

The Navigation Company presents:

Advanced Naval Navigation Systems for **Surface Combatants.**



The world's leading
navigation system
company.



Making the difference.

As the navigation system integrator in many significant worldwide naval programs, Anschütz has delivered using proven processes. Our offer includes both highly customizable and off-the-shelf integrated navigation solutions for new build and retrofit projects. Following delivery, we offer a wide ranging and efficient aftersales service.

Customers benefit from our first-hand knowledge and expertise in navigation systems, system integration and system safety.

The Navigation Company: Trust the technology leader!

With many years of experience, own user-level operational expertise and technical know-how Anschütz has become the world-leading provider of naval navigation systems. We own a broad range of products, which are fully designed and manufactured in Germany with a clear focus on quality, scalability and user experience.

We continuously drive product improvement and innovation across our broad portfolio of navigation sensors and systems, steering control systems, and tactical applications, in order to meet and exceed our customer's operational requirements.

Our products provide high performance basis for highly integrated, customized system solutions for surface ships and submarines, but can also significantly enhance vessel capabilities in a retrofit. Our experienced program management offers customers ongoing support and ensures compliance with requirements, military standards, and regulations.

System Integration: Customized solutions at lowest risk

Anschütz has long experience in customized system integration. This includes requirements and acceptance management as well as configuration and obsolescence management. Our experienced program managers accompany the respective customer through the dedicated design phase and the related program milestones and reviews.

We are used to working with the world's leading combat system integrators on one hand, but also with local SMEs on the other, to fulfill requirements for local industry participation. Our solutions offer flexible configurations and designs to adapt to any requirement of data management or CMS interfacing. Furthermore, in various programs, we have realized the fully functional integration of customer-specific equipment (GFX) such as P(Y) GPS and surveillance radars into our integrated navigation system. This includes full third party supplier management.

System safety expertise

With many years of experience at designing naval systems, Anschütz sets and maintains high standards of safety that aim to match or exceed current industry best practices. We have implemented a comprehensive safety management system, training and professional education in order to ensure the qualifications of our engineers and to drive continuous improvement in terms of "functional safety" throughout our product portfolio. The methodology of our safety analysis is based on the IEC 61508 and MIL STD 882, but we are able to follow specific customer requirements (e.g. MIL STD 882E), where required.

Small to large, surface to sub-surface

Anschütz owns a modular product range for navigation, steering control, tactical operations, data management, and more. Our products are the base for any integrated solution, embedded within modern network infrastructure and scaled to the individual customer requirements. Our references include large system solutions for major naval programs, but also small and very cost-effective navigation and bridge systems. We provide our products and systems to surface ships, commercial and naval, and to submarines.





Key Benefits For navies and operators

- Modern, consistent HMI for intuitive operation and safe navigation
- Advanced features for IMO navigation and tactical operation (surveillance)
- Modular software applications and features (flexibility and scalability through life)
- Customizable through integration of customer-specific equipment
- Highest standards of system safety and security (IMO and ANEP-77 Compliant)

For shipyards and integrators

- Single responsible integrator for entire bridge system (incl. GFX) and beyond
- Expertise in requirements engineering to analyze, optimize and realize individual needs
- Experienced program and suppliers' management reduces customer risk and workload
- Modern network infrastructure for reduced complexity and easier integration
- SNI and SCE capable (shared network infrastructure and computing environment)
- Standardized COTS technology: low risk, low NREs, optimized value for money

For marine logistics and services

- Reliable life cycle support through a global service organization and local partners
- Comprehensive service support during installation, trials, and warranty
- COTS/MOTS technology with fewer spare parts simplifies logistics and service
- Integration of GFE and GFX to support fleet commonality
- Dedicated support solutions to meet Navy specific requirements
- Intuitive familiarization, reducing crew training

Synapsis Naval.

