



# Teledyne PDS



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Teledyne PDS Software Suite  
- Collect, Process, Deliver



**TELEDYNE PDS**  
Everywhereyoulook™



# Teledyne Marine Software Solutions

## Teledyne PDS Software Suite - Collect, Process, Deliver

Teledyne PDS is a multipurpose software platform that supports a wide range of tasks within Hydrography, Dredge Guidance, Construction Support, Search & Recovery Operations and Port Entrance Monitoring.

Teledyne PDS is of-the-shelf software and developed to solve the challenges that arises from each specific task in the main business areas served by Teledyne Marine. Teledyne PDS interfaces with a wide range of sensors like Lidar, Multibeam and Singlebeam Echosounders, and is an optimal tool for interfacing to a variety of periphery sensors like dredge and construction sensors, sound velocity measurements, positioning, motion systems and most other devices that can output data.

The software is designed to be used in the maritime world with an intuitive user interface that is easy to learn. With Teledyne PDS you only need one software suite to collect, process and deliver data with in the same workflow.



You can use your Teledyne PDS files for data acquisition, editing, chart production and volume calculation without switching application – simplifying your analysis and saving desk time.

### Contact Teledyne PDS:

Teledyne RESON B.V.  
Stuttgartstraat 42-44  
3047 AS Rotterdam  
The Netherlands

[pds@teledyne.com](mailto:pds@teledyne.com)

TEL +31 (0)10 245 15 00  
FAX +31 (0)10 245 15 55

[www.teledyne-pds.com](http://www.teledyne-pds.com)

PDS Support:  
[pds-support@teledyne.com](mailto:pds-support@teledyne.com)

*Teledyne PDS supports a wide range of takes within:*

- Hydrography
- Dredge Guidance
- Construction Support
- Search & Recovery
- Operations and Port Entrance Monitoring



## Hydrography

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## Downloads

### Teledyne PDS trial version

The PDS Trial version lets you operate Teledyne PDS in “demo mode”. This enables you to get a firsthand impression of the interface and workflows in the Software Suite.

Get Teledyne PDS trial version:  
[www.teledyne-pds.com/download](http://www.teledyne-pds.com/download)

### Teledyne PDS LiteView

Teledyne PDS LiteView is a freeware 3D viewer that can be used to view Teledyne PDS data files. The viewer will read the Teledyne PDS logdata files, grid model files, 3D design model files and GeoTIFF files. The multibeam and laserscanner data will be extracted from the logdata files and will be visible in the viewer.

Get PDS LiteView:  
[www.teledyne-pds.com/download](http://www.teledyne-pds.com/download)

Please notice that this application collection only represents selected Teledyne PDS applications. Please visit [www.teledyne-pds.com](http://www.teledyne-pds.com) to get the full overview.

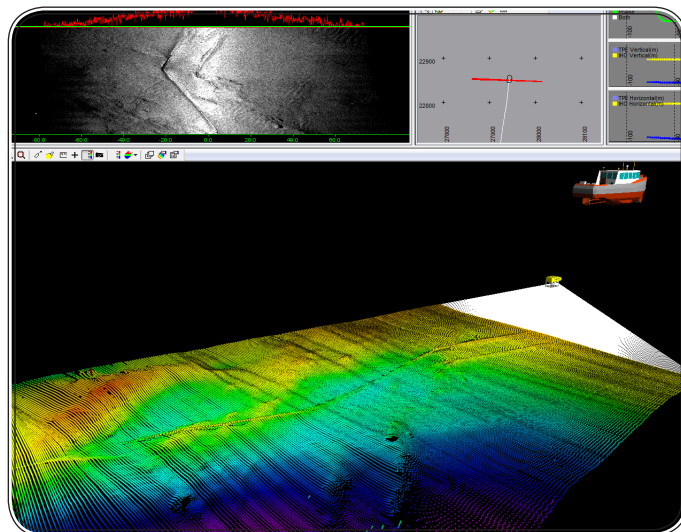
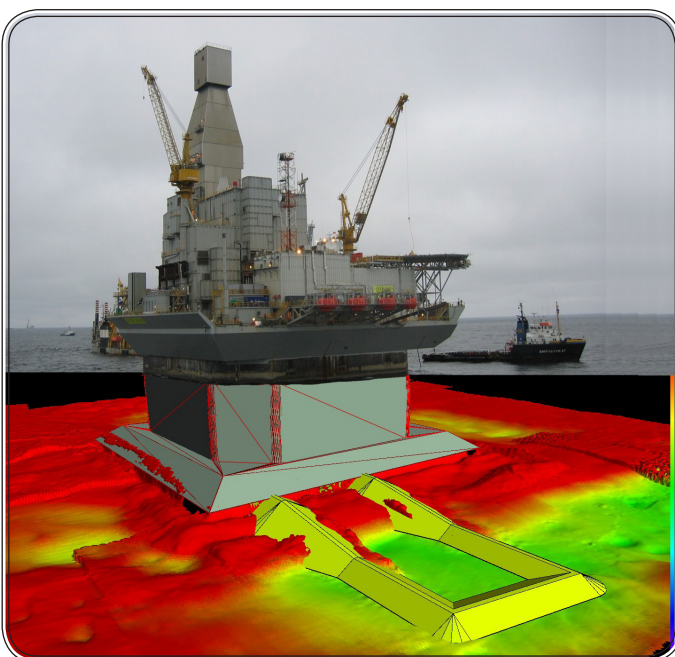


Teledyne PDS

# Multibeam Application + USBL + ROV

Teledyne RESON's in-house developed Teledyne PDS Multibeam is designed to efficiently create high quality, fast results - whether it is for multibeam surveys, single-beam surveys, construction or dredging works.

Teledyne PDS for Multibeam Surveys provides the functionality for survey planning, data acquisition, data processing, editing, volume calculations and chart production. This turnkey solution offers the surveyor and helmsman a strong tool to carry out the Multibeam survey efficiently.



Progress is shown realtime in 3D views and topviews using a color-coded Digital Terrain Model. Various filter settings can be applied to the Multibeam data online, thus providing real time data processing. QC displays reassure the operators that the data is of the desired quality. The 3D editing modules, combined with CUBE modeling, offers operators the right tools for both small and large datasets. They provide the high quality and fast results as requested today.

After data processing grid models can be generated and your data is available for volume calculations, charting, processing and export. The chart model offers the operator quick plot results specially when repeated surveys are to be plotted. The plot module has proven to be one of the best available on the market! Optionally data can be exported to a GIS database for more efficient data management. Teledyne RESON has proven that Teledyne PDS-Multibeam is an aid to cope with any of your projects.

## FEATURES

### Teledyne PDS MULTIBEAM

Complete software suite for acquisition, processing and charting

Support for multi-vessel

USBL calibration module

Capable to handle large data sets

Powerful and fast Multibeam calibration tool, combined in processing module or stand-alone

3D MB data editor combined with 3D DTM and CUBE editor

Integrated SVP-Editor

Easy to extend to other Teledyne PDS applications



# Teledyne PDS



## Hydrography

### PROCESSING

Data ready to process directly after data acquisition.  
MBES data processing module includes:

- Integrated 3D area MB editor with automatic filtering functions against CUBE or DTM model.
- CUBE and DTM modeling with 3D edit and interpolate functions.
- CUBE and DTM models are updated on the fly while editing swath data
- Add/change applied MB filters.
- SVP-Editor with instant correction in profile box.
- Dedicated fast and reliable MBES/Laser calibration function.

Quick calibration function for check on large data sets.  
3D boxes for closer inspection/detailed editing.  
All editors have a multiple UNDO/REDO function.  
Position editor shows position with navigation chart in background.  
Tidal data editor.  
All editors show the validated data and/or the original data.  
SSS and Snippet views.  
All editors in one screen layout: Synchronised processing.  
DTM data shows the following items color coded:  
Depths, minimum, maximum, standard deviations and hits per cell

### CHARTING

Powerful tool for generating charts.  
Multiple planviews Multiple profiles possible.  
Depth contouring.  
Text, descriptions and images.  
Plot profiles.

### EXPORT

Export MB data to various formats (CSV, Excel, XYZ, ESRI grid).  
MB data export to XTF, CARIS and Neptune.

### MULTIBEAM + USBL + ROV INCLUDES

USBL Tracking option.  
Doppler interfacing and aiding.

### INTERFACING

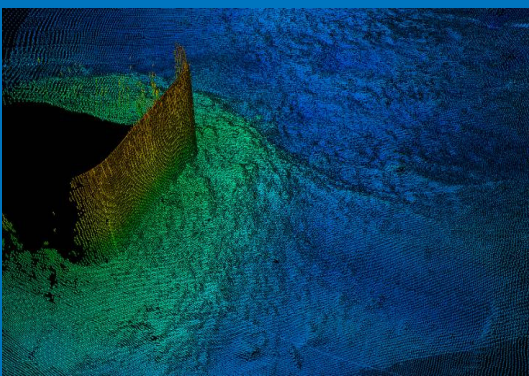
Positioning systems, Compass - Motion sensors.  
PPS interfacing.  
SSS and snippets data from SeaBat systems.  
Sound velocity probe.  
Singlebeam echosounders.  
USBL systems.  
Tidal information.  
Magnetometers.  
Configurable input/output.  
USBL system  
Doppler  
Height measurements  
Depth sensor

### PLANNING

Routes, Track guidance lines, Waypoints.  
DXF charts can be read simultaneously.  
Digital Terrain models.  
3D design TIN models.  
3D design models creation from polygons and 3D-DXF files.  
Use another DTM as design.

### SURVEY OPERATION

Acquisition, time stamping and logging of all sensors in a single file.  
Navigation charts: DXF files, C-MAP, S57 import, Geotiff, User defined Charts.  
Shows DTM colour-coded for depths and differences with design or previous survey.  
Profile displays show Multibeam data .  
2D and 3D Planview with progress of survey.  
TPE error view.  
Display for SSS and Snippet data.  
Status views of equipment, logging and alarms.  
Multibeam data online flagged for Filter settings



## WHY CHOOSE TELEDYNE PDS MULTIBEAM + USBL + ROV?

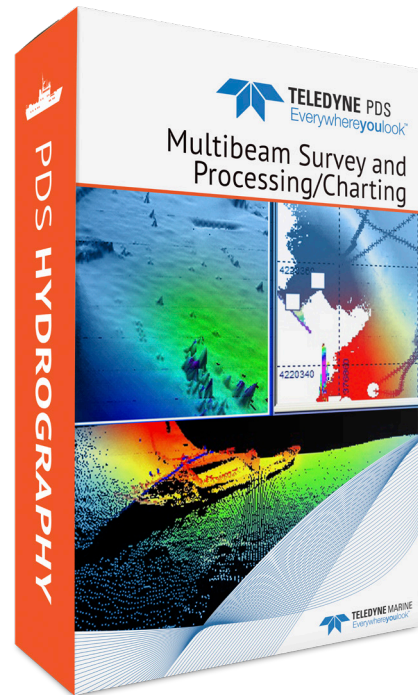
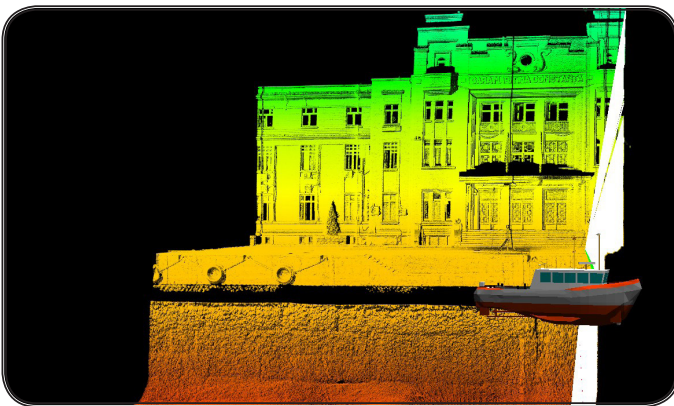
- Reliable hydrographic software for shallow and deep water applications
- Fast Multibeam data calibration/verification module
- The tool for efficient surveying, processing and charting
- Designed for ROV surveys including Doppler aiding and height aiding.
- Teledyne PDS flexible software, tuned for standard and special projects.

