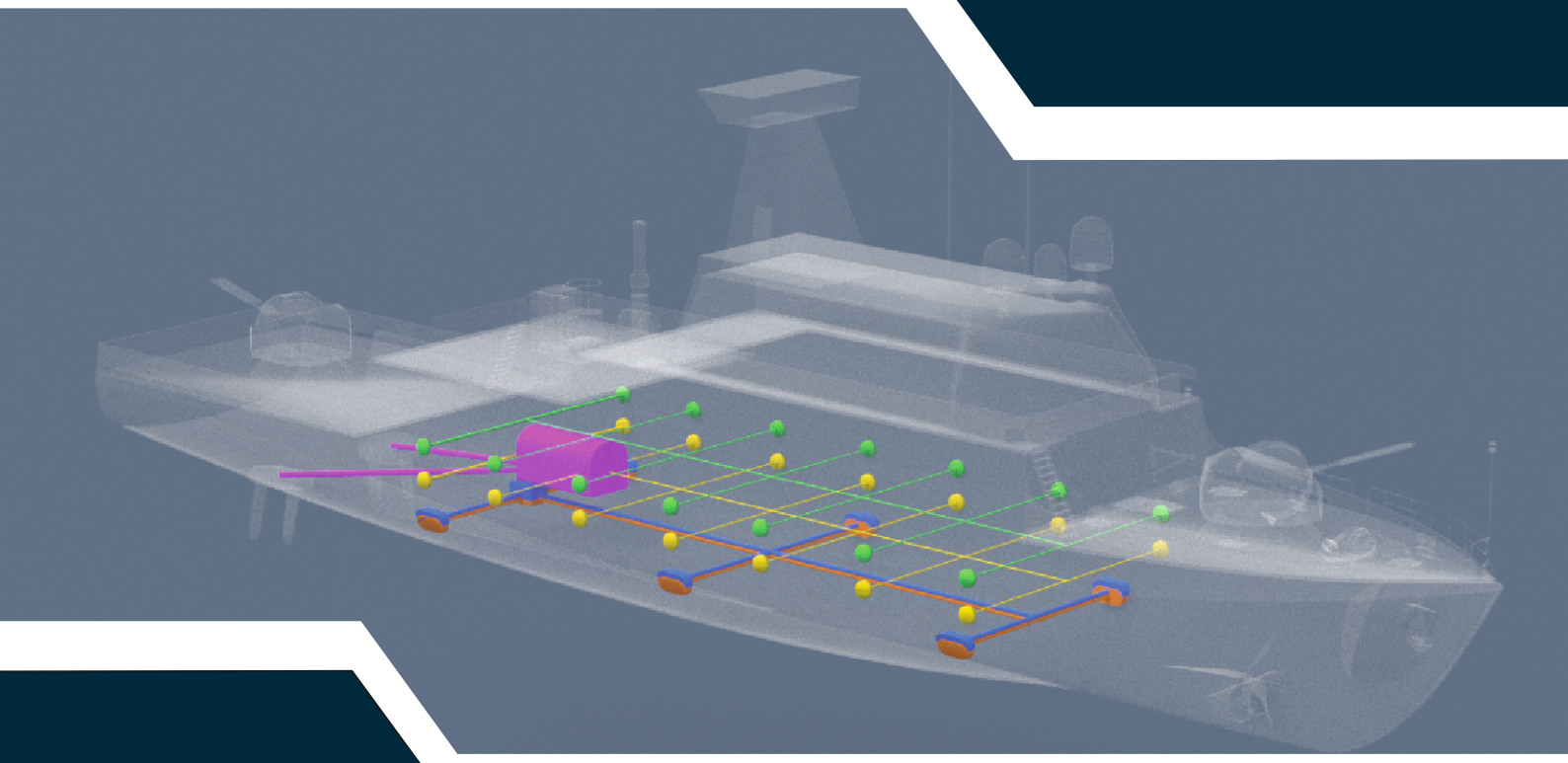
INTELLIGENCE CONNECTING US

PHYSICAL FIELDS MONITORING SYSTEM

UNDERWATER WEAPON SYSTEMS



The Physical Fields Monitoring System increases the safety of the ship in waters, where underwater weapon system with non-contact incendiary device was placed and also increases the level of passive defense against the attack of missiles with noses homing infrared sources.

The System consists of the following physical fields monitoring subsystems:

- magnetic,
- electric,
- thermal.

As a supplement to Physical Fields Monitoring System is Vibration Monitoring System (PMD) of ship's equipment and devices.

These subsystems supply ship's minimization physical fields structure with the input data. The signals from the Magnetic Field Monitoring Subsystem control the operation of Ship's Demagnetizing Device, which minimizes the magnetic field of the ship. Electric Field Monitoring Subsystem is connected to the Electric Field Measurement Module (MPE) and Multisector Cathodic Protection Station (MSOK), which minimizes the electric field of the ship or protect against electrochemical corrosion of the hull. The Ship's Monitoring Thermal Subsystem allows to control the thermal fields of any selected areas of the ship, delivers data on temperature of those areas and generates the thermal picture of the ship on passive protection console. As a supplement to Physical Fields Monitoring System is Vibration Monitoring Subsystem (PMD) of ship's equipment and devices. It is designed to measure devices and ship mechanisms vibration parameters and selected construction points of the ship's hull, in real time. The results of measurement are pictured on Passive Protection Console, where the analysis of amplitude-frequency of measured vibrations can be done.

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CTM PGZ

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