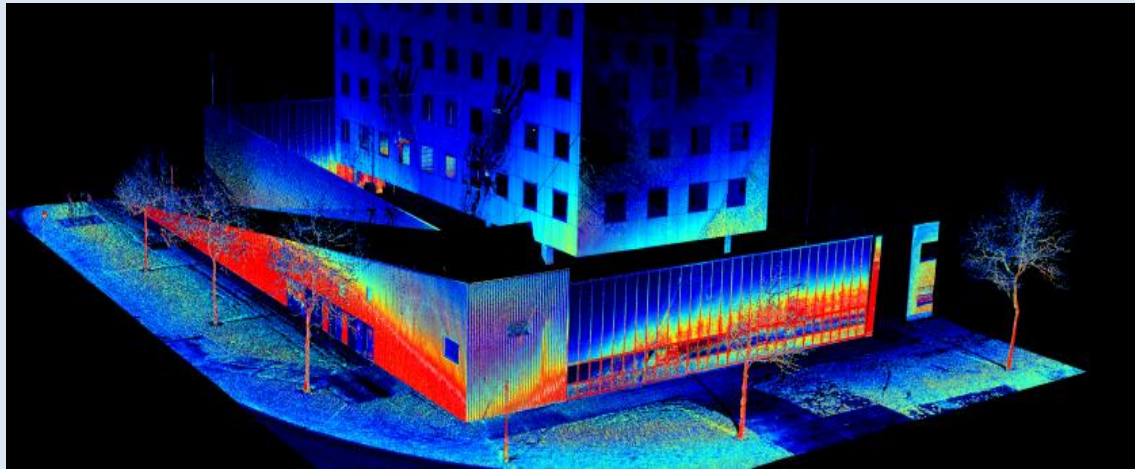
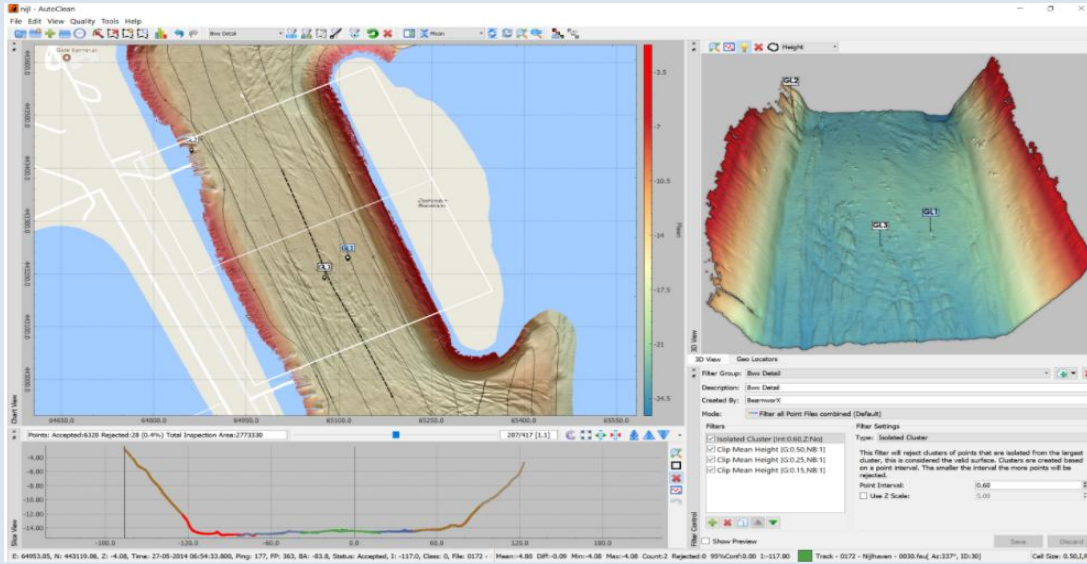


AUTOCLEAN Sorvey Sonuç Verilerini temizlemek ve doğrulamak kolay bir yol!

User-friendly and robust point cloud cleaning program for Bathymetric and Lidar point data. In times where software becomes more and more complex we present a new cleaning tool that is focused on day to day cleaning on board of survey vessels or near site. Very easy to learn, easy to operate and to install program. Due to its flexible import and export it will fit in every workflow.

