# 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. This is true for ship design and support industries. The Organization for International Standardization (ISO) has an industry initiative underway for creating neutral product model data exchange standards. The product model data exchange standard is the **ST**andard for the **E**xchange of **P**roduct model data (STEP).

ISO 10303 FOR SHIP PRODUCT MODEL DATA EXCHANGE

TC 184/SC 4/WG 3/T 23 (Ship Team), is working to ensure these standards will support world shipbuilding exchange requirements. The ship community is participating in this standard to ensure that ship product model data can be exchanged between design, analysis and manufacturing systems to support real business processes.

Ship Structural Envelope (hull forms, structures, arrangement)
Ship Distributed Systems (electrical, piping, HVAC, cable trays, and mechanical systems)
Mission Subsystems/Equipment (PLIB, RDL)
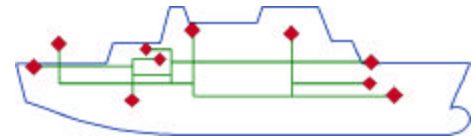
SHIP STRUCTURAL ENVELOPE APPLICATION PROTOCOLS (APs)

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:Industry Standard - Ship arrangement

AP 215 addresses the transfer of product definition necessary to support 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 216:2003 - Ship moulded forms

AP 216 addresses principle hull moulded form dimensions and characteristics, appendages, hydrostatic properties, and propellers and control surfaces.

AP 218:Industry Standard - Ship structures

Addresses the transfer of product model data to support the shipbuilding activities and applications associated with the design phase and the early stages of manufacturing such as: plates, profiles, assembly, connectivity and change identification.

DISTRIBUTED SYSTEMS APPLICATION PROTOCOLS (APs)

## *AP 227:2001 - Plant spatial configuration and AP 227:Edition 2 draft*

AP 227 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.
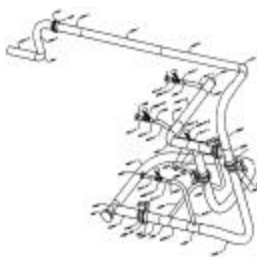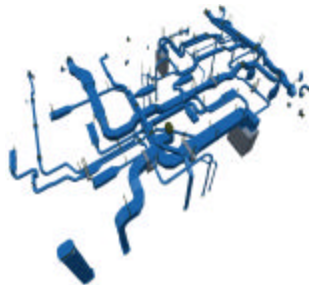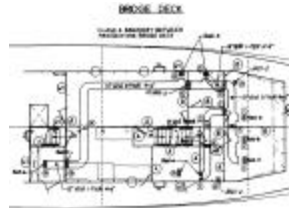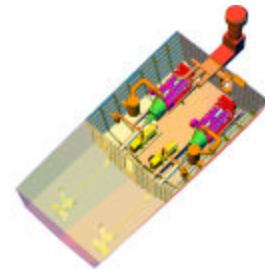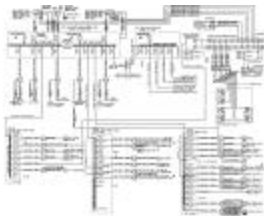

| **Piping** | **HVAC** | **Cable Trays** | **Mechanical** |

AP 212:2001 - Electrotechnical design and installation

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 cable tray interference detection.

MISSION SUBSYSTEMS/EQUIPMENT

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 the assembly is made of. 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.

SUMMARY

The essence of the STEP product model data exchange standard is that 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. For information on procuring copies of the standard contact the US Product Data Association - https://www.uspro.org/ .

ADDITIONAL SHIP PRODUCT MODEL DATA INFORMATION

ISO   TC 184/SC 4 On-Line Information Service for STEP and PLIB - http://www.tc184-sc4.org
ISO   TC 184/SC 4/WG 3/T 23 (Ship team) - http://www.usashipbuilding.com/niddesc/t23.html
US   Navy/Ind Digital Data Exchng Stnds Cmmttee - http://www.usashipbuilding.com/niddesc/niddesc.html
Europe Marine e-business Standards Association - http://www.emsa.org
Japan   Marine Standards Association - http://www.jmsa.or.jp
Korea   STEP Center - http://kstep.or.kr