## Teledyne PDS

# Multibeam Survey and Processing/Charting

Teledyne RESON's in-house developed Teledyne PDS Multibeam is designed to efficiently create high quality, fast results - whether it is for multibeam surveys, singlebeam surveys, construction or dredging works.

Teledyne PDS for Multibeam Surveys provides the functionality for survey planning, data acquisition, data processing, editing, volume calculations and chart production. This turnkey solution offers the surveyor and helmsman a strong tool to carry out the Multibeam survey efficiently. Progress is shown realtime in 3D views and topviews using a color-coded Digital Terrain Model. Various filter settings can be applied to the Multibeam data online, thus providing real time data processing. QC displays reassure the operators that the data is of the desired quality.



The 3D editing module combines 3D swath editing, MB and Laser calibration, DTM modeling and editing, CUBE modeling, WCD data visualization and SVP editor. Combining all these features in to ONE module saves a lot of time for the data processor. While cleaning swath data your CUBE and DTM models are updated on the fly!

After data processing the data can be used for volume calculations and charting. The chart model offers the operator quick plot results especially when repeated surveys are to be plotted. The plot module has proven to be one of the best available on the market! Optionally data can be exported to a GIS database for more efficient data management.

## FEATURES

### Teledyne PDS MULTIBEAM

- Complete software suite for acquisition, processing and charting
- The tool for efficient and accurate results
- Capable to handle large data sets
- Powerful and fast Multibeam calibration tool, combined in processing module or stand-alone
- 3D MB data editor combined with 3D DTM and CUBE editor
- Integrated SVP Editor
- Water Column data Visualization
- Strong integration with Seabat 7K series
- Easy to extend to other Teledyne PDS applications

# Teledyne PDS



## Hydrography

### PROCESSING

Data ready to process directly after data acquisition.  
MBES data processing module includes:

- Integrated 3D area MB editor with automatic filtering functions against CUBE or DTM model.
- CUBE and DTM modeling with 3D edit and interpolate function
- CUBE and DTM models are updated on the fly while editing swath data.
- Add/change applied MB filters.
- SVP-Editor with instant correction in profile box.
- Dedicated fast and reliable MBES/Laser calibration function.
- Water Column Visualisation
- Quick calibration function for check on large data sets.
- 3D boxes for closer inspection/detailed editing.
- All editors have a multiple UNDO/REDO function.
- Position editor shows position with navigationchart in background.
- Tidal data editor.
- All editors show the validated data and/or the original data.
- SSS and Snippet views.

All editors in one screen layout: Synchronised processing  
DTM data shows the following items color coded:  
depths, minimum, maximum, standard deviations and hits per cell.

### SURVEY OPERATION

- Acquisition, time stamping and logging of all sensors in a single file.  
Navigation charts: DXF files, C-MAP, S57 import, Tresco charts, Geotiff, User defined Charts.
- Shows DTM colour-coded for depths and differences with design or previous survey.
- Profile displays show Multibeam data.
- 2D and 3D Planview with progress of survey.
- TPE error view.
- Display for SSS and Snippet data.
- Status views of equipment, logging and alarms.
- Multibeam data online flagged for Filter settings.

### INTERFACING

- Positioning systems, Compass - Motion sensors.
- PPS interfacing.
- SSS and snippets data from SeaBat systems.
- Sound velocity probe.
- Singlebeam echosounders.
- Laser Scanners.
- Tidal information.
- Magnetometers.
- Configurable input/output. Other equipment on request

### PLANNING

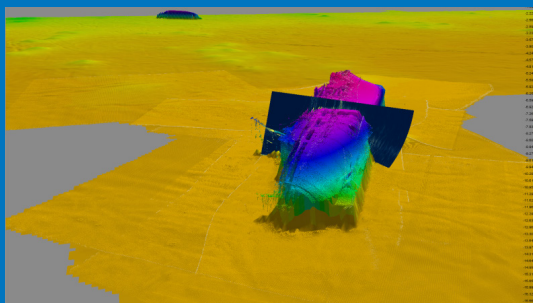
- Interactive Runline editor, Routes, Waypoints.
- Multiple DXF charts can be read simultaneously.
- Digital Terrain models.
- 3D design TIN models.
- 3D design models creation from polygons and 3D-DXF files.
- Use another DTM as design.
- User defined Charts.

### CHARTING

- Powerful tool for generating charts.
- Multiple planviews Multiple profiles possible.
- Depth contouring.
- Text, descriptions and images.
- Plot profiles

### VOLUME COMPUTATION

- Compute volumes and generate reports Volumes computed from DTM gridmodel
- Design model can be:
- Profile design
- 3D TIN model from 3D dxf format
- Digital Terrain Model



### WHY CHOOSE Teledyne PDS MULTIBEAM?

- Reliable hydrographic software for shallow and deep water applications
- Fast Multibeam and laser data calibration/verification module
- The tool for efficient surveying, processing and charting
- Teledyne PDS flexible software, tuned for standard and special projects.



## Teledyne PDS

# Singlebeam Survey and Processing/Charting

Teledyne RESON is one of the world leaders in singlebeam and multibeam echosounders, dredge guidance systems and hydrographic software.

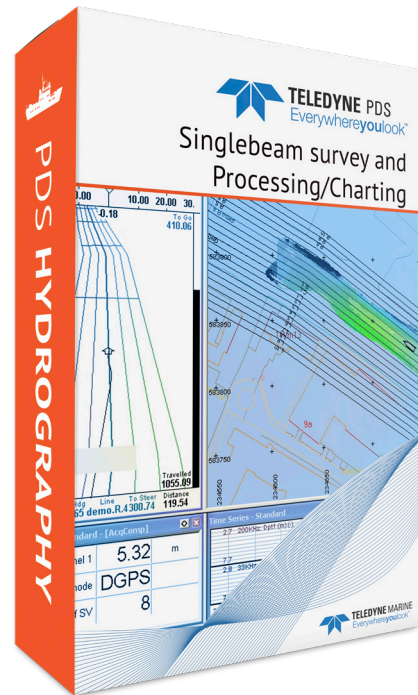
Teledyne RESON's in-house developed Teledyne PDS Singlebeam is designed to efficiently create high quality, fast results - whether singlebeam surveys, construction or dredging works.



Teledyne PDS for Singlebeam Surveys provides the functionality for survey planning, data acquisition, data processing, editing, volume calculations and chart production. This turnkey solution offers the surveyor and helmsman a strong tool to carry out the survey efficiently. Progress is shown realtime in 2D and 3D views using a color-coded Digital Terrain Model. QC displays reassure the operators that the data is of the desired quality. The Linebased editing modules offers operators the right tools for data editing and cleaning.

## FEATURES

- Complete software suite for acquisition, processing and charting
- The tool for efficient and accurate results
- Capable to handle large data sets
- Innovative singlebeam interpolation for grid-models
- Also for Magnetometer data
- Volume computations from sailed lines or gridmodel
- SVP profile can be applied
- Fast creation of charts
- Easy to extend to other PDS applications



After data processing grid models can be generated, interpolations can be done and your data is available for volume calculations, charting, processing and export.

The chart model offers the operator quick plot results specially when repeated surveys are to be plotted. The plot module has proven to be one of the best available on the market!

The chart model offers the operator quick plot results specially when repeated surveys are to be plotted. The plot module has proven to be one of the best available on the market!

Teledyne RESON has proven that Teledyne PDS-Singlebeam is an aid to cope with any of your projects.

# Teledyne PDS



## Hydrography

### GENERAL

- Complete software suite for acquisition, processing and charting
- Easy to adapt to your project
- Smooth integration with existing Teledyne PDS applications
- Wizard guides you through the different setups
- Easy configuration of the equipment
- Overview of your equipment
- Import of DXF file for Vessel shape
- Create track guidance lines, waypoints and routes

### INTERFACING

- Positioning systems
- Singlebeam echosounders
- Compass
- Motion sensor
- Tide
- Eventing to echosounder
- Output of data
- Magnetometer
- Acquisition, logging of all sensors in a single file

### DATA ACQUISITION

- Selection of 4 different layouts
- DXF files, S57 import, C-MAP, Geo tiff AIS layer
- Shows multiple charts
- Shows DTM with corrected depths in colourcoded cells.
- Planview with progress of survey
- Status views of equipment, logging and alarms
- Online correction for:
  - Heave, Roll and Pitch of vessel
  - Offsets
  - RTK height and tide

### PROCESSING

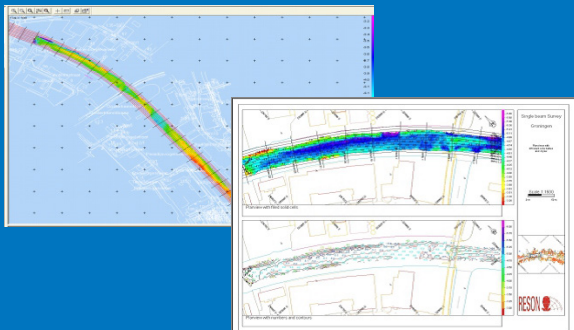
- Position editor shows position with DXF, Geotiff, S57, C-map and gridmodel in background
- Linebased editor shows data relative to sailed line
- Tidal data editor
- All editors show the original position together with edited and removed data
- All editors have the following functions:
  - Delete/Undelete
  - Move / Smooth
  - Interpolate / Find spikes
  - UNDO / REDO function
- Tide is applied, reapplied and removed without replay of the data
- New models are generated direct and fast from the data file
- Direct generation of 3D model from DTM
- Filter DTM data, view depths, standard deviations and hits per cell, interpolate functions

### CHARTING

- Generation of your chart using predefined and user adjusted templates
- Multiple planviews Multiple profiles
- Depths Contours Text images
- Fast generation and printing of charts

### VOLUME COMPUTATION

- Compute volumes and generate reports
- Volumes computed from DTM gridmodel
- End-Area volume calculation
- Volumes direct from datafiles using wizard
- Design model can be:
  - Profile design
  - DTM model
- Export data in to XYZ and Excel



### Why choose Teledyne PDS Singlebeam?

- Reliable hydrographic software for shallow and deep water applications
- The tool for efficient surveying, processing and charting
- Teledyne PDS flexible software, tuned for standard and special projects

Teledyne PDS

# Cutter Dredger Monitoring

With over 25 years dredge market experience, Teledyne RESON produces precision tools for any user. This leaflet gives you a brief overview of our capabilities. Our client database includes large and small dredging companies, hydraulic engineering, construction, offshore and survey firms. With those in mind, all Teledyne RESON products are designed to withstand the harsh environment in which the equipment is used. Whether it's for revetment surveys, rock dumping, excavating, dredging, maintenance surveys, building breakwaters, windmill parks, barge management or any other construction projects, Teledyne RESON will supply you with a suitable solution.