Ürün Özellikleri (Product Features)

- ✓ Automatic cleaning and validation for Bathymetric and Lidar point clouds
- ✓ Manual flagging of points in 2D Slice and 3D View
- ✓ Stand-alone application with straight forward installer
- ✓ Easy to learn and use
- ✓ Optimum use of modern hardware (multi core, 64 bits, GB's of memory)
- ✓ Supports many automated cleaning algorithms: statistical, spline filter, spatial coherence
- ✓ Full undo on all modification actions
- ✓ Imports and exports to various file formats, e.g. FAU/GSF/Kongsberg ALL+KMALL/PDS/ASCII/LAS/LAZ/Hypack HS2, HS2X/Grids
- ✓ Respects the point status as flagged by the acquisition software
- ✓ Automatic Least Square Adjustment Height Fitting for Tide errors
- ✓ Reference layer for design or previous survey
- ✓ Optionally exports only the changes back to the original source files
- ✓ Drag and drop area selection
- ✓ Automatic import and filtering of files through folder monitoring during the survey
- ✓ Dedicated Single Beam Editor (**SBEdit**) available as an Add-On
- ✓ Optionally reprocesses Raw Multibeam Data during import, available as Add-On
- ✓ Chart View background layers: CAD/DXF, GeoTiff, Webmap (Google Maps, OpenStreetMap)
- ✓ Target/ Point of Interest Handling (Geo Locators)





AUTOPATCH Multibeam Echosounder ve Laser Scanner Patcahtest ve rapor

Fully automated Multibeam Echosounder and Laser Scanner patch test calculator. Your calibration report is just a click away!

AutoPatch can be used to calibrate the mounting angles for multibeam echosounders and laser scanners. It is very easy to operate, it is fast and gives consistent and reproducible results. It is also a great tool to determine the overall quality of your survey configuration.

Ürün Özellikleri (Product Features)

- ✓ Very easy to operate
- ✓ One button click to complete the full calculation
- ✓ Calculates Roll/Pitch/Heading mounting angles, various latencies, Transducer offset shifts.
- ✓ Refraction, analyse sound velocity and SVP optimization
- ✓ Height fitting for none-RTK data
- ✓ Automatic line and area selection
- ✓ Extensive calibration report
- ✓ Includes despiking/outlier removal for sounder data
- ✓ Exact calculation algorithms, using full ray-tracing
- ✓ Consistent and reproducible calibration results
- ✓ Supports XTF (QINSy), Hypack HSX, Kongsberg ALL+KMALL, Teledyne PDS, WASSP, Reson S7K, GeoSwath RDF, BeamworX Raw Format
- ✓ Calibrates Single/Dual Head multibeam systems including separate TX and RX elements
- ✓ Calculates the best-fit result from multiple survey lines

Overview

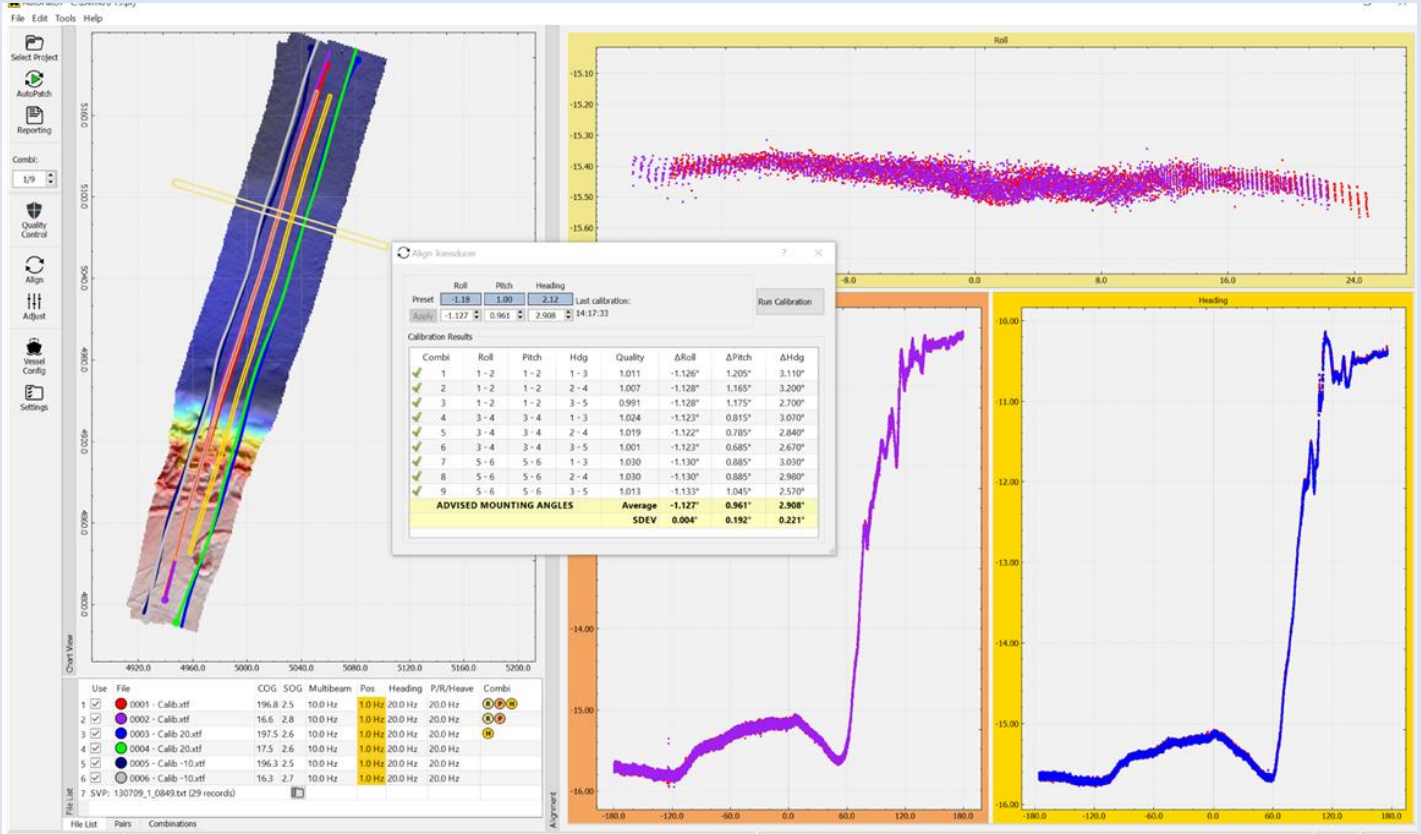
The 2D Chart View (left), combined with the Slice Views (right) for Pitch Roll and Heading data allow for detailed inspection of the data fit.

