Fourth Meeting of the International Committee on
Global Navigation Satellite Systems
14-18 September
Saint-Petersburg, RUSSIA

Maritime navigation systems

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ТРАНЗАС
ЭЛЕКТРОННЫЕ ТЕХНОЛОГИИ

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Main Facts

- The Transas (TRANsport SAfety Systems) group of companies was formed in 1990 in St.Petersburg.
- Manufacturer of hi-tech systems to ensure safety on transport.
- The total number of employees at the enterprises forming the Transas Group comes to more than 1800.
- The company distributor network is deployed in 110 countries worldwide.
- The technology development and strategic decision making centre is St. Petersburg. International sales are coordinated from Gothenburg (Sweden).
- The Transas Group turnover reached 250 mln US dollars by the beginning of 2009
- Production facilities are certified for compliance with the ISO 9001 international quality standard.

General office of TG, St/Petersburg, RUSSIA

Administrative office of international sells (Cork, Irland)

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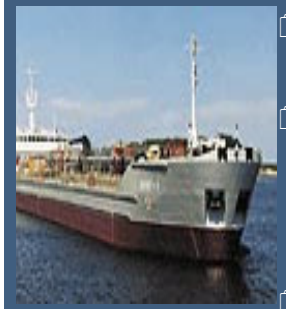
Lines of Activity



MARINE

- Shipboard equipment
- Coastal equipment: VTS, monitoring and security systems
- Simulator systems

AVIATION

- Avionics
- Aeronautical support
- Simulator systems
- Unmanned multi-purpose systems

R/W

- Locomotive control equipment
- Electronic maps of Russian railroads
- Simulator systems

TRANSAS INTEGRATED SOLUTIONS

OIL/GAS INDUSTRY

- Multi-level oil/gas industry objects safety/security systems
- Simulator systems for training oil/gas industry specialists
- Systems for remote monitoring of the oil/gas industry object parameters

DEFENSE

- Integrated conning systems
- Integrated airborne computing and display systems
- Naval ship and flight crew training facilities
- Electronic cartography

CONSTRUCTION

- Architectural and construction design
- Construction of buildings and structures with the standard lifetime of 100 years and more
- Fulfilling prime contractor functions

EDUTAINMENT SYSTEMS

- Information/education and entertainment systems
- 3D/4D interactive games
- Media café interactive theatre

Activities in International organizations

ZAO TRANSAS paticipates permanently in international working groups ENAV, IEC, CIRM, RTCM и IALA in development of Resolutions, Recommendations, standards and national normative documents since 2000:

- Concept of E-Navigation;
- Standard IEC 61993-2 (UAIS class A), Operational and performance requirements, methods of test and required test results. Standard describes the requirements to UAIS which is to be mandatory installed on board the ship in accordance with IMO SOLAS Chapter V Resolution;
- Standard IEC 62287-1,2 (AIS class B “CS” and “SO”), Operational and performance requirements, methods of test and required test results. Standards describe the requirements to AIS which is installed on board the ships on voluntery base and not under IMO SOLAS Chapter V Resolution;
- Standard IEC 62320-1 (AIS Base Station), Minimum operational and performance requirements – Methods of test and required test results;
- IALA Technical clarifications of ITU-R M.1371-3, detailing the requirements to VHF parameters and formats of AIS class A and B equipment;
- IALA Recommendation A-124 on Automatic Identification System (AIS) Shore Station and Networking Aspect relating to the AIS Service;
- Inland Vessel Tracking and Tracing Standard;
- Standard IEC 62288 MARITIME NAVIGATION AND RADIOCOMMUNICATION EQUIPMENT AND SYSTEMS – Presentation of navigation related information - General requirements, methods of test and required test results, describing the symbols displaying on ECDIS, ESC, INS, RADAR monitors;
- Standard IEC 61162-1,2, Maritime Navigation and Communication Equipment and Systems-Digital interfaces

- Participation in International organizations permits TRANSAS to promote RF technical policy, affect on technical and technological levels, realize on-line the latest requirements in producing equipment and keep high level of its quality.