## Designed for efficient dredging

Teledyne PDS for Cutter Dredgers is designed to the requirements of the dredge operator to carry out his job more efficiently. The operator has real time an overview of the dredger with the top and side views displaying the vessel outline, suction tubes and the dredge head along with the surveyed depths, design and dredged depth.

## FEATURES

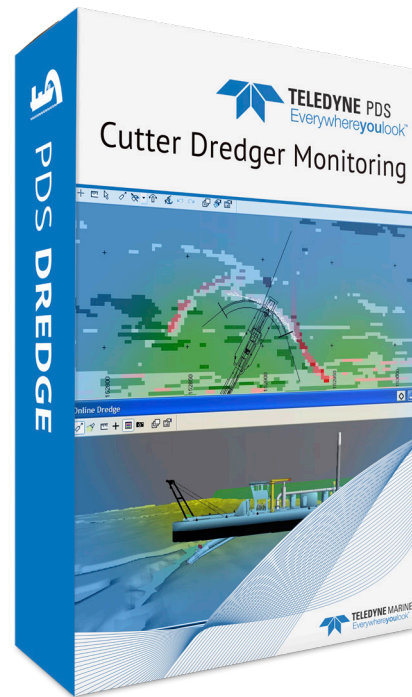
### Teledyne PDS DREDGE

- Teledyne RESON's products give you accurate, efficient dredging.

### INTEGRATED DREDGE SOLUTIONS

- Teledyne RESON is the only supplier of integrated dredge and survey solutions to the dredge and construction market.

- Teledyne RESON provides all the sensors for optimum dredge guidance.
- Products are designed for the dredge and construction environment
- Create high quality and fast results Innovative products



## Real time visualization and monitoring

Teledyne PDS-Cutter supports visualization and monitoring of the angle and position of the ladder and cutterhead. It also shows information of the dredger such as the absolute position of the dredge head position in relation to the DTM and design model. Dredged areas are shown in various views which are updated as soon as new data is available. Multiple monitors with independent layouts are tailored to the needs of the dredge operator and helmsman. A color-coded Digital Terrain Model (DTM) highlights the high and low spots. The DTM is updated real-time registering the progress of the dredging work. The updated Real-time models supported are depth, differential and production models. The updates follow the shape of the Cutterhead. The update is immediately visible in the top, side and 3D views. 3D-Design models allow definition of highly complex designs. Concentration, flow, vacuum and pressure data can be displayed.

## Cumulative production

A cumulative production calculation and reporting feature is implemented.



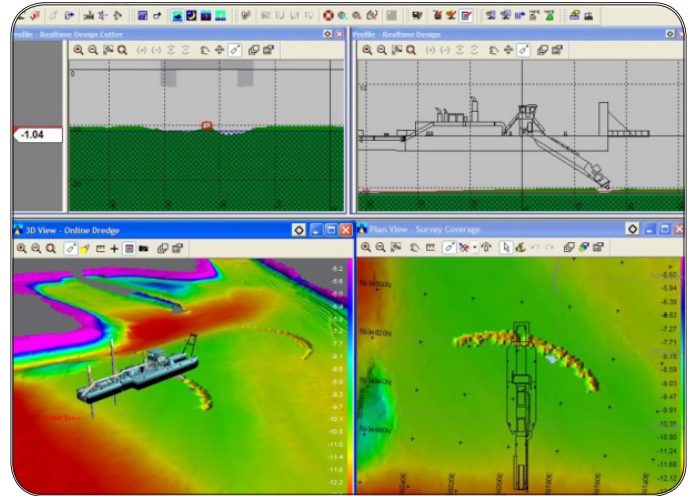
# Teledyne PDS



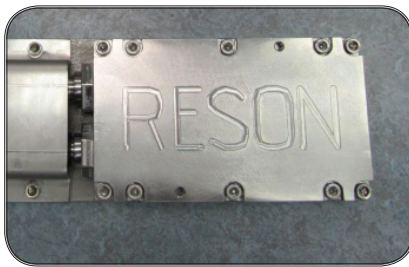
Dredge



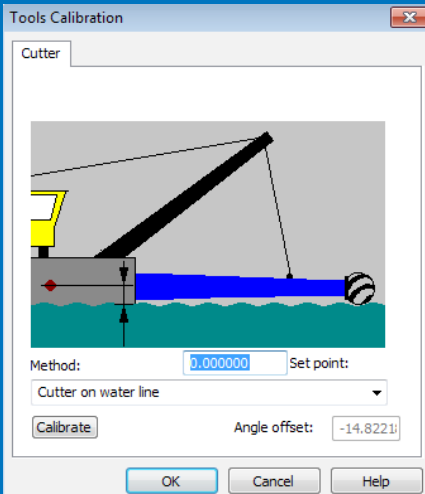
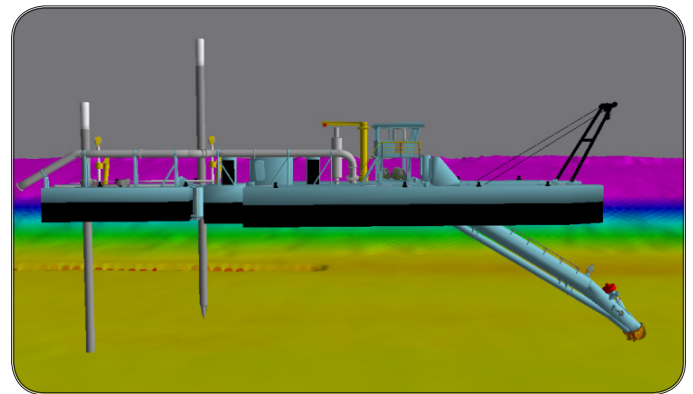
Sand production cutter application



Visualization including 3D



Supply of sensors



## Why choose Teledyne PDS dredge for your application ?

- Reliable dredge monitoring software and sensors for your project
- The tool for efficient dredging
- Strong back office support
- Teledyne PDS flexible software, tuned for standard and special projects

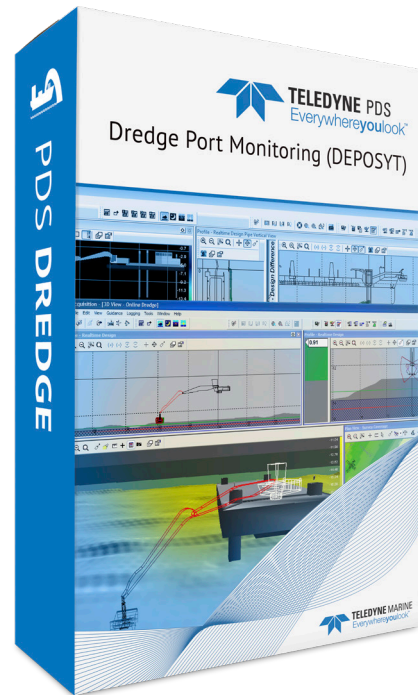
Teledyne PDS

# Dredge Port Monitoring (DEPOSYT)

With over 25 years dredge market experience, Teledyne RESON produces precision tools for any type of dredger. This leaflet is a brief overview of the Dredge Port Monitoring System called DEPOSYT. DEPOSYT is based on BORACIET that was first developed for the Port of Rotterdam in 2003. Port of Rotterdam has used BORACIET ever since for all their maintenance dredge activities. Teledyne PDS DEPOSYT monitors and controls all survey- and dredging vessels involved in one project from one central location. Projects can vary from standard maintenance dredge work to complete port construction projects. DEPOSYT is also a planning tool that helps the project supervisor and coordinator to carry out the project as efficiently as possible by optimizing vessel use and capacity.

Via Wifi or any other wireless connection real time sensor data from the different dredges is sent to Teledyne PDS DEPOSYT in the office. This sensor data will contain all sensors interfaced to the Teledyne PDS system onboard and will be for example the GPS position, dredge tool position and movement. Dredge tools can be for example an excavator bucket, a hopper suction tube or a cutter head. DEPOSYT uses the data to show the actual dredge's position and movements and it updates the seabed DTM in the office real time.

When additional sensors are installed and interfaced DEPOSYT can also display, example of these data can be fuel level, engine time, engine running or not, door open of a Hopper dredger etc. This will help the supervisor with planning to improve or maintain efficiency the vessel use. Thanks to DEPOSYT the supervisor will have an up to date overview of all the dredge activities in the project/ area.



DEPOSYT also stores the data, so data can be replayed at a later date when required.