Best-fit Result

AutoPatch automatically picks the best possible survey data for it's calibration procedure. The result of the calculation is the best possible transducer mounting angle for the entire patch test area.

Problem Analysis

AutoPatch can carry out various automatic tests on the survey data, this includes position-, motion-, multibeam latency tests, sound velocity profile errors, mis-alignment of pitch/roll sensor, transducer offset position. The found values can immediately be applied and visualized



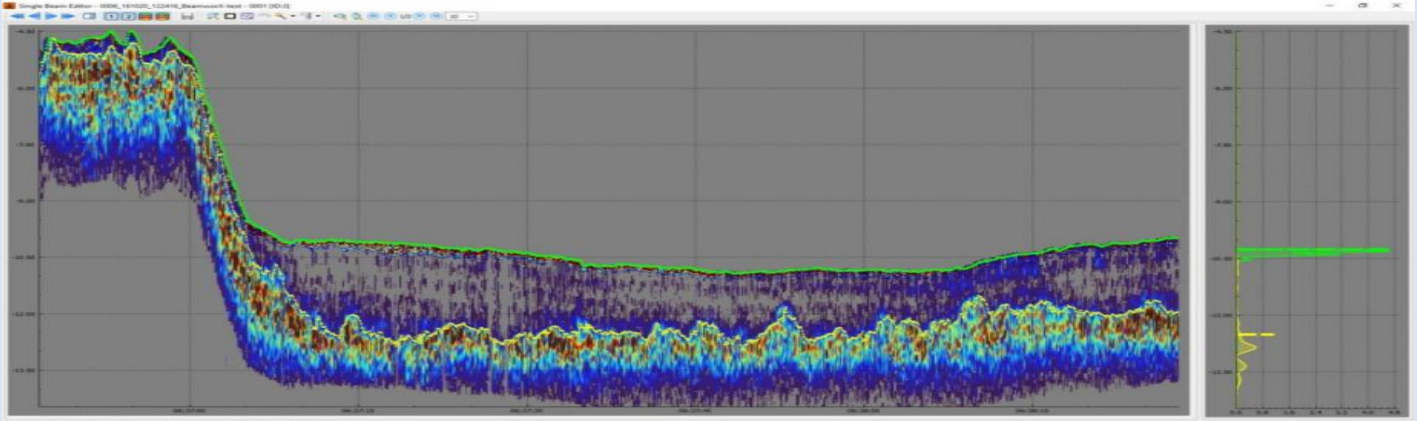


SBEDIT (Singlebeam Echosounder) Kullanıcı dostu SB Editor!

SBEdit makes it very easy to edit Single Beam Echosounder Data (SBE) in Chart Datum with the raw acoustics as background. The background makes it easier to decide how to edit the digitized High and Low Frequencies (HF and LF).