Integrated navigation tailored to naval requirements

SYNAPSIS represents the cutting-edge of an integrated navigation system and sets the standard as the world's first type-approved system according to the IMO performance and IEC test standards MSC.252(83) / IEC 61924-2. Meanwhile SYNAPSIS has proven its performance in more than 200 commercial and naval installations.

SYNAPSIS is built on a holistic system concept where any system can be designed utilising standardized system components, interconnected via state-of-the-art LAN. The multifunctional workstations use commercial-off-the-shelf (COTS) hardware, a common software backbone for central tasks and services, and software modules to enable dedicated functions. This allows the operator to manage any situation from any display - from navigation to steering, alarms and tactical SA.

Central navigation intelligence

SYNAPSIS is based on a common software backbone called the Bridge Integration Platform (BIP). The BIP manages all charts, targets and tracks, and performs central services. The multi-redundant data distribution service enables an entirely consistent presentation and handling of data or alarms throughout all workstations. Functional benefits:

- CCRS: sensor data is checked for integrity, validity and plausibility
- Corrupted / manipulated data is detected and excluded automatically
- Health monitoring, redundancy and backup management
- Central management of tracks, targets and zones, consistent alerting
- Central alert management (CAM) reduces stress and directs attention to critical alerts

The BIP ensures reliable and validated information and reduces superfluous or distracting data. SYNAPSIS effectively supports safe decision-making and precise navigation.

SYNAPSIS Naval - highly effective (W)INBS

Leveraging our experience from the most sophisticated naval programs, we have now launched a highly functional and flexible Warship Integrated Navigation and Bridge System (WINBS) named SYNAPSIS Naval.

Synapsis Naval is based on the proven, standardized COTS technology of the IMO-compliant SYNAPSIS integrated navigation system, but is enhanced with military and tactical features. SYNAPSIS Naval enables highly functional and modular bridge system solutions and, at the same time, reduces risk and non-recurring cost.

SYNAPSIS Naval is ready for integration into the most varied naval ship system environments.

Selection of features provided with SYNAPSIS Naval

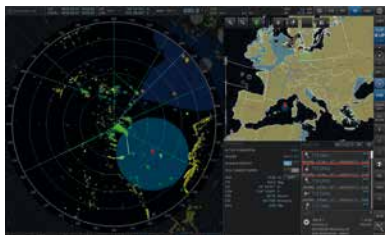
- Multifunctional workstations, incl. tactical radar and WECDIS
- IMO navigation and SCANTER surveillance radars
- Situation awareness and self-defense capabilities
- Integration of visual surveillance system
- Data management and distribution, incl. CMS integration
- Sensor-agnostic to support customerspecific equipment
- Open architecture eases third party integration
- Cyber security
- Precise and managed configuration control to maintain safety approvals
- Use of customer-provided hardware



High performance products.

SYNOPSIS Naval is built upon our wide range of products. Typically, our products use commercial-off-the-shelf technology but are adapted to military standards and requirements.

Naval Radar NX and WECDIS NX add a collection of military and tactical features to the navigational software in order to improve situational awareness and support tactical capabilities.



Navigation and surveillance with Naval Radar NX

Naval Radar NX is a modular software, based on a high-resolutions navigational radar display. Software extensions are available to support tactical operations and specialized missions, while the single user interface offers for a common operational concept.

Typical features of Naval Radar NX:

- IMO navigation and tactical operation
- 360° radar video merge
- Track management, correlation and filtering
- Alert and guard zone management
- Point of intercept and course to steer
- Advanced features like station keeping, helicopter guidance, EOS integration, SAR and more



Surveillance radars

SYNOPSIS Naval is type-approved by DNV/GL with solid-state surveillance radars from Terma's SCANTER series according to IMO Resolution 192(79) Performance Standard for radar equipment and IEC 62388 Ed. 2.0 Test Standard for shipborne radar.

SCANTER 6002 and 2602 radars provide additional capabilities in air and surface surveillance including helicopter guidance.