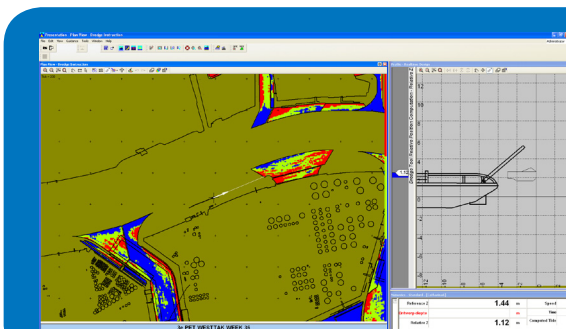
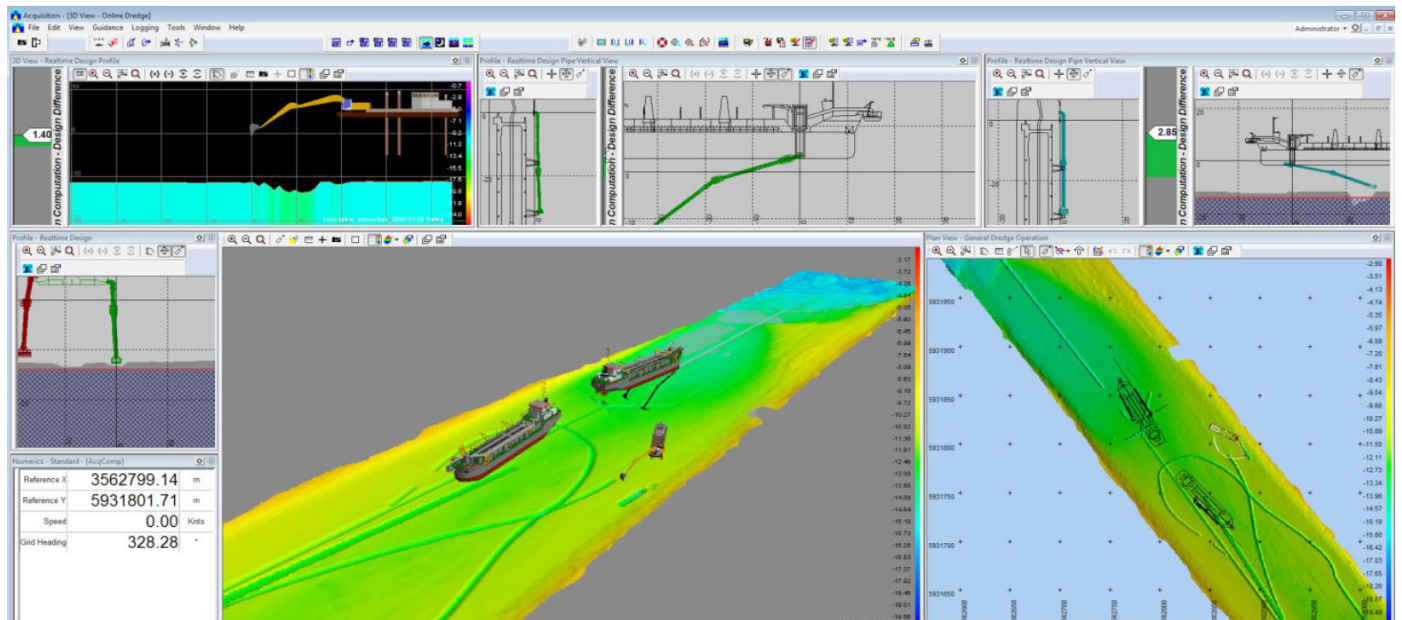
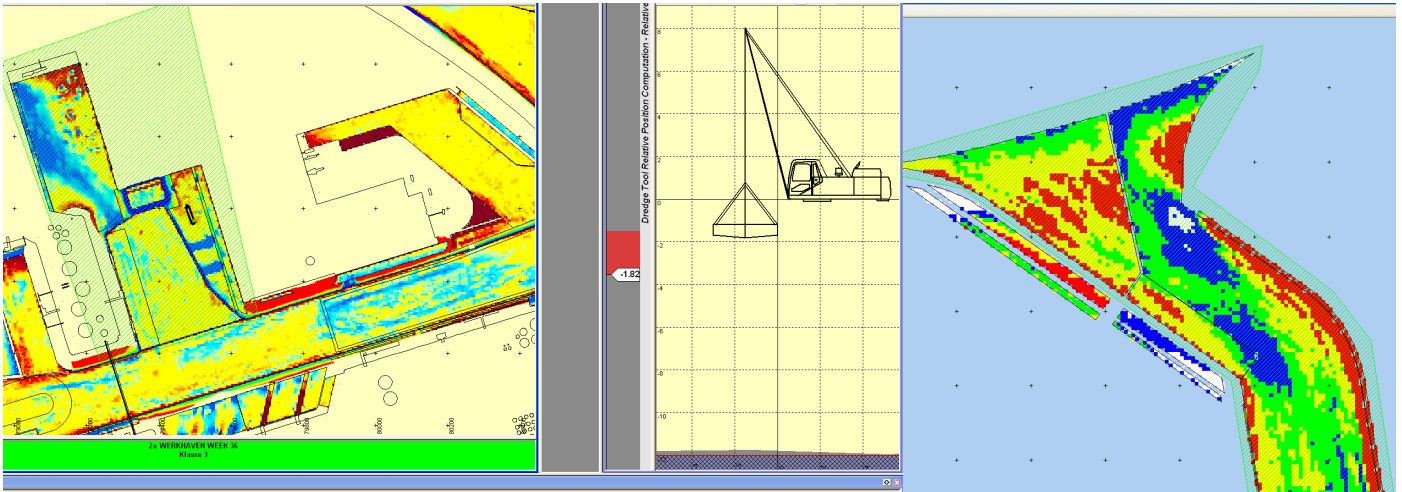
Optional the project supervisor can also use DEPOSYT to send work instructions to the different dredge vessels via the wireless connection. A work instruction contains information such as the exact location where the vessel has to dredge, updated depth information (DTM) and any restrictions that may apply.

The operator on board the dredge sees the new work instruction in his Teledyne PDS Dredge System and after he acknowledges the work instruction all the details are shown in his Teledyne PDS Dredge System. When the operator deviates from the work instructions and for example continues work outside his allocated area an alarm will immediately be generated both on board the dredger and the DEPOSYT office to alert both operator and supervisor.

## FEATURES

### Teledyne PDS DEPOSYT

- Teledyne RESON's products give you accurate, efficient dredging.
- Teledyne RESON is the only supplier of integrated dredge and survey solutions to the dredge and construction market.
- Teledyne RESON provides all the sensors for optimum dredge guidance
- Products are designed for the dredge and construction environment
- Create fast and high quality results
- Innovative Products
- Plan, Monitor and Control your project from start to finish



## WHY CHOOSE Teledyne PDS DEPOSYT FOR YOUR Project ?

- Reliable dredge monitoring software and sensors for your project
- The tool to monitor, control and plan from start to finish



Teledyne PDS

# Excavator Monitoring system

With over 25 years dredge market experience, Teledyne RESON produces precision tools for any user. This leaflet gives you a brief overview of our capabilities.

Our client database includes large and small dredging companies, hydraulic engineering, construction, offshore and survey firms. With those in mind, all Teledyne RESON products are designed to withstand the harsh environment in which the equipment is used.



Whether it's for revetment surveys, rock dumping, excavating, dredging, maintenance surveys, building breakwaters, windmill parks, barge management or any other construction projects, Teledyne RESON will supply you with a suitable solution.

## FEATURES

### Teledyne PDS DREDGE

- Teledyne RESON's products give you accurate, efficient dredging.
- Teledyne RESON is the only supplier of integrated dredge and survey solutions to the dredge and construction market.
- Teledyne RESON provides all the sensors for optimum dredge guidance.

- Products are designed for the dredge and construction environment
- Create high quality and fast results Innovative products
- Easy to extend to other Teledyne PDS applications



Teledyne RESON's Teledyne PDS excavator application is tailored to the requirements of the dredge operator to carry out his job more efficiently. The operator has real time an overview of the excavator and pontoon in top and profile views displaying the excavator outline, the boom, stick and bucket along with the surveyed depth and design depth. The position of the dredge-tool relative to the design is constantly monitored and displayed. A color-coded Digital Terrain Model (DTM) highlights the high and low spots. The DTM is updated real-time for the shape of the bucket or clamshell, thus registering the progress of the dredging work. The update is immediately visible in the top and side views. 3D-Design models allow the user to define complex designs.

Teledyne PDS supports a wide range of dredge tools. Next to the standard bucket also clamshells, dredge pumps, drills and any other dredge tool can be used.

# Teledyne PDS



Dredge



*Bucket sensor installed*



*Swivel bucket support*



*Crane rotation sensors*



*Compact installation also suitable for small cranes*



## WHY CHOOSE Teledyne PDS ?

- Reliable dredge monitoring software and sensors for your project
- The tool for efficient dredging
- Teledyne PDS flexible software, tuned for standard and special projects.

Teledyne PDS

# Ploughing

With over 25 years dredge market experience, Teledyne RESON produces precision tools for any user. This leaflet gives you a brief overview of our capabilities. Our client database includes large and small dredging companies, hydraulic engineering, construction, offshore and survey firms. With those in mind, all Teledyne RESON products are designed to withstand the harsh environment in which the equipment is used. Whether it's for revetment surveys, rock dumping, excavating, dredging, maintenance surveys, building breakwaters, windmill parks, barge management or any other construction projects, Teledyne RESON will supply you with a suitable solution.

Teledyne PDS-Plough supports different ways to monitor your plough operation. The plough is visualized in 2 and 3D and in a profile view. The application supports various options to calculate the plough position, for example by using pressure sensors on the plough, or measuring the hoisting wire lengths. The plough tow-cable length is also used in the calculation to determine the absolute position if required.



The Teledyne PDS-Bar Sweep software will show the plough in real-time in the planview and in profile views. A Digital Terrain Model (DTM) can be used in the background to show the as-surveyed or as-dredged depth. The DTM is updated realtime following the exact plough position. The track covered by the plough during the survey is logged in a DTM file.

It is also possible to create and record events when the plough 'hits' targets / objects. Each time the event button is pressed, Teledyne PDS writes the current plough location to a DXF file and shows position with the bar length and direction of sailing. Beside the profile views an up-down indicator shows the plough depth relative to the design depth. If a design depth is not available the up-down indicator can be closed.

## FEATURES

### Teledyne PDS DREDGE

- Teledyne RESON's products give you accurate, efficient dredging.

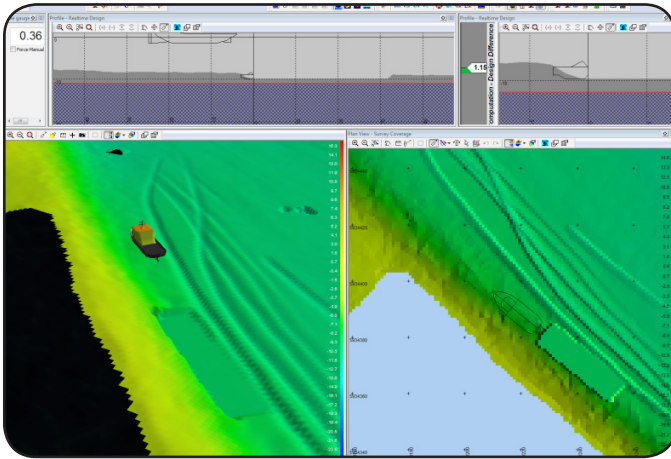
### INTEGRATED DREDGE SOLUTIONS

- Teledyne RESON is the only supplier of integrated dredge and survey solutions to the dredge and construction market.
- Teledyne RESON provides all the sensors for optimum dredge guidance.
- Products are designed for the dredge and construction environment
- Create high quality and fast results Innovative products

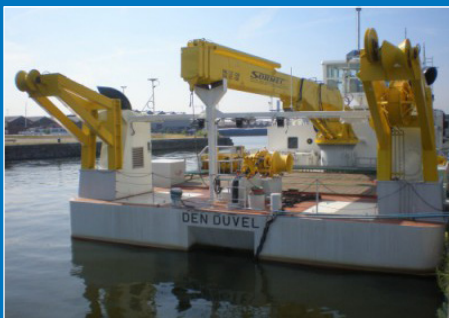




Support of various ploughs



Teledyne PDS plan view with various custom selectable views



## Why Choose Teledyne PDS dredge for your application ?

- Reliable dredge monitoring software and sensors for your project
- The tool for efficient dredging
- Strong back office support
- Teledyne PDS flexible software, tuned for standard and special projects

Teledyne PDS

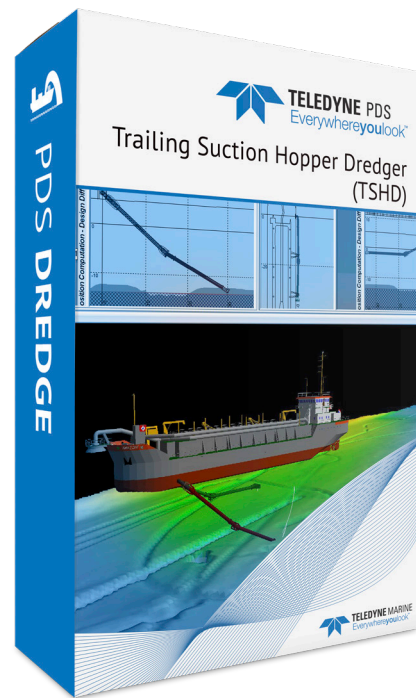
# Trailing Suction Hopper Dredger (TSHD)

With over 25 years dredge market experience, Teledyne RESON produces precision tools for any user. This leaflet gives you a brief overview of our capabilities. Our client database includes large and small dredging companies, hydraulic engineering, construction, offshore and survey firms. With those in mind, all Teledyne RESON products are designed to withstand the harsh environment in which the equipment is used. Whether it's for revetment surveys, rock dumping, excavating, dredging, maintenance surveys, building breakwaters, windmill parks, barge management or any other construction projects, Teledyne RESON will supply you with a suitable solution.