- TRANSAS participates in development of E-navigation Concept which according to IMO and IALA intentions is addressed to improve :
  - efficiency of Navigation
  - Safety

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Definition of E-Navigation

"E-navigation is the harmonized creation, collection, integration, exchange and presentation of maritime information on board and ashore by electronic means to enhance berth-to-berth navigation and related services, for safety and security at sea and protection of the marine environment."

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IALA's Definition

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"e-Navigation is the harmonised collection, integration, exchange, presentation and analysis of maritime information onboard and ashore by electronic means to enhance berth to berth navigation and related services, for safety and security at sea and protection of the marine environment"

Transasas e-Navigation components produced

- Electronic charts with editing service and Electronic Chart Display and information system (ECDIS): Navi-Sailor, Electronic Chart system for pilots Navi-Pilot
- Vessel Traffic and Monitoring Systems with capability to broadcast information to shipborne chart system: Navi-Harbour/Navi-Traffic
- Ethernet service of ship monitoring: Fleet View Online
- Nets of AIS Base Stations: AISNET
- Shipborne and Base Station AIS with GNSS (GLONASS , GPS, Galileo) module: AIS T104, T601; with GLONASS/GPS module T300, T214
- Reference station to broadcast differential corrections of GLONASS and GPSS: «Aqua-Station»
- Special shipbonre and base station radars: Navi-Radar
- Shipbonre and base station equipment of Global Maritime Distress Safety System: GMDSS
- Shipborne INS: Transas INS
- Multilevel integrated system for provision of complex safety and security of ports, territory and water areas: WAIPS
- Complex training system for training ship and coastal specialists for different kinds of specialities

TRANSAS Maritime Shipborne Equipment

- The shipping industry largely owes to Transas the appearance of electronic chart systems on the merchant ships at the beginning of the 90-s. It was the Transas system which was the first to be issued with international certificates of compliance.

- Transas products are accepted as a standard of quality, user friendliness and reliability, and are installed in practically all the largest and most well-known shipping companies of the world. Transas is also an indisputable leader in the government sector. Transas systems are used for fitting out whole Coast Guard and Naval fleets of many countries (Russia, USA, Sweden, Germany, India, UK, Chili, Peru, Columbia, etc.).

- As of today, Transas has delivered about ten thousand electronic chart systems and several million electronic charts. Transas confidently retains 40 % of the world market in this field.

- Transas does not only produce the entire line of navigational equipment, but also carries out full integration of all the ship control systems. And it was Transas again which received the world's first compliance certificate for the Integrated Navigation System.

