A Guide To ECDIS
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Your Journey To Paperless I-Navigation With iECDIS™ Has Begun!

You’ve started the journey and we’re here to help you get there. You discarded paper maps for navigation in your car years ago in favour of GPS satnav, and now it’s time to embrace the benefits of electronic chart revolution on your ships. i-Navigation using iECDIS™ offers you so many benefits over paper charts:

• Improved navigational awareness with the integration of chart, positioning and navigational information
• Real-time accurate ship position
• Automatic monitoring of vessel voyage route
• Reduction of human error & elimination of time needed to manually update charts
• Alarm points can be set
• No need to store numerous paper charts

Let’s not pretend though that changing to i-navigation is a simple task, because it’s not - there’s a lot to learn and a lot to do. But difficult or not, you’ve got to do it sooner or later - the sooner the better to get an advantage over your competitors.

That’s why we’ve produced this simple step by step guide to what’s required to embrace the revolution. We hope it helps you to decide what’s right for your ships and when.

Whether you choose our amazing iECDIS™ for your ships or not, we hope you’ll remember Martek Marine for giving you a helping hand in adopting paperless navigation. Happy sailing!
First things first - you need to decide when to fit ECDIS to each of your ships and for this you've got two choices:

Choice 1 - wait until the approach of the deadlines imposed by SOLAS ch V Reg. 19. For your convenience we’ve published the table below so you can see at a glance the latest compliance dates for your ships.

Choice 2 - do it now! Why wait until the latest possible time? Did you wait to deploy satnav in your car? By adopting iECDIS™ early, you can get in front of the crowd and access all the benefits immediately. If you’re worried about capital cost don’t be, with iECDIS™ you can uniquely lease the system as a service from just US$ 299 / month.

ECDIS Implementation Schedule - July 2012 to July 2018

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Once you’ve decided when you’ll be installing ECDIS on board your vessels you’ll then need to choose a make and model of ECDIS. You’ll have seen lots of ECDIS manufacturers out there and it’s so difficult to tell which system to choose. It’s therefore critical to make your decision on an informed set of objective design and performance criteria. Consider 4 aspects:

1 **Software**

It’s highly recommended that you make your choice after you’ve played with the software at your leisure. Familiarise yourself with the look and feel and ease of conducting the more common routine operations. Whilst there are so many mandatory features required in all type approved ECDIS, look out for the software’s ability to deliver important features in a simple, intuitive interface. Credentials of the software are critical - how many systems running the software are installed and operating successfully on ships?

2 **Hardware**

It needs to be built to last on ships, to look and feel rugged and impact resistant. Future proofed, fast processor speed and lots of RAM memory. You’ll want redundancy and removable high capacity hard disc drives, fanless cooling, military specification performance, radar overlay card and sufficient inputs/outputs and connectivity for other integrated bridge devices.

3 **Chart Supply**

Rules mandate that vessels must sail with up to-date ENCs (vector charts) when sailing with ECDIS as the primary means of navigation. Because there is not yet full global coverage of ENCs, in such areas, vessels are permitted to operate their ECDIS in the Raster Chart Display System (RCDS) mode if approved by their flag state. Vessels must also carry up to date paper charts for these particular areas.

By selecting iECDIS™ with our official iCHART ENCs, you’ll be able to upload these charts quicker than other ENCs. Chart updates take a matter of minutes rather than hours and can be done direct from the internet, e-mail, DVD, USB or GSM modem.

You’ll have flexible pricing options with iCHART - direct, dynamic and pay as you sail ensuring you always have the latest charts for your vessels wherever they’re sailing at the most economical pricing.

4 **Type Approval**

When selecting your ECDIS for your vessel make sure that it’s fully type approved and in compliance with your vessel’s classification body and flag state.
ENC / SENC / RNC Charts Explained

ENC is an acronym for Electronic Navigational Chart and comes in **VECTOR** format. RNC is an acronym for Raster Navigational Chart and comes in **RASTER** format. The difference in the two formats being that vector charts are derived from a series of points and lines and can be manipulated to highlight or hide more detailed information whereas raster charts are simply a scanned and passive image of a paper chart – what you see is what you get.