## Designed for efficient dredging

Teledyne PDS for Trailing Hopper Dredgers is designed to the requirements of the dredge operator to carry out his job more efficiently. The operator has real time an overview of the dredger with the top and side views displaying the vessel outline, suction tubes and the dredge head along with the surveyed depths, design and dredged depth.



## Realtime visualization and monitoring

Teledyne PDS-Hopper supports visualization and monitoring of the horizontal and vertical position of the suction tubes. It also shows information of the dredger such as the absolute position of the dredge head position in relation to the DTM and design model. Dredged areas are shown in various views which are updated as soon as new data is available. Alarms can be generated when the tube radius passed a pre-set bend. Multiple monitors with independent layouts are tailored to the needs of the dredge operator and helmsman. A color-coded Digital Terrain Model (DTM) highlights the high and low spots. The DTM is updated real-time registering the progress of the dredging work. The updated Real-time models supported are depth, differential and production models. The updates follow the shape of the dredgeheads. The update is immediately visible in the top, side and 3D views. 3D-Design models allow definition of highly complex designs. Concentration, flow, vacuum and pressure data can be displayed.

## DLM and TDS and reporting to Dredge Information Systems

The DLM and TDS are options to Teledyne PDS-Hopper. DLM reports are generated automatically. A trip reporting option is available. This data can be linked to Dredge Information Systems maintained by certain Port Authorities. Trip reporting can be done automatically when Teledyne PDS is interfaced with the pump, valve and hopper door switches.

## FEATURES

### Teledyne PDS DREDGE

Teledyne RESON's products give you accurate, efficient dredging.

### INTEGRATED DREDGE SOLUTIONS

Teledyne RESON is the only supplier of integrated dredge and survey solutions to the dredge and construction market.

Teledyne RESON provides all the sensors for optimum dredge guidance.

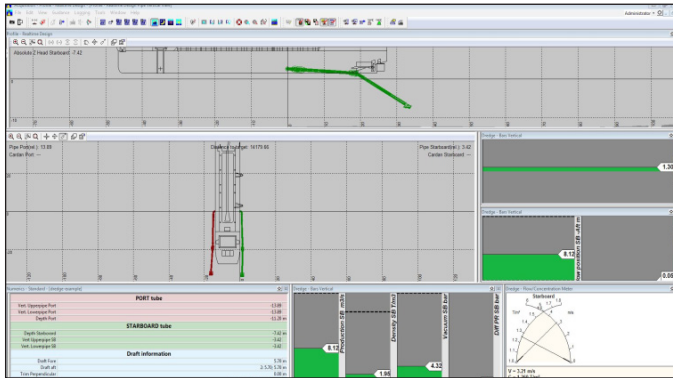
Products are designed for the dredge and construction environment

Create high quality and fast results Innovative products

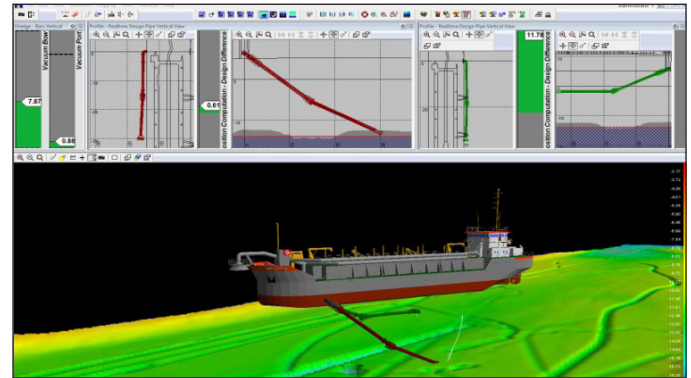
# Teledyne PDS



Dredge



Display example of suction tube visualization



Visualization including 3D



Supply of angle sensors



Supply of inclino sensors



Supply of pressure and vacuum sensors



## WHY CHOOSE TELEDYNE PDS DREDGE FOR YOUR APPLICATION?

- Reliable dredge monitoring software and sensors for your project
- The tool for efficient dredging
- Strong back office support
- Teledyne PDS flexible software, tuned for standard and special projects.



Teledyne PDS

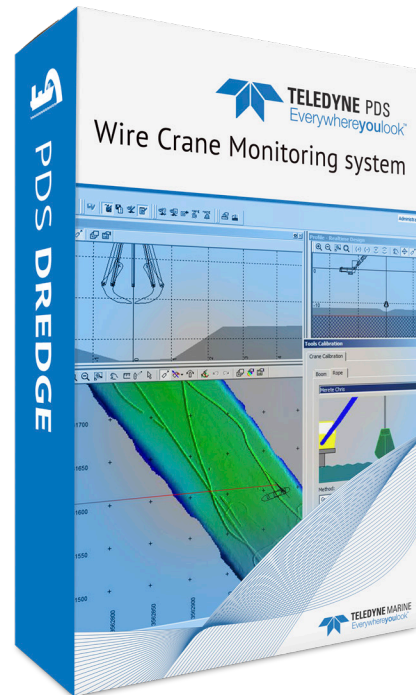
# Wire Crane Monitoring system

With over 25 years dredge market experience, Teledyne RESON produces precision tools for any user. This leaflet gives you a brief overview of our capabilities.

Our client database includes large and small dredging companies, hydraulic engineering, construction, offshore and survey firms. With those in mind, all Teledyne RESON products are designed to withstand the harsh environment in which the equipment is used. Whether it's for revetment surveys, rock dumping, excavating, dredging, maintenance surveys, building breakwaters, windmill parks, barge management or any other construction projects, Teledyne RESON will supply you with a suitable solution.



Teledyne RESON's Teledyne PDS-Wirecrane application provides the functionality tailored for the dredge operator to carry out his job efficiently.



The operator has a real time overview of the dredger in top and profile views displaying the clamshell, pontoon, Design Depths and color-coded Digital Terrain Model (DTM). The DTM highlights the high and low spots and is updated real-time registering the progress of the dredging work. The update follows the shape of the bucket, clamshell or orange peel bucket and is visible immediately in all the views. The system also shows the open/close status of the bucket. A built-in calibration allows for easy calibration of the cable counters. Up/Down indicators show the operator the exact distance to the seafloor and design depth continuously. 3D-Design models allow the use of complex designs. The system can be set to a digging or digging mode.

Teledyne RESON supplies fully integrated Clamshell Dredger Monitoring Packages, which includes a range of rotational sensors, inclinometers, ruggedized panel PC's, positioning systems, tide gauges, draft sensors and our Teledyne PDS Software.

## FEATURES

### Teledyne PDS DREDGE

- Teledyne RESON's products give you accurate, efficient dredging.
- Teledyne RESON is the only supplier of integrated dredge and survey solutions to the dredge and construction market.
- Teledyne RESON provides all the sensors for optimum dredge guidance.
- Products are designed for the dredge and construction environment
- Create high quality and fast results Innovative products
- Easy to extend to other Teledyne PDS applications

# Teledyne PDS



Dredge



*Support of various buckets*



*Measures boom angle for winch correction*



*Winch rotation counterstion*



*Full crane visualization*



## WHY CHOOSE Teledyne PDS ?

- Reliable dredge monitoring software and sensors for your project
- The tool for efficient dredging
- Teledyne PDS flexible software, tuned for standard and special projects.



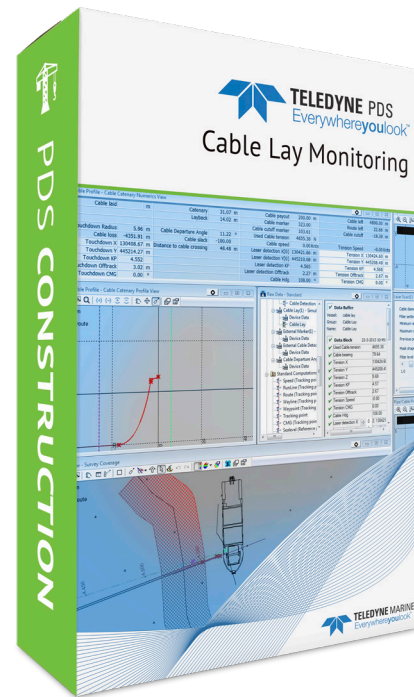
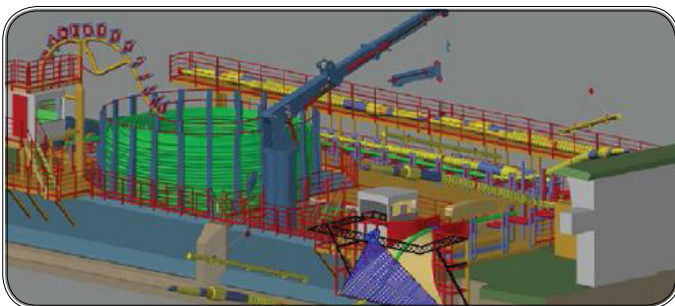
## Teledyne PDS

# Cable Lay Monitoring

With over 30 years dredge market experience, Teledyne RESON produces precision tools for any user. This leaflet gives you an overview of how we can improve your business.

Our client base includes large and small dredging companies, hydraulic engineering, construction, offshore and survey firms. With those in mind, all our products are designed to withstand the harsh environment in which the equipment is used. Whether you are involved in hydrographic surveys, dredge projects like rock dumping or excavating, or construction projects like building breakwaters, pipe- and cable lay activities, our solutions increase your efficiency and minimize your downtime.

Teledyne RESON's Teledyne PDS-Cable-Lay application provides the functionality tailored for the operator to carry out his job efficiently. Prior to the start of the actual cable lay process (pre) engineering work, such as vessel route calculations takes place in the office. PDS Cable-Lay allows you to use all this a-priori information during your project. The a-priori information is loaded into PDS Cable-Lay using import wizards and is visualized during project to ensure the project accuracies are met.