Интегрированная навигационная система Hyundai-ТРАНЗАС

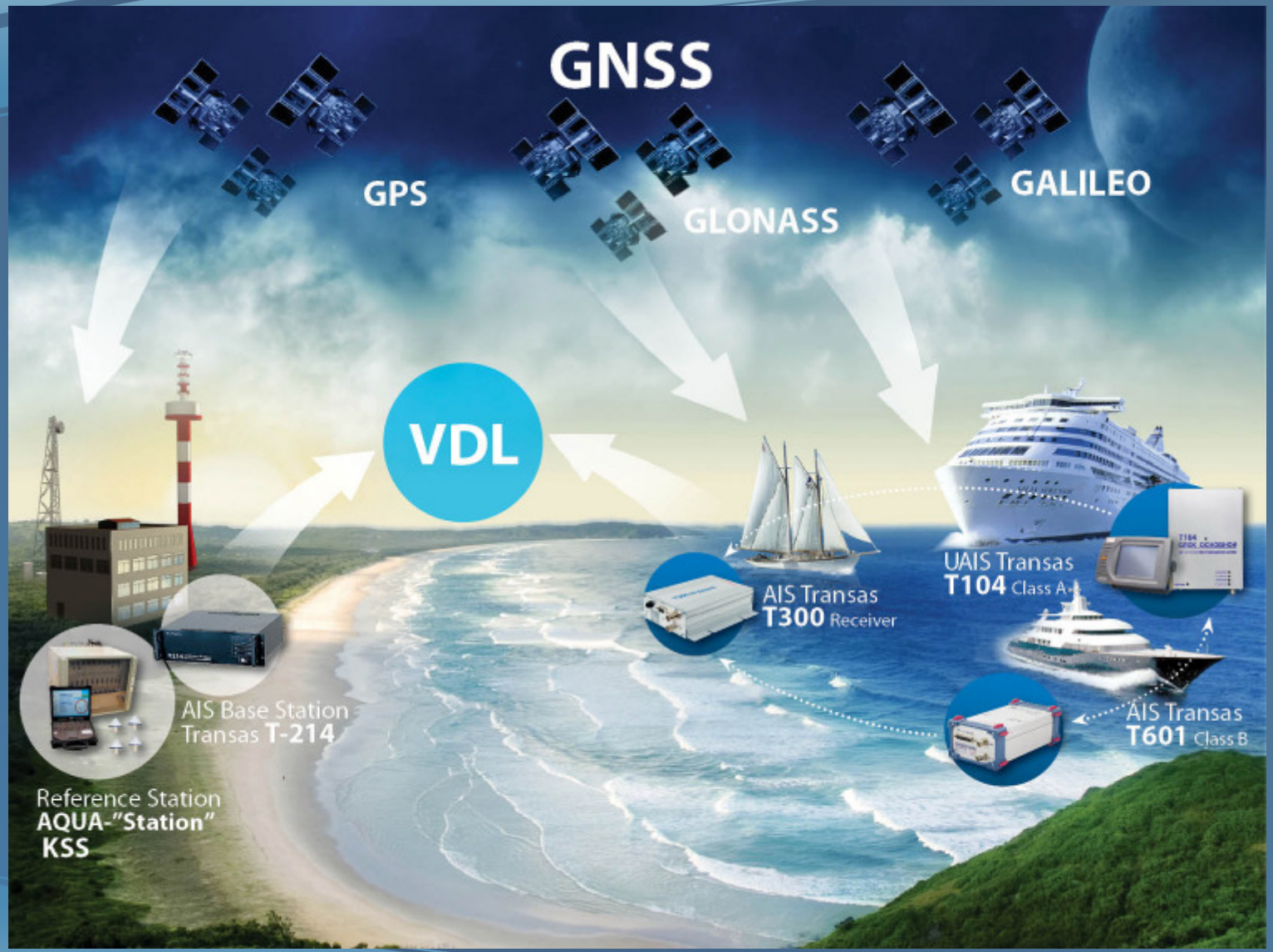
Осуществление пуско-наладочных работ

Электронно-картографическая система ТРАНЗАС

Integrated Navigation System

- Integrated Navigation System - combination of connected between themselves systems which improves navigational safety and efficiency of sea transportation.
- INS combines main navigation systems of TRANSAS production (ECDIS Navi-Sailor, Navi-Radar, Navi-Conning) in one joint complex to provide effective use of all functional capabilities of these given systems.
- TRANSAS together with Hyundai Heavy Industries has created INS Hyundai-Transas Intelligent Bridge System (HTiBS), meeting International requirements IEC 61924 for «C» catagory.

AIS Technology today



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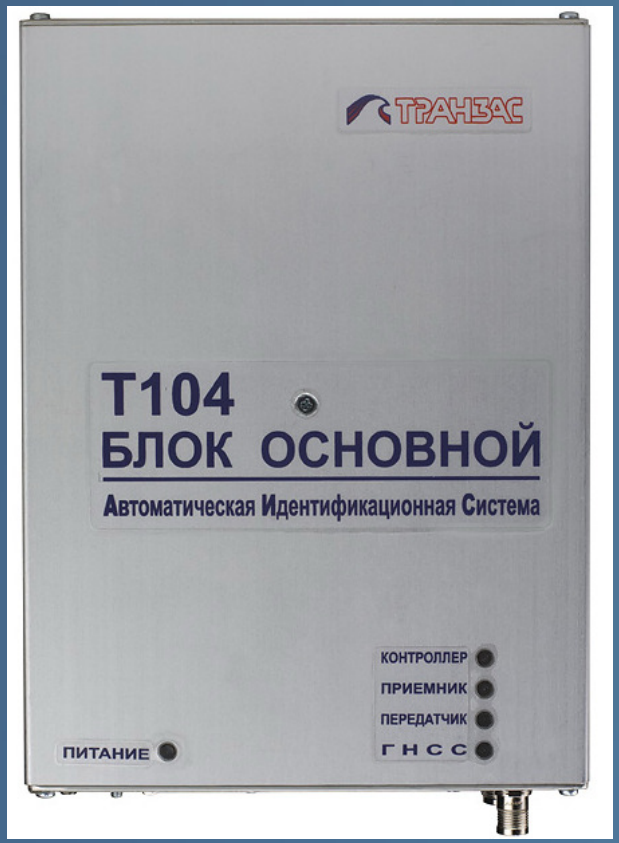
Class A shipborne equipment of the Universal Automatic Identification system TRANSAS AIS T104