SBEdit is an **AutoClean** Add-On, it is fully integrated into **AutoClean**.

The SBE result data is presented in Chart Datum and the raw acoustics are aligned exactly to the result, you can freely zoom around at any zoom level, the acoustics will always be presented at the correct location. The presentation of the acoustics is configurable with different color palettes and drawing order. The Grid reference layer can optionally be shown to compare the data with previous or other (multibeam) surveys.

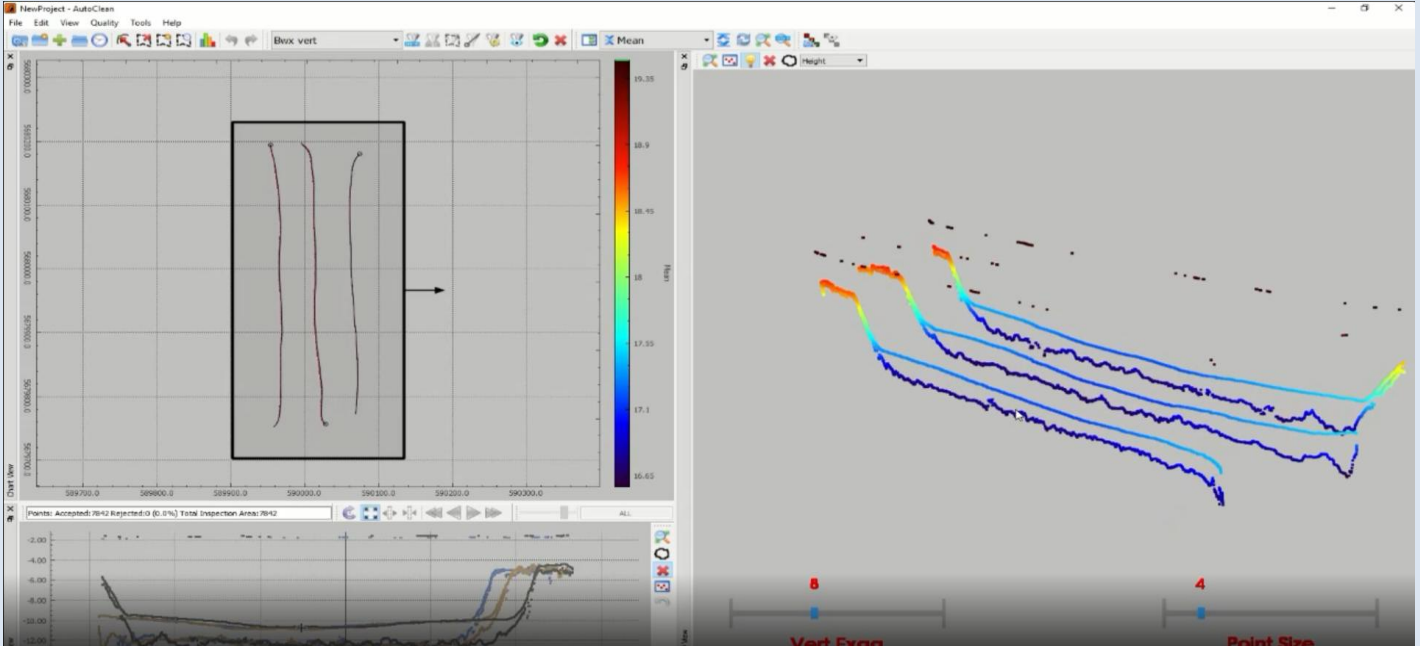


A full range of edit tools is available:

- ✓ Manual clipping with the mouse cursor
- ✓ Assign new height by “free-drawing” with the mouse cursor
- ✓ Automatic “boxcar” Despiking
- ✓ Height Averaging
- ✓ Undo every edit action

The modifications are stored in the files alongside the original digitization. At all times it is possible to revert to the original digitization.

NavAQ is used to log the “echogram” data directly from the sounder and the position results from a 3rd party Acquisition software or from raw sensors. These files are then commonly presented in **AutoClean** and **SBEdit**. The Echosounder requires no hardware modification, most modern sounders can already output an “echogram” data packet over a network port



SBEDIT Singlebeam Yazılım ekran görünümü





RAW PROCESSING Ham Veri İşleme

Fast processing of any type of multibeam data!

With this optional Add-On to **AutoClean** it is possible to directly import RAW Multibeam Echosounder files and quickly reprocess the data to survey results on any survey datum. All input parameters, Vessel and System Configuration, Sound Velocity Profiles are extracted from the raw data and can be further modified as required. The blazing fast multi-threaded reprocessing utilizes full launch angle calculation and sound velocity ray tracing leading to very accurate footprint results. User interface is kept to a strict minimum which assists novice users.