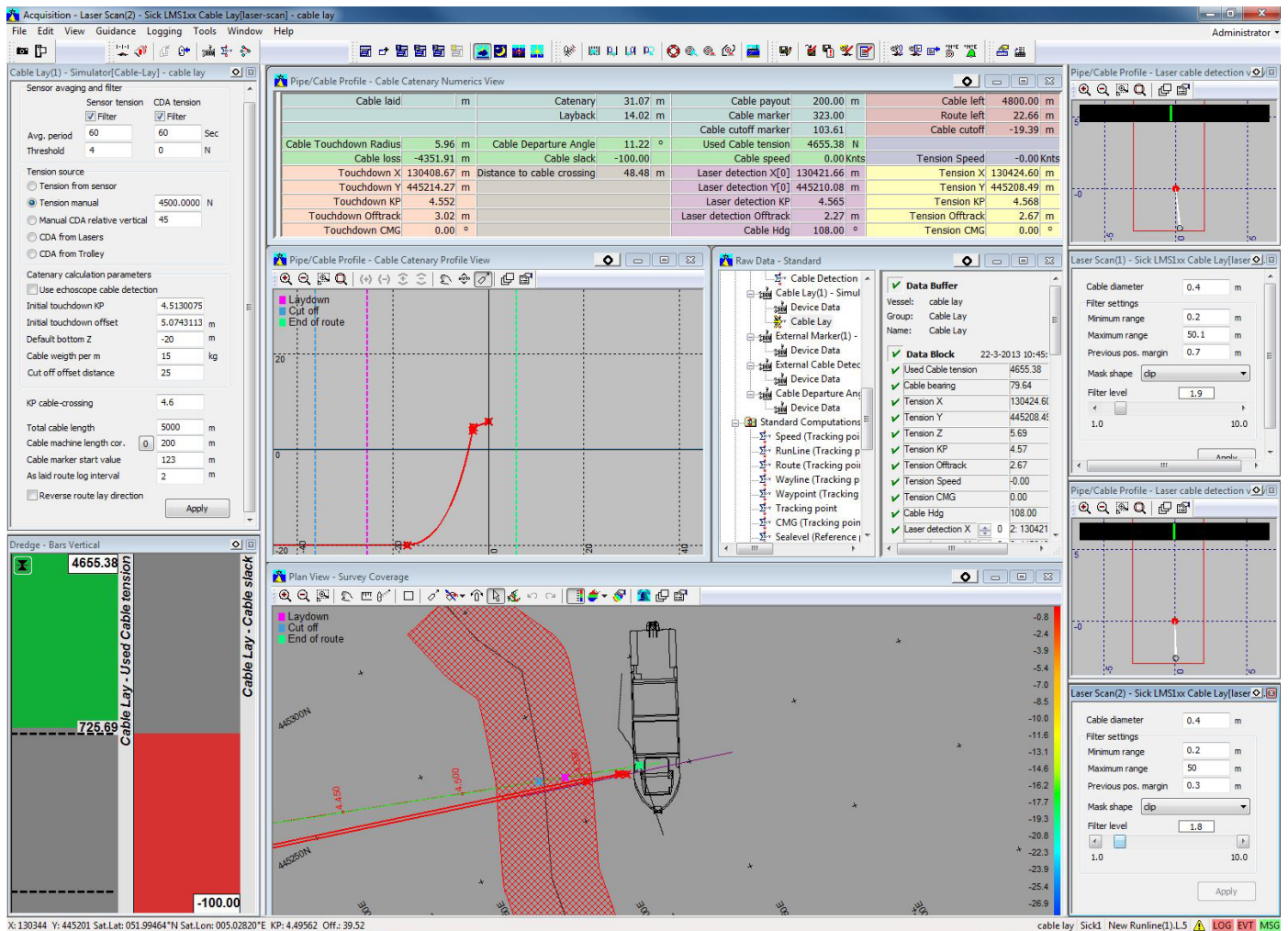
The Teledyne PDS-Cable-Lay provides various layouts to support your Cable Lay Project in the best way possible. Not only will PDS Cable-Lay visualize the theoretical values, it will also display the cable lay process in real time. For example using information from sensors such as tension values from the tension machine and the trolley, and using the cable chute position, Cable Departure Angle (CDA) is calculated and displayed. In short PDS Cable-Lay will show all parameters that are essential throughout the project.

Whether it is touchdown position, catenary- or tension point or any other parameters, all of these can be visualized, either numerically or graphically. In one screen the project surveyor has all the information available, allowing him to take immediate action when actual values start to deviate too much from a-priori calculated values. During the project all data can be logged, for later review. The actual cable route is logged in a separate file. This means your as-laid route is ready for distribution the moment you have placed the cable at final touchdown point.

## FEATURES

- Teledyne RESON's products give you accurate and reliable working tools
- Teledyne PDS-Cable-Lay ensures maximum use of the engineering preparation done in the office by importing these data
- Teledyne RESON provides sensors for optimum control of your construction project
- Teledyne PDS gives you a proven experience you can trust to support your business
- The application can be extended with other Teledyne PDS apps





## Why choose Teledyne PDS Cable Lay Monitoring for your application ?

- Reliable monitoring software and sensors to maximize uptime
- Improving your return to investment
- Teledyne PDS flexible software, tuned for standard and special projects on a cost effective platform

Teledyne PDS

# Dredge & Construction Applications

With over 25 years dredge market experience, Teledyne RESON produces precision tools for any user. This leaflet gives you a brief overview of our capabilities. Our client base includes large and small dredging companies, hydraulic engineering, construction, offshore and survey firms. With those in mind, all Teledyne RESON products are designed to withstand the harsh environment in which the equipment is used. Whether it's for revetment surveys, rock dumping, excavating, dredging, maintenance surveys, building breakwaters, windmill parks, barge management or any other construction projects, Teledyne RESON will supply you with a suitable solution.



Teledyne RESON supplies a full range of sensors and software for dredge guidance and construction applications. Dredge system supported are hydraulic excavators, wire-cranes, bucket dredgers, underwater ploughs, trailing suction hopper dredgers and cutter suction dredgers.

## FEATURES

### Teledyne PDS DREDGE

Teledyne RESON's products give you accurate, efficient dredging.

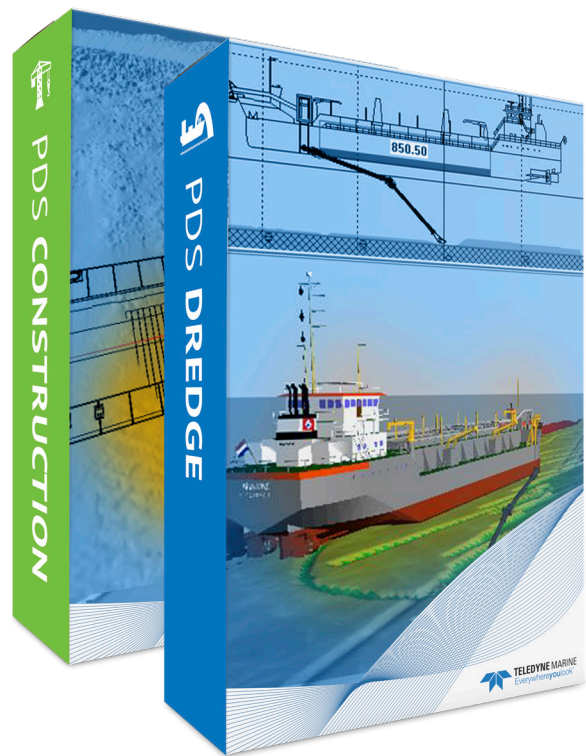
### INTEGRATED DREDGE SOLUTIONS

Teledyne RESON is the only supplier of integrated dredge and survey solutions to the dredge and construction market.

Teledyne RESON provides all the sensors for optimum dredge guidance.

Products are designed for the dredge and construction environment.

Create high quality and fast results.



The application's strength is the Teledyne PDS software that combines the various sensors to a complete solution tuned to your project. This allows users to extend their standard dredge solution with additional features to carry out more complex projects.

Complex solution examples are standard Teledyne PDS dredge guidance systems with the addition of external equipment not regularly used in dredge activities.

For example a crane installation integrated with a USBL position system to position an underwater frame with sensors that are also interfaced and visualized in Teledyne PDS, or a TSHD integrated with a Multibeam system.

For deepwater projects it is possible to integrate an underwater crawler with an ROV using a multibeam system and USBL for positioning.

# Teledyne PDS



Dredge

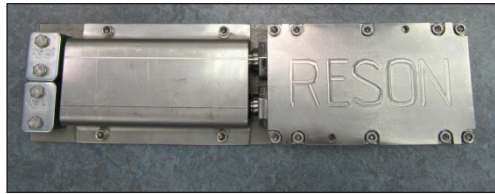


Construction

## EXAMPLE OF SENSOR RANGE SUPPLIED BY TELEDYNE RESON



Angle sensor



Inclinensor

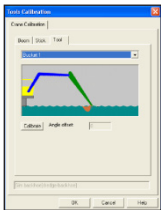


Interface

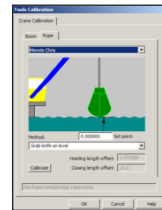
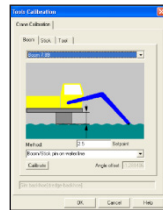
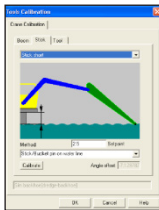


Draftsensor

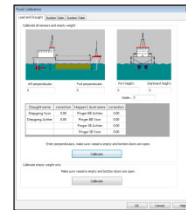
## INTEGRATED CALIBRATIONS FOR VARIOUS APPLICATIONS



Excavator Calibration

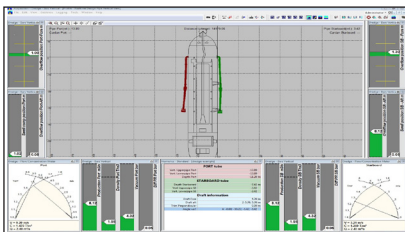


Wirecrane Calibration

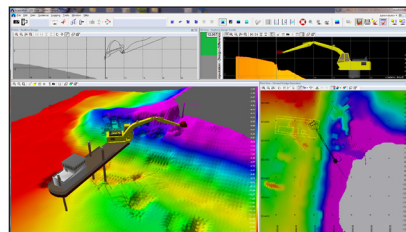


TSHD Calibration

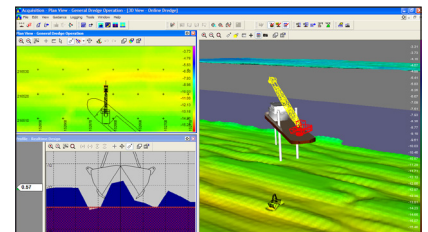
## EXAMPLE OF VARIOUS MONITORING VIEWS



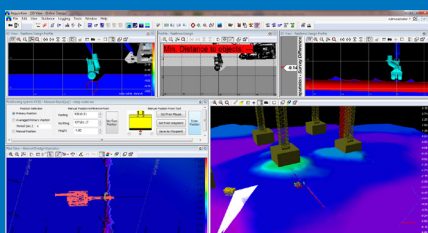
STDH layout example



Excavator layout example



Wirecrane example layout



## WHY CHOOSE TELEDYNE PDS DREDGE FOR YOUR APPLICATION?

- Reliable dredge monitoring software and sensors for your project
- The tool for efficient dredging
- Strong back office support
- Teledyne PDS flexible software, tuned for standard and special projects.



Teledyne PDS

# PDS ImageScan

## BlueView M series 2D Sonar integrated in PDS

### Use of BlueView M series with PDS Dredge and Construction

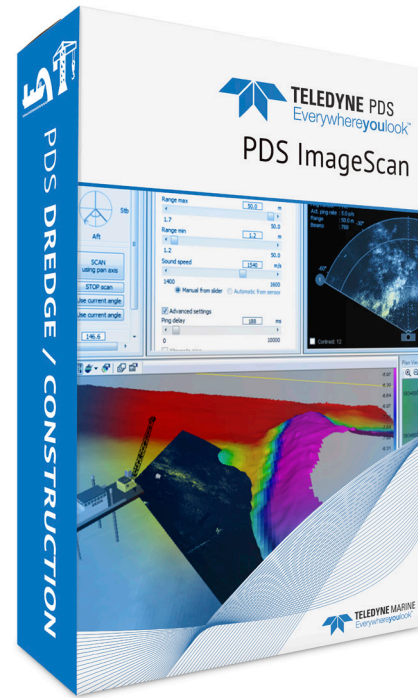
Teledyne PDS software is one of the most versatile software packages available in the dredge / construction market. Its scalability allows the user great flexibility in which way the software is used.