Naval Radar NX combined with SCANTER radars offers an advanced and effective tactical radar system for maximum tracking performance but full IMO compliance.

Customers can operate any radar related task from navigation to missions such as SAR, helicopter guidance or surveillance in a single solution, with high performance in (small) target detection even under severe weather conditions.



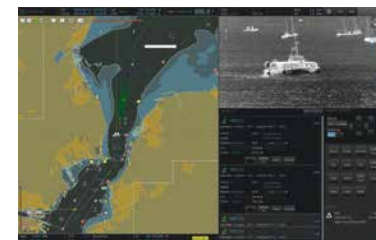
Navigation radar

SYNOPSIS Naval also integrates the NautoScan NX (NSX) network-based radars. The NSX is a high performance IMO navigation radar distributing a high fidelity radar raw video.



Tactical navigation with Naval ECDIS NX

Naval ECDIS NX is an advanced, versatile Warship Electronic Chart Display and Information System. The system is based on the IMO ECDIS NX, known for providing a clear situation awareness and unparalleled intuitiveness in use. Naval ECDIS NX adds military and surveillance features to the chart based system. Modular enhancements enable easy adaptation to customer requirements.



Situational awareness and self-defence with SYNTACS

SYNOPSIS Naval can integrate effective situational awareness features from Anschütz' SYNTACS Tactical Command System (C2 – Command and Control). SYNTACS can be integrated seamlessly on the bridge workstations; thus supporting personnel- and cost saving initiatives. SYNTACS can be scaled up to provide self-defense capabilities for combatants.



Heading sensors and inertial navigation

Anschütz provides a range of state-of-the-art heading sensors and heading control systems, specifically designed for the use aboard naval vessels. Our sensors are based on most modern technologies and have proven their reliability and safety in thousands of installations. Depending on customer requirements, Anschütz can offer maintenance-free heading system solutions as well as high accuracy inertial navigation systems at low lifecycle cost.



Steering gear control systems

Anschütz designs and delivers highly advanced steering control systems, which can be configured to any redundancy requirements. In order to offer the highest levels of operational safety, the system was developed in accordance with fail-safe principles. Reliable CAN-bus technology allows comfortable take-over or give-over of steering from any steering position, while commissioning, installation, and operation are kept simple. The well-known Anschütz steering algorithms ensure highly precise control in automatic and manual steering. Our steering gear control systems can be configured and hardened to meet most stringent of naval requirements for front line combatants and aircraft carriers.

Advanced capabilities for the naval bridge.



Multifunctional workstations for navigation and tactical operation

Naval Radar NX, WECDIS NX, Conning NX and C2 applications can be operated on multifunctional workstations, providing access to navigational and tactical operations from any workstation at any time. The user interfaces offer a consistent operational concept, a clear structured presentation of data, and self-explaining controls to improve safety in operation and contribute to a better familiarization. Tactical features include, for example, military symbols and layers as well as features and modules for tactical track and zone management, helicopter guidance, station keeping, 360° radar video merge, electro-optical sensors or self-defense capabilities. The integration of SCANTER surveillance radars together with the Naval Radar NX software offers an unsurpassed performance in tactical operations while being type approved for navigation.

Visual surveillance system

SYNOPSIS Naval can integrate a shipborne video surveillance capability as an additional application on the bridge consoles. The integration of one of the world's leading visual surveillance systems incorporates camera equipment that is qualified for ships uses and provides high definition images from any number of cameras. The system can be enhanced with software modules providing person recognition and man overboard assistance as well as installation in hazardous environments such as munition chambers.

Data management and distribution

In addition to the integrated services, SYNOPSIS Naval can enable data distribution management and the other INS services on separate, redundant processors. This advanced data management solution provides an onboard cloud-like common data space to all connected network processors, including red/black separation. The main advantage is the secure availability of high quality navigation data for other consumers like combat management system (CMS). Additional features, like for example data logging, simulation or time distribution, are available as specified in specific programs.