Supported RAW File Types

Kongsberg All + KMALL, XTF, Hypack HSX, Teledyne Reson PDS, Reson S7K, WASSP, GeoSwath RDF, BeamworX RAW (**NavAQ**).
Further can be added on user request.

Survey Configuration Editor

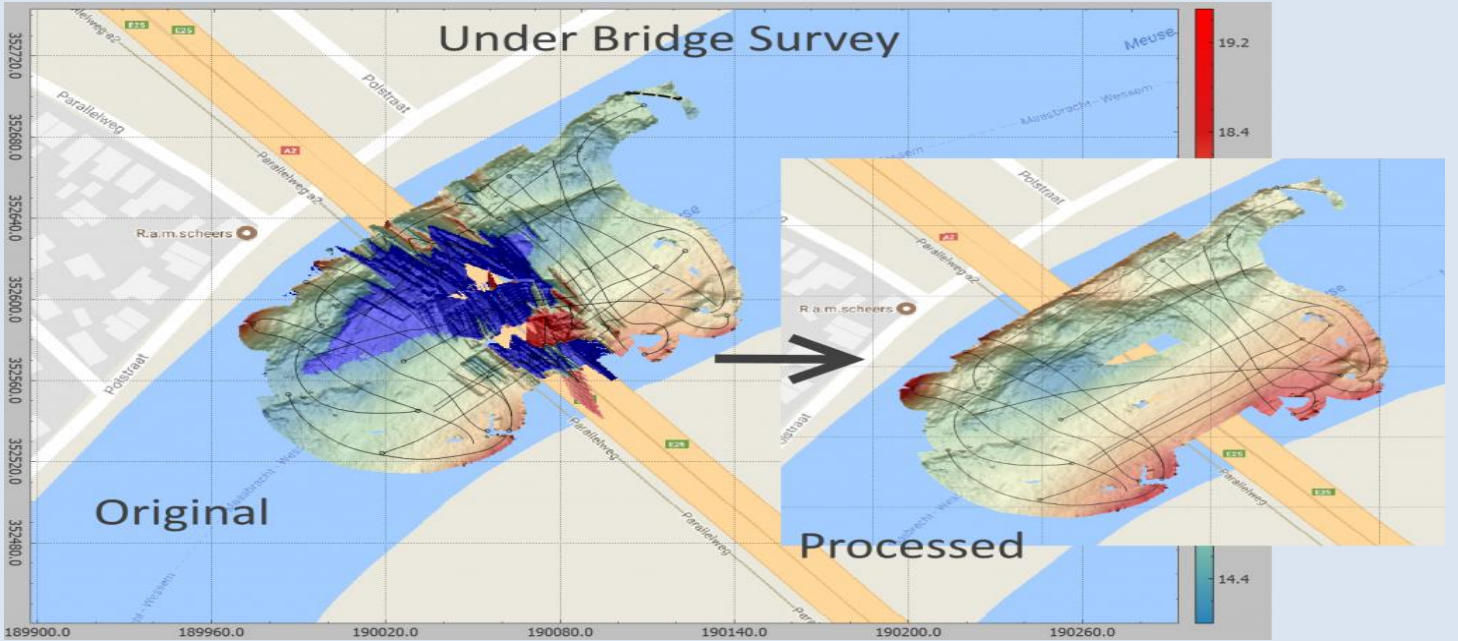
A flexible editor allows to setup how the data is to be calculated: which systems are used and their offset/latencies etc., how heights are calculated (RTK Height or Tide), Sound Velocity Profiles, depth blocking gates etc. **BeamworX software** supports full geodetic calculations from GPS positions to projected survey datum including grid shifts, Geoid models, WKT/EPSG/Proj4 import.

Post-Processed Track usage

Instead of using the position/motion data from the RAW files it is also possible to read this data directly from post-processed track files, e.g **SBET** or ASCII files.

Track Editor

The Raw position and motion data can optionally be extracted from the Raw Files and manually and automatically edited. The results can be saved to a post-processed track file.



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Satış ve Eğitim
MARİMET

Adres : İstasyon Mahallesi Vatan Cad. Ceyhun Sokak. Ahmet Algan Apt. No: 10/2 34940 Tuzla, İSTANBUL - TÜRKİYE
Tel: +90 216 447 38 65 **Fax:** +90 216 447 38 64 **Gsm :** +90 532 525 87 53 **Web:** www.marinmet.com.tr