PDS is used for example on wirecrane and excavator operations to monitor the activities, it can be expanded with other tools to support special applications. One example is the add-on of a laser scanning system to enhance the bucket position on a wirecrane or adding a TDY BlueView BV5000 unit on a crane to measure in real-time the area you dredge or place objects into. This is the so-called PDS MotionScan option.

Another example is our block placement add-on module that supports breakwater construction projects from design to final placement.

The PDS ImageScan is yet another add-on developed to support the operator to place or remove objects underwater, from sandbags, boulders or any other object on the seafloor.

Expanding existing PDS installations with ImageScan is relatively easy. The BlueView sonar is fitted to the pontoon and is interfaced to the existing Crane PC running PDS. By adding the pontoon heading information and using the crane position and motion data, the system is ready for operation.



### Features and benefits ImageScan

#### Scalability

- Use as stand-alone application or as add on to an existing installation

#### Easy to operate

- Full control and visualization of the BlueView sonar via PDS.
- Reduced number of sensors required used in combination with existing PDS Crane installations

#### Combination of data

- Combined views of Crane tool and sonar
- Planview shows pipe, cable routes or objects to place / remove

## FEATURES

### Teledyne PDS Dredge / Construction:

- Teledyne products give you accurate, efficient dredging and construction tools.
- Teledyne RESON is the only integrated dredge and survey solutions supplier to the dredge and construction market.
- Teledyne RESON provides all the sensors for optimum dredge guidance.



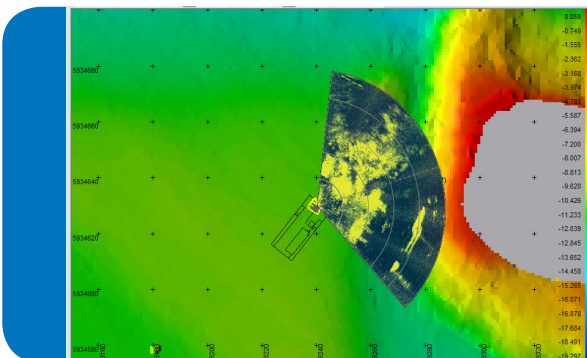
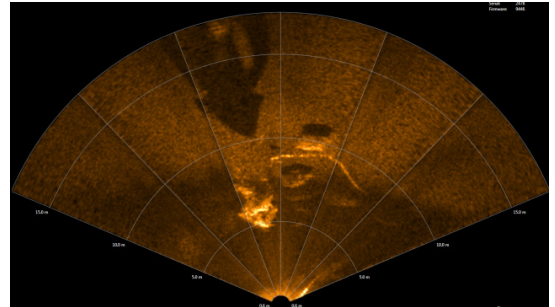
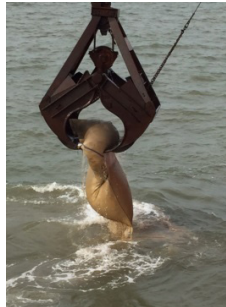
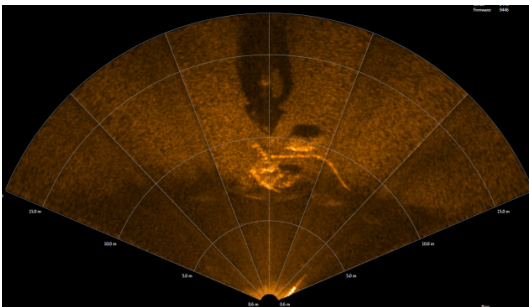
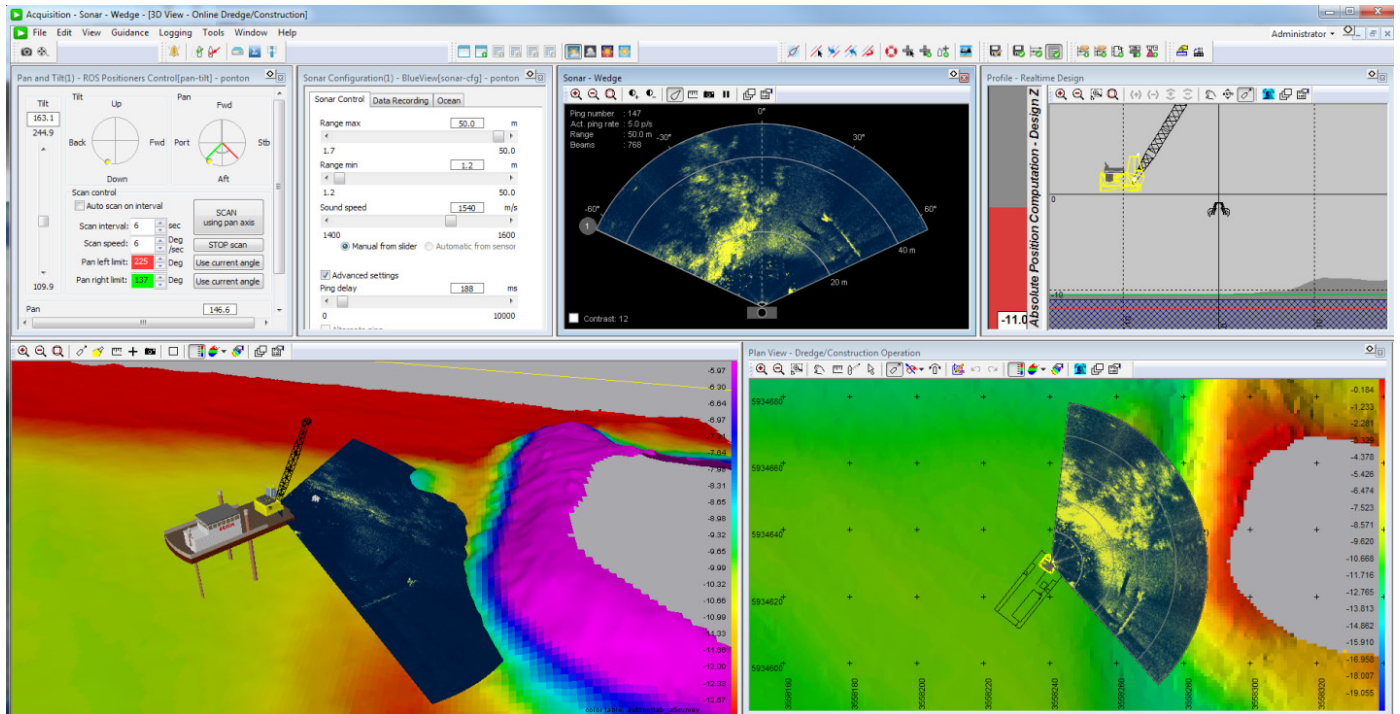
# Teledyne PDS



Dredge



Construction



## WHY choose PDS Dredge / Construction for your application ?

- Reliable monitoring software and hardware for your project
- Efficient tools to operate accurately
- Strong back office and development
- Flexible software, tuned to your application

## Teledyne PDS

# Pile Placement Monitoring

With over 25 years of experience in the offshore industry, Teledyne RESON produces precision sensors and software for any user. This leaflet gives you a brief overview of our capabilities in the new renewable energy market, the construction of windmill parks. Our clients database includes large and smaller construction companies, hydraulic engineering, offshore and survey firms. With those in mind, all Teledyne RESON products are designed to withstand the harsh environment in which the equipment is used. Whether it's for pipeline surveys, rock dumping, windmill parks, barge management or any other construction projects, Teledyne RESON will supply you with a suitable solution.



The Monopile Placement module is developed in close cooperation between our clients and our engineering and software teams. Importing pre-engineering information the application supports the client's project preparations. The pre-engineering information as position, orientation and monopile information is used as guidance during real time operations.

## FEATURES

- Products are tuned to meet clients requirements.
- Ensure a good cooperation between office and field staff by using project data in an efficient way.
- Innovative Solutions
- During operation reporting of project details.
- Works seamless with other Teledyne PDS applications.
- Imports data from the clients project team to ensure a good work flow between office and offshore engineers/surveyors.
- Teledyne RESON can also provide the hardware required for the project.



In the field the operator simply selects the monopile to be placed and Teledyne PDS shows all relevant information. To monitor pile position and inclination during placement a number of laser systems, placed at different locations are used.

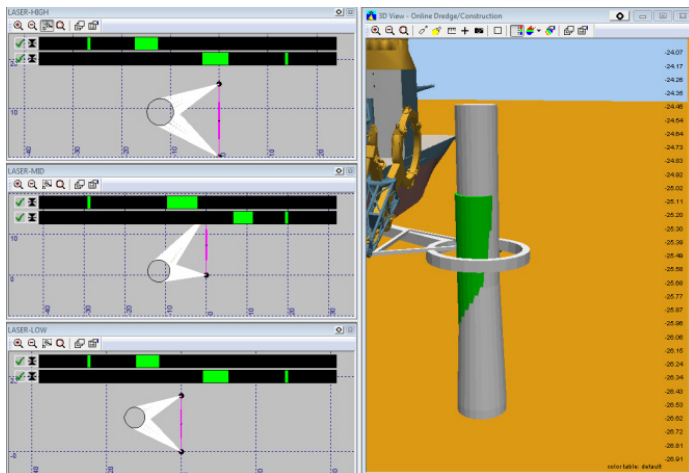
The well proven Teledyne PDS pipe and cable detection algorithm is used to calculate and visualize actual monopile position and inclination from the laser measurements. Using a tracking laser to measure the pile's vertical movement Teledyne PDS is also able to show the pile penetration into the seabed.

During pile placement all data is saved. When logging is stopped, a report with details such as pile inclination and position during the hammering is directly generated.

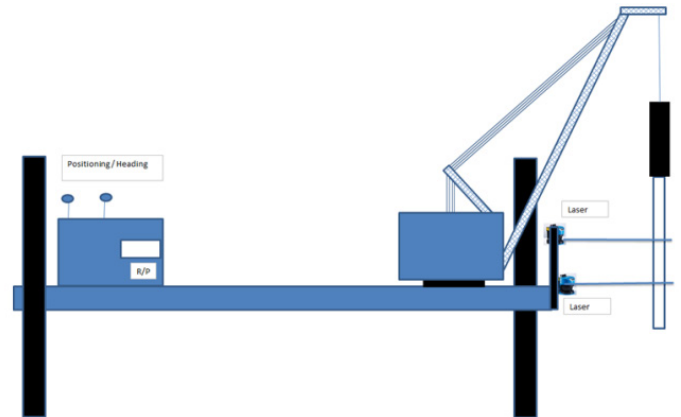
To monitor final pile position after placement, the pile can be fitted with placement sensors. Their data is fed into Teledyne PDS so a report with the standard deviation of the measurements can be generated immediately. Teledyne PDS monopile placement can also be used for other type of pile placements such as placements of piles in ports and harbours. Teledyne RESON is more than happy to work with their client on this type of piling projects.