- Determines coordinates and speed over ground using GNSS GLONASS, GPS and Galileo signals.
- Increases safety at sea and in coastal waters using automatic exchange of navigational, static and voyage information between ships and base stations.
- According to Chapter V of International Convention SOLAS all ships of more than 300 gross tonnage shall be equipped with UAIS.
- Meets requirements of the latest Resolutions, standards and recommendations: ITU-R M.1371-3, IEC 61993-2 Ed.2, IEC 61162-1,2, ITU R-M.825-3, IEC 60945, Inland Vessel Tracking and Tracing Standard TET of RF MINTRANS.
- TRANSAS was the first in RUSSIA who was handled Certificate of Type approval of UAIS equipment by MINTRANS RF and Type approval Certificate on UAIS by Russian Maritime Register of Shipping.



Class B shipborne equipment of the Universal Automatic Identification system using CSTDMA techniques TRANSAS AIS T601

- Determines coordinates and speed over he ground using GNSS GLONASS, GPS and Galileo signals.
- Designated to input, transmit, receive dynamic and static information and safety related messages as well.
- Installed voluntary on ships which are not under SOLAS Chapter V Convention (Regulation 19).
- Meets requirements of standard IEC 62287-1 CS, Recommendation ITU-R M.1371-3 and in part of concern IEC 61108, IEC 60945, IEC 61162-1,2 standards.
- Additionally receives all messages of Inland Vessel Tracking and Tracing Standard.

Shipborne AIS Receiver TRANSAS T300

- Designated to provide navigation information and improve safety of undersize vessels, yachts in high sea and coastal waters.
- Receives automatically navigational, static, voyage related information and safety related messages from other vessels and Base station and transmits these information via presentation interface to monitor of Electronic-Chart System.
- Certified by GOCCTANDARD RF.

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Complex solution of Navigation and Safety tasks at sea

- **Navigation and Safety Tasks** are being solved on common base of determination coordinates with use of the same GNSS (GLONASS/GPS). Requirements on accuracy for GNSS and AIS equipment are the same.
- Shipborne GNSS and AIS equipment are to be certified in part of EMC, low and high temperature, vibration, dry and damp heat and others in accordance with the same international standard IEC 60945.
- Experience of both (GNSS and AIS) equipment on board the vessels proves there high operating reliability. Equipment works for years continuously.
- Displaying of Navigational information and Safety (AIS) information is carried out on the same ECDIS (or ECS).

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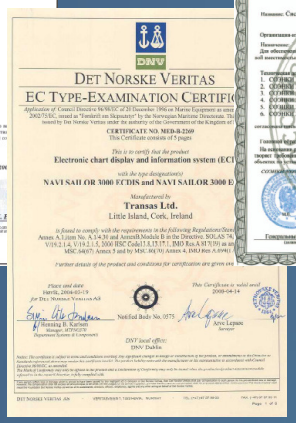
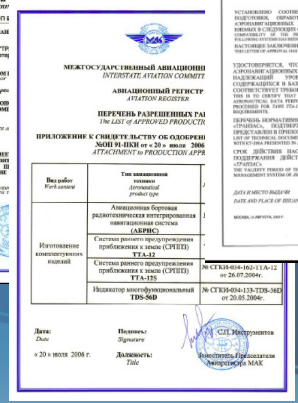
Certificates





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Summary

- Application of satellite navigation technology in TRANSAS development products is addressed to achieve maximum approach to realize of IMO E-Navigation Concept and increase efficiency of navigational support and safety sailing at sea and inland waterways.

- Complex approach to solving of navigation and safety tasks allows to create joined equipment carrying out these two functions simultaneously that gives the possibility to decrease the cost of mandatory installed equipment on board the ship according to IMO requirements.

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Thank you very much for your attention!

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