Sensors and systems integration of customer choice

Anschütz supports customer-specific functionality and equipment within cost-effective GFE solutions at low risk. The solutions include subcontract management and help the customer to overcome the challenges of fleet wide commonality, logistics and training. SYNOPSIS Naval uses an "open architecture" based platform, which is sensor agnostic and provides interfaces to 3rd party systems (e.g. P(Y)GPS, STANAG-compliant WECDIS) – proven in various programs for worldwide navies. The customer benefits from a common operator display and data management system that is used for all types of integrated sensors.

Cyber security

Anschütz has vast experience in delivering standard and customized security solutions to the customer. Our solutions are based on the analysis of customer requirements with regard to security, confidentiality, integrity and availability of our systems. The main aspects are protection against unauthorized access, physically / software, protection of sensitive data, Increased availability of mission-critical systems and infrastructure, accountability and transparency: what sensitive access / action took place. Our integrated solutions are also compliant with NATO doctrine for the certification of warship systems, ANEP-77, the Naval Ship Code for navigation. On customer demand a sustainable life time support can be offered by regular analysis and individually planned updates.

Integration on customer hardware

SYNOPSIS Naval can be integrated on customer-selected or customer-provided hardware. It supports virtual networks and can be hosted on a shared computer environment. The customer benefits in logistics through common hardware, enhanced redundancy and can also include local industry for hardware supply and maintenance.



PLANNING



Programs & projects

We are with you, from start to finish.

We plan your project with you and ensure that you receive what you have ordered from us – a quality product, on time.



DESIGNING



Logistics engineering

We enable readiness for operation both present and future.

Our job is to provide technical documentation and to define logistics support measures (incl. ILS proposals).



PRODUCING



Quality assurance

We make sure that we deliver quality as a part of normal business.

We are committed to ensuring accuracy in our products and diligence in our processes in order to assure you safety.



SETTING TO WORK



Engineering

We design solutions that fit your needs best.

Hand in hand with Programs & Projects, our experienced team design and engineer innovative customer-specific solutions to meet and exceed your expectations.



HARBOUR/ SEA TRIALS



Purchasing

We ensure value for money and reliable supplies throughout the life cycle of your vessel.

We put ourselves in your position to work out the best and most efficient solution, incl. local industry participation.



TRAINING



System testing & approval

We power up your system to meet acceptance criteria during harbour and sea trials.

We integrate, configure and test your system in order to ensure functionality, quality, and performance as promised.



AFTER SALES



Service & Support

We offer worldwide support, around the clock.

Whenever, wherever and in whatever you may need support, we will assist you with our knowledge as both the manufacturer and the designer of your integrated system.

System integration performance through experience.

Acting as system integrator means not only satisfying technology requirements. Of steadily growing importance are nonfunctional requirements such as program management, comprehensive logistic support, country-specific safety and security needs, subcontract management, and much more.

At Anschütz people and processes are continuously improving, utilizing experiences from several large programs in the recent years.

Well managed programs to ensure execution to expectation

Program management – process and cornerstone to ensure customer value - translates customer requirements into the organization, acting as trusted partner to the customer in all phases and during the lifetime of the vessel, ensuring execution to expectation. Program management works closely with the engineering team, with the supply chain, and with quality management.

Subcontract management

Anschütz has further invested into a robust subcontract management department to handle customer-specific requirements and complex, high-value work packages. Skilled subcontract managers are supported through modern tools to ensure quality, regular audits, risk mitigations, and cost down initiatives. Where applicable we focus on involvement of local industry and technology transfer to create innovative solutions, providing local service support and maintenance, or adding capabilities to existing products.

Local industry participation

Anschütz has gained long experience in the handling of local industry participation. The whole process – from understanding the requirements through identifying appropriate areas in its scope of supply and services to surveying and qualifying local partners, preferably SMEs – has been implemented in a structured procedure. We aim for a long-term relationship, and to maximize customer value through worldwide strategic alliances.