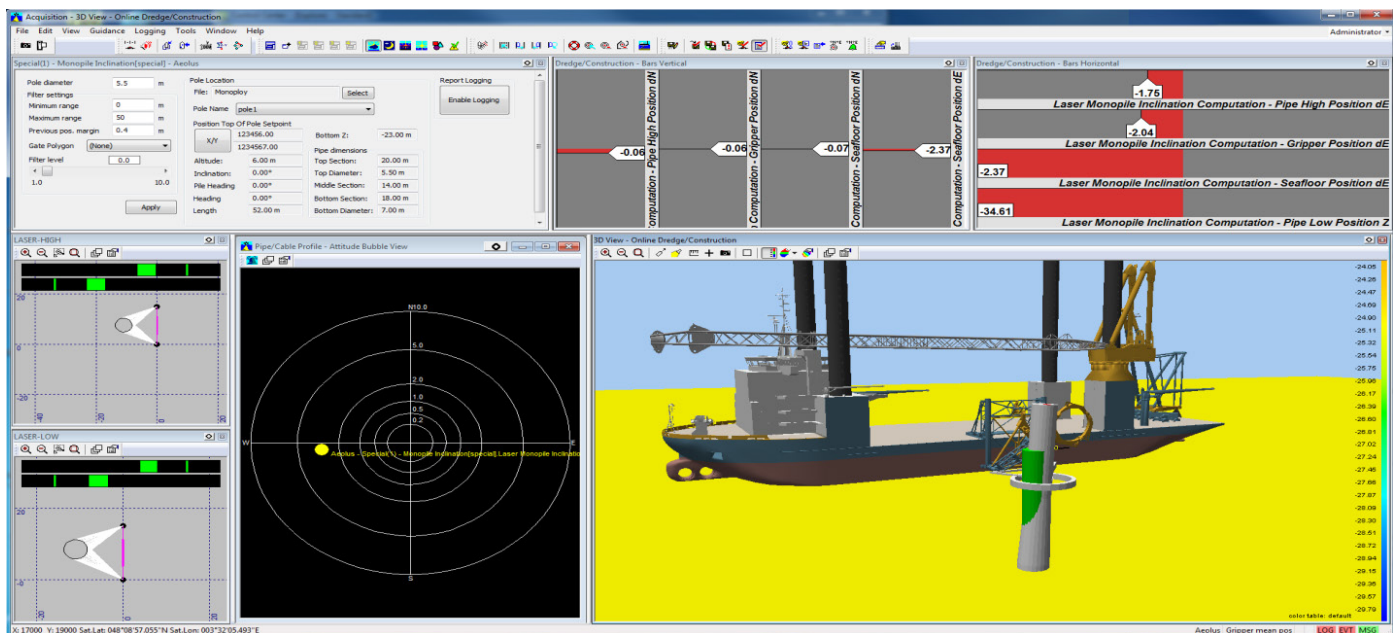
# Teledyne PDS



View with 6 laser scanning the monopile



Monopiling from crane platform



Example of real-time view with bar indicators, 3D view with actual pile position and level/heading view

## Why choose Teledyne PDS Pile Placement Monitoring for your application ?

- Proven record, easy to use especially for existing Teledyne PDS users
- The tool to guide and manage your pile placement projects

Teledyne PDS

# Port Entrance Simulation (PES)

With over 25 years hydrographic and dredge market experience, Teledyne RESON produces tools for a variety of applications. This leaflet is a brief overview of the Port Entrance Simulation package, called PES.

Teledyne PDS-PES is an unique software tool to ensure Safe Navigation for vessels from entrance of the Port to their berth. Teledyne PDS-PES package allows Port authorities and Pilots making decisions on vessel management in their Ports. This means that they need tools to check if vessels that enter their Ports can safely navigate in and out of the Port using the latest collected survey data. Teledyne PDS-PES is such a tool. It simulates the route the vessel has to sail and indicates the areas which are too shallow taken in account the shape and draft of the vessel as well as tidal information.



Teledyne PDS-PES is developed in cooperation with the Port of Antwerp. The requirements were: a power full tool that is easy to operate, uses the size and draft of the vessel, Under Keel Clearance



(UKC) margins for Route and Berthing and uses DTM (digital terrain model) models available from the Hydrographic department.

The results are saved as an AVI which provides all the information about Safe Navigation along the chosen route. For pilots the information is saved as DXF charts and DTM models.

Teledyne PDS-PES can be easily adapted to the vessel which will enter the port. The operator selects a vessel from a database or creates a new vessel on the fly, which is added to the database. The draft, turn radius and size are the most important inputs for the vessel. A standard route for the vessel can be selected whereby automatically the vessel draft is used to generate a differential model with the hydrographic DTM. The differential DTM is colour coded using the defined UKC margins to notify the operator for unsafe parts of the route. The route can be changed interactively to avoid the shallow areas.

The operator can also sail with the vessel along the selected route or can alter the route on the fly when required. The final route will be available as a DXF for later use by the pilots. A video of the simulated route is stored and can be send together with the route to the Pilot. Teledyne PDS-PES offers the Port of Antwerp a strong and powerful tool to secure safe sailing in their Port with dredging activities as cost effective as possible.

## FEATURES

### Teledyne PDS PES

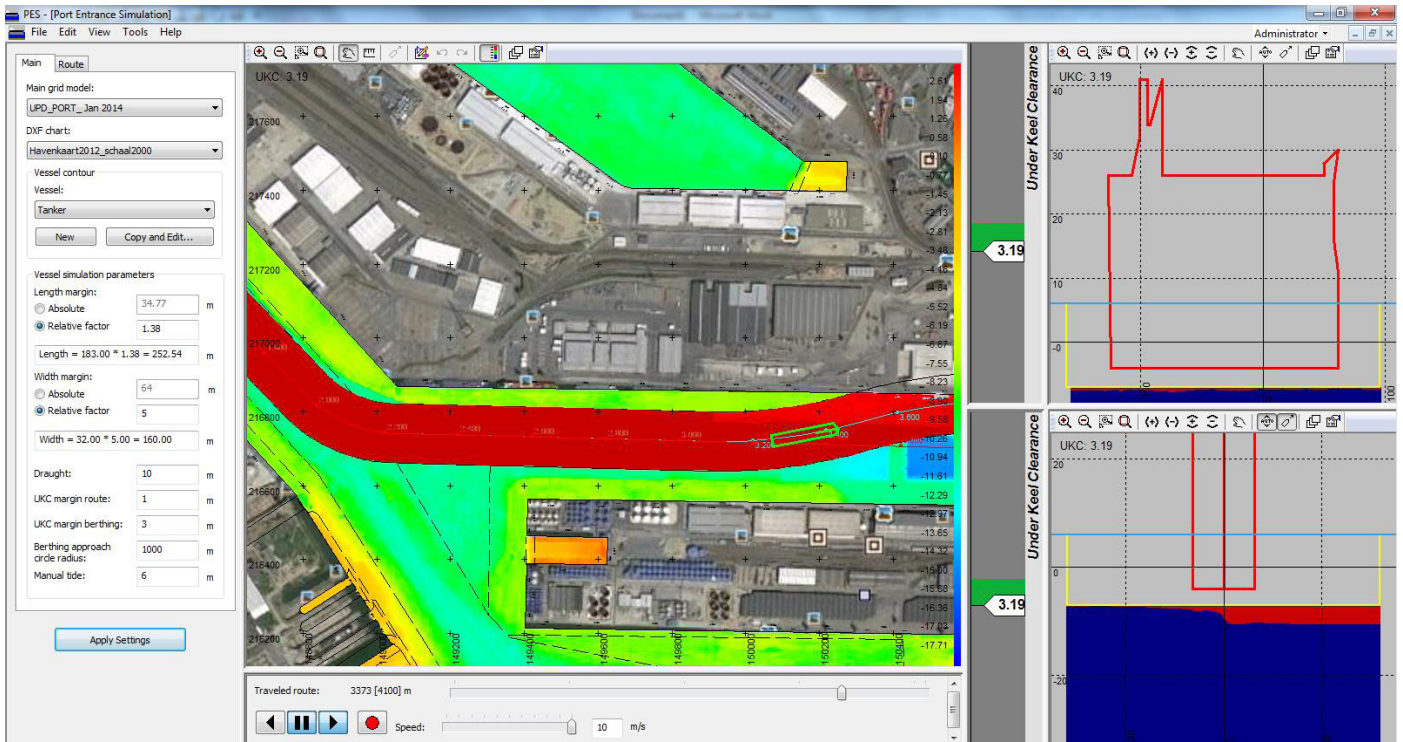
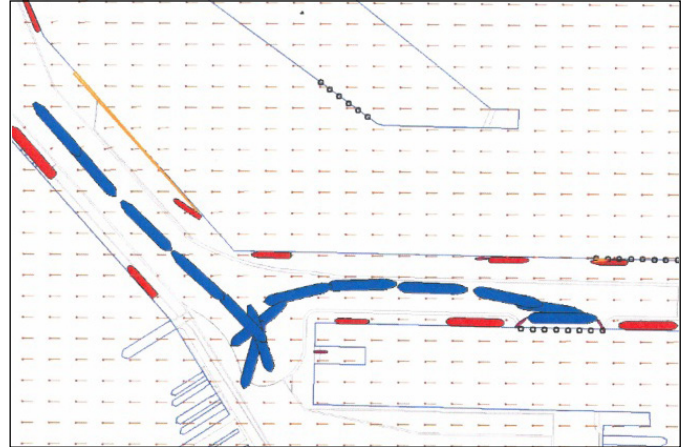
- Teledyne RESON's products for accurate and efficient simulation tools.
- Teledyne RESON is the only supplier of integrated dredge and survey solutions to the dredge and construction market.
- Products are designed for Port, dredge, survey and construction projects
- Create fast and easy routes for safe navigation in Ports
- Innovative Products
- Collect, process and simulate hydrographic data for your Port.



# Teledyne PDS

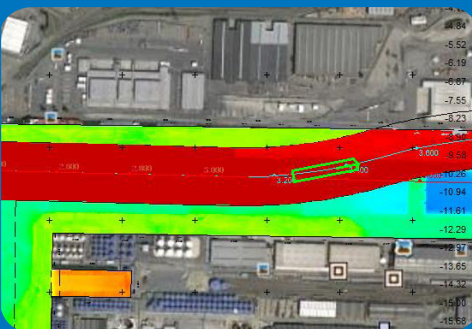


Ports



## WHY CHOOSE TELEDYNE PDS PES FOR YOUR PORT

- Easy to use package
- Easy to add new vessels and routes to the system
- Easy reuse of existing data from Hydrographic department





# What you should know about us

Teledyne PDS is a Teledyne Marine solution optimized for both Teledyne Marine products and almost all other available systems in the market from recognized manufacturers.

Teledyne Marine is a group of leading-edge subsea technology companies that are part of Teledyne Technologies Incorporated. Through acquisitions and collaboration over the past ten years, Teledyne Marine has evolved into an industry powerhouse, bringing Imaging, Instruments, Interconnect, Seismic, and Vehicle technology together to provide total solutions to our customers. Each Teledyne Marine company is a leader in its respective field, with a shared commitment to providing premium products backed by unparalleled service and support.

[www.teledynemarine.com](http://www.teledynemarine.com)