ENC and RNC fall under the category of official charts. Only charts which have been issued by or on the authority of a Hydrographic Office are deemed as official. Any other type of chart is simply a “private” chart which are **NOT** permitted as primary tools for navigation and are **NOT** produced and issued by a recognised Hydrographic office.

Because ENC data doesn’t yet cover the entire globe, some flag states allow ships to navigate using their ECDIS in the Raster Chart Display System (RCDS) mode with RNCs in areas where no ENCs are available, but they must also carry up to date paper charts. Using RCDS mode in ENC available geographic areas isn’t allowed.

Regardless of ECDIS manufacturer, all ECDIS units use S-57 ENC chart format transformed into their own SENC (System Electronic Navigation Chart) format. Base sets are sent to vessels 4 times per year with license periods for ENCs typically 3, 6, 9 or 12 months. License period purchasing decision depends on the trade of your vessels. For example if your vessel is trading on the spot market then we would recommend that 3 months licenses are purchased where as if your vessel is trading on the same route for an extended period of time, then a 12 month subscription would be more economical as 12 months are cheaper than purchasing 3 month quarterly subscriptions. Whichever license period you select, updates for new editions, notices and corrections can be supplied via CD/DVD, online, USB, e-mail or GSM modem with Martek Marine’s iECDIS™.
Crew Training

ECDIS regulations require that the master and all watch keepers on ECDIS-fitted ships are trained in both generic and type specific ECDIS operation. There are a number of training options available including shore, web and computer based.

**Generic Training** – This should follow the IMO model course 1.27 (40 hours duration) for bridge officers to satisfy the IMO Standards for Training Certification and Watch Keeping (STCW).

**Type Specific Training** - equipment specific training for a particular make and model of ECDIS needs to be carried out according to the IMO’s International Safety Management (ISM) Code.

Select only training organisations with comprehensive flag state approvals including those of your ships that will be fitted with ECDIS.

You might also want to consider training your own internal ECDIS trainers(s) so that you have an in house ECDIS “specialist” to supplement the external certified training.

Operating Procedures

So you’ve identified when you’re going to install ECDIS, which manufacturer you’re going to go with and put in place training for your crew. You now need to ensure that you put in place operating procedures for your ECDIS. Things to consider:-

- Departure and arrival checks
- Passage planning and watch keeping
- Watch handover
- Sensor failures
- Black out planning
- Bridge procedures

The procedures should be relevant to your specific vessel and in line with your company policies, the area of operation and the type of trade. You can then update your ISM (International Safety Management) code procedures.
The final stage in your ECDIS integration is the on board implementation. Gradual transition can be over several months depending on your compliance window - therefore it’s important to consider making the move to ECDIS before compliance becomes mandatory. This will allow for problems to be identified and for crew to feel competent and able at navigating with electronic charts rather than paper.

Regular audits and reviews should take place to spot potential issues and to improve procedures and best practice. Full risk assessment should be performed for ship-specific hazards associated with the ECDIS operation, dependent upon ship type, trade and area of operation. Hazards range from failure of ECDIS hardware, computer viruses and sensor failure, to black out, incorrect chart installation and misinterpretation of information.

Once the specific risks are identified, appropriate control measures will need to be established and put in place in consultation with ship staff. Incorporate your ECDIS procedures and risk assessment into your Safety Management System.

It’s good practice to place an ECDIS experienced senior officer on board during the initial transition stage to guide lesser experienced crew members.
A Guide To ECDIS

We hope this guide helps you to navigate through the complex waters to ECDIS compliance. With the iECDIS™ from Martek Marine you can be sure of not just meeting compliance but improving operational performance.

Powered by Jeppesen, a Boeing company – the heart of >20,000 ECDIS/ECS systems worldwide

Rugged, heavy duty military spec’ hardware – built to last on ships

Fanless operation with no moving parts – ultimate stability, durability and lifetime

iECDIS™ from US$ 299 per month