Predictable performance, full compliance

Anschütz maintains an integrated management system which complies with international standards such as ISO 9001 and ISO 14001, and employs the most modern tools and methods in R&D and program execution. In this way we ensure the highest quality of product and delivery as promised. We offer excellence in EXIM, security, ethics, and strict compliance in international trade.

Customer service excellence to ensure **lifetime performance.**

Anschütz has an international reputation as one of the world's largest and most reliable service providers. We have decades of experience in offering commercial and naval customers excellent technical support, maintenance and repair works through a large global network of qualified service partners.

Reliability from the start

Anschütz supports naval customers with specially trained technicians, who are familiar in dealing with military and security-sensitive projects, and who understand that quality is indispensable for our customers. A particular focus is customer support during installation, setting into operation and testing. We also offer land-based and ship-based training for crews and maintainers, as well as simulator equipment.

Retrofit solutions

Anschütz has many years of experience in providing navigation systems for retrofit on inservice vessels. We can provide various retrofit applications from our own product range but also third party products to maintain or extend the operational capabilities of your ship. Thanks to the clear, structured and intuitive user interfaces of our products, crews can familiarize with new equipment aboard quickly.

Integrated logistics support (ILS) and In-service support (ISS)

Naval ships typically have a long life time, require excellent system performance, minimal downtime, and shall be adaptable to emergent operational requirements. Anschütz draws on many years of experience in supporting customers, while always striving to utilize the latest tools in customizing logistics.

Our customized ILS takes all of the customer specific requirements into account and characterizes all relevant logistic support measures as a prerequisite for economical and effective operation of technical equipment.

On the basis of detailed system knowledge Anschütz offers ISS packages that provide customer support into the future. Our customized solutions cover performance-related payments to ensure maximum system availability at predictable low costs. Further key factors are the handling of obsolescence, refreshing through technical updating, ensuring a suitable training level and documentation updates.

About us

The history of Anschütz has strongly influenced ship navigation.

It all started with the gyro compass. Since the magnetic compass does not work properly in steel ships and near a pole, the young Dr. Hermann Anschütz-Kaempfe was obsessed with finding a suitable course-keeping instrument and concentrated on locating the geographical north direction with the help of a gyro.

