



SHIP STEP ON A PAGE

ISO 10303 Standard for the Exchange of Product model data (STEP)

Organizations and industries all over the world have problems exchanging product model data. These exchanges can be between design, analysis, or manufacturing systems. Industry collaborators have developed a suite of standards in the Organization for International Standardization (ISO) to exchange neutral product model data. It is the **ST**andard for the **EX**change of **P**roduct model data (STEP).

ISO 10303 for Ship Product Model Data Exchange

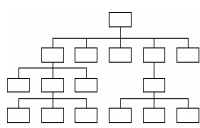
The STEP development community is working to ensure these standards support international product model exchange requirements. The ship community is participating to ensure that their product model data can be exchanged to support real business processes. Integrated Resource parts in STEP address geometry, materials, tolerances, configuration management, and other general requirements. Application Protocol (APs) parts have been developed to address specific products and processes.

SHIP STEP STANDARDS

Almost every AP can be used by most industries. These are the key ship industry needs for product model data exchange using ISO 10303 STEP.

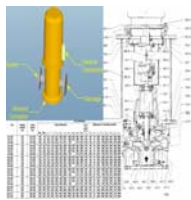
System Standards

AP 233 - Systems Engineering Data Representation (In development)



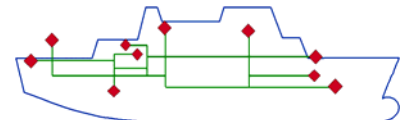
AP 233 addresses a need to exchange system requirements. The scope includes conformity to the concept of a system; configuration control; requirements, requirement analysis, and functional allocation/ analysis/ behaviour; and physical architecture.

AP 239 - Product Lifecycle Support (Published by ISO in 2005)



AP 239 addresses support of the system from concept to disposal. It enables you to: request, define, justify, approve, schedule and capture feedback on work activities/resources; document product requirements and configuration as-designed, as-built, and as-maintained; provide feedback on product properties, operating states, behaviour and usage; and define support opportunities, facilities, personnel, and organizations for the complete ship description of structural envelope, distributed systems, and the subsystems/equipment.

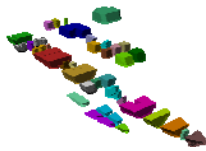
- Ship Structural Envelope (hull forms, structures, arrangement)
- Distribution Systems (electrical, piping, HVAC, cable trays, mechanical)
- Mission Subsystems/Equipment (PLIB, RDL)



Ship Structural Envelope Standards

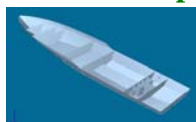
This is some of the product model data that can be exchanged with the ISO 10303 ship STEP APs and ISO 13584 PLIB standards.

AP 215 - Ship arrangement (Published by ISO in 2004)



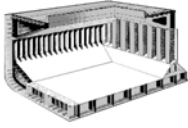
AP 215:2004 supports the following activities: subdivision of ships into compartments and zones; volumetric capacity calculations; compartment connectivity/adjacency checking; stability calculation and spatial accessibility; area/volume reporting; tank capacities.

AP 216 - Ship moulded forms (Published by ISO in 2003)



AP 216:2003 addresses principle hull moulded form dimensions and characteristics, internal compartment boundaries, appendages, hydrostatic properties, propellers and control surfaces.

AP 218 - Ship structures (Published by ISO in 2004)

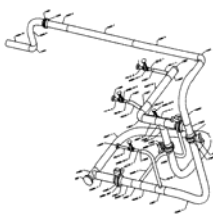


AP 218:2004 addresses transfer of data for shipbuilding activities and applications associated with design and early the stages of manufacturing such as: plates, stiffeners, profiles, assemblies, connectivity, welds, approvals, and change identification.

Distribution Systems Standards

AP 227 - Plant spatial configuration (Published by ISO in 2005)

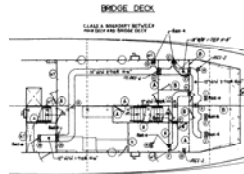
AP 227:2005 is an ISO standard that addresses the spatial configuration of items in process plants and ships. AP 227:2001 supports the transfer of product definition necessary to support piping design in process plant facilities. Edition 2 adds HVAC and cable tray information and distributed system information such as: flow; sizing; stress; connectivity checks; system testing; interference detection; fabrication; assembly and installation instructions. Edition 2 also addresses mechanical systems, such as conveyor systems or a ship power train.



Piping



HVAC

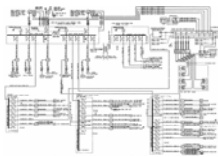


Cable Trays



Mechanical

AP 212 - Electrotechnical design and installation (Published by ISO in 2001)



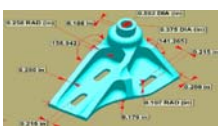
AP 212:2001 is an ISO standard that specifies information requirements for the exchange of design information of electrotechnical plants and industrial systems. Addresses the transfer of electrical product definition necessary to support electrical and cable tray: current analysis; equipment; lighting; cable sizing; electrical connectivity checks; and interference detection.

Mission Subsystems/Equipment Standards

ISO 13584 and 15926 for parts libraries and catalogs

Before the product model data exchange of a facility or ship can take place we need to complete a successful exchange of the components pieces that make the assembly. For this reason T 23 is also participating in two alternatives for parts library exchanges. We intend to be able to support both approaches to exchanging part catalog information.

AP 214 - Core data for automotive mechanical design processes (Published in 2001)



AP 214:2001 is used to exchange mechanical geometry, product structure, configuration management, assemblies, supplier, tolerances and other information. It includes drawing exchange ensuring that a complete manufacturing technical data package can be exchanged.

SUMMARY

Geometry is just one aspect of the product that needs to be shared and archived. The STEP APs capture additional data on components and systems to improve sharing of important ship information. Additional information is at:

ISO Catalog - <http://www.iso.org/iso/en/CatalogueListPage.CatalogueList/>

ISO TC 184/SC 4/WG 3/T 23 (Ship team) - <http://www.nsrp.org/t23/>

ANSI Catalog - <http://webstore.ansi.org/ansidocstore/default.asp/>

US National Shipbuilding Research Program - <http://www.nsrp.org/>

PDES, Inc. - <http://pdesinc.aticorp.org/>

Europe Marine e-business Standards Association - <http://www.emsa.org/>

Japan Ship Technology Research Association (JSTRA) - <http://www.jstra.jp/>

Korea STEP Center - <http://kstep.or.kr/>

For information on how to participate contact Jim Mays at 301 227-1938 or james.mays@navy.mil.

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