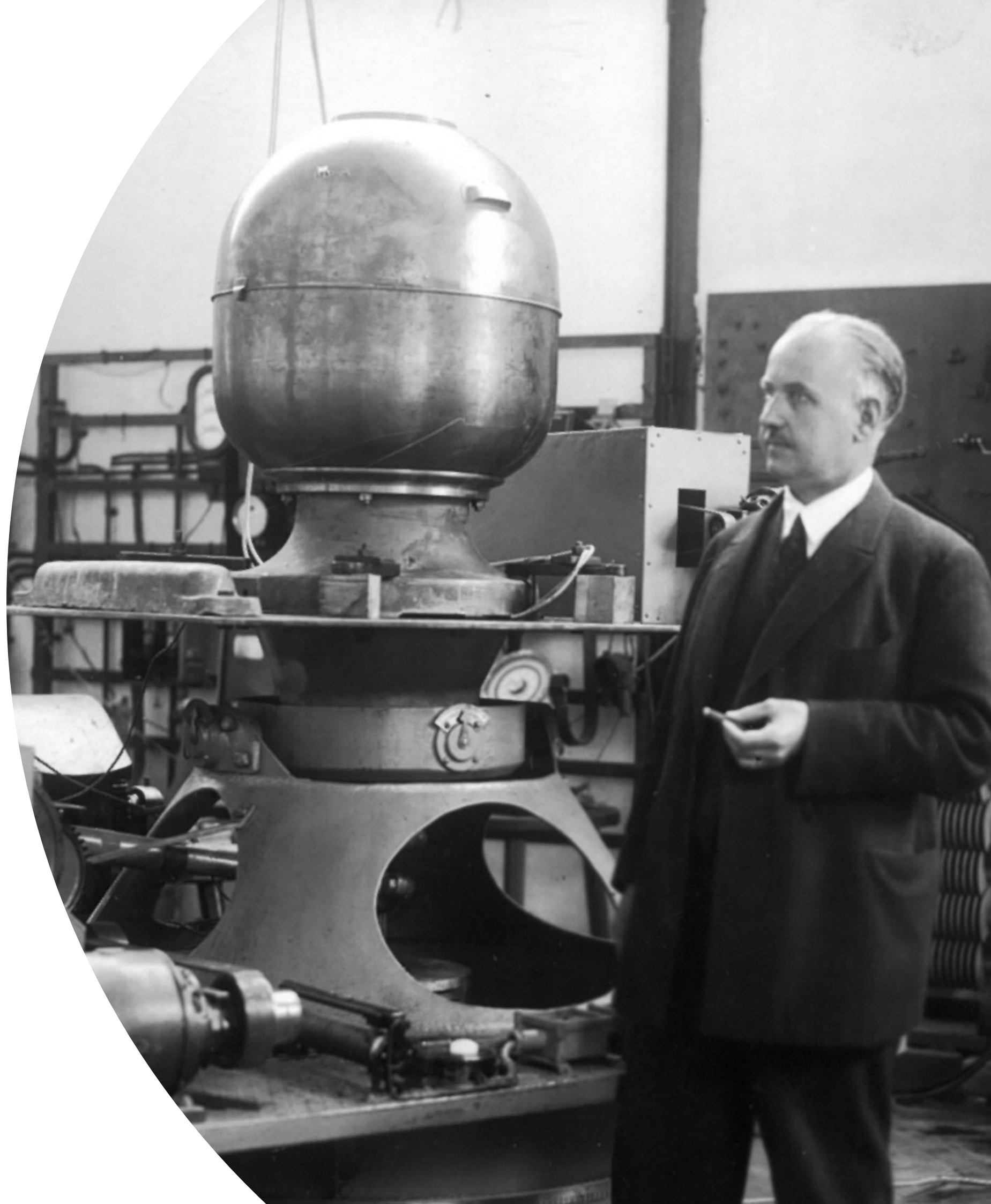
In 1904 he invented the gyro compass. One year later the company Anschütz & Co. GmbH was founded and started the production of gyro compasses. Further innovations followed, for example, the world's first chart plotter, a great grandfather of the present generation of electronic sea chart systems. Between 1995 and 2023, Anschütz has been part of Raytheon Technologies (formerly Raytheon Company) and developed under the name Raytheon Anschütz GmbH to a world-leading integrator of navigation and naval systems involved in many significant international naval combatants programs.

Today, Anschütz GmbH is part of a diversified, medium-sized global group under German ownership. We offer a large portfolio of products and systems for navigation and mission, engineered and made in Germany with a focus on quality, innovation and customer value. We have built up proven processes and an unparalleled skill set to design and integrate customized navigation and bridge systems for navies around the world.

Our employees worldwide strive for excellence and continuity in program execution and customer relations. Our baseline are ISO certified management processes and continuous improvement programs and our policies and training programs ensure EXIM excellence, ethics, security and compliance.

Our recent references include:

- UK Royal Navy Type 26 Global Combat Ships
- Integrated Navigation and Bridge Systems (INBS)
- UK Royal Navy Type 31 - INBS
- German Navy F125 Frigates - INBS
- German Navy K130 Corvettes, 1st and 2nd batch - INBS
- UK Royal Navy Type 45 Destroyers incl. ISS contracts - INBS
- Type 45 Destroyers - WECDIS Upgrade
- Royal Navy of Oman Al-Ofouq Class Patrol Boats - INBS
- OPV Slazak of the Polish Navy - INBS and C2
- Canadian Halifax-Class frigates - Radar system modernization
- and many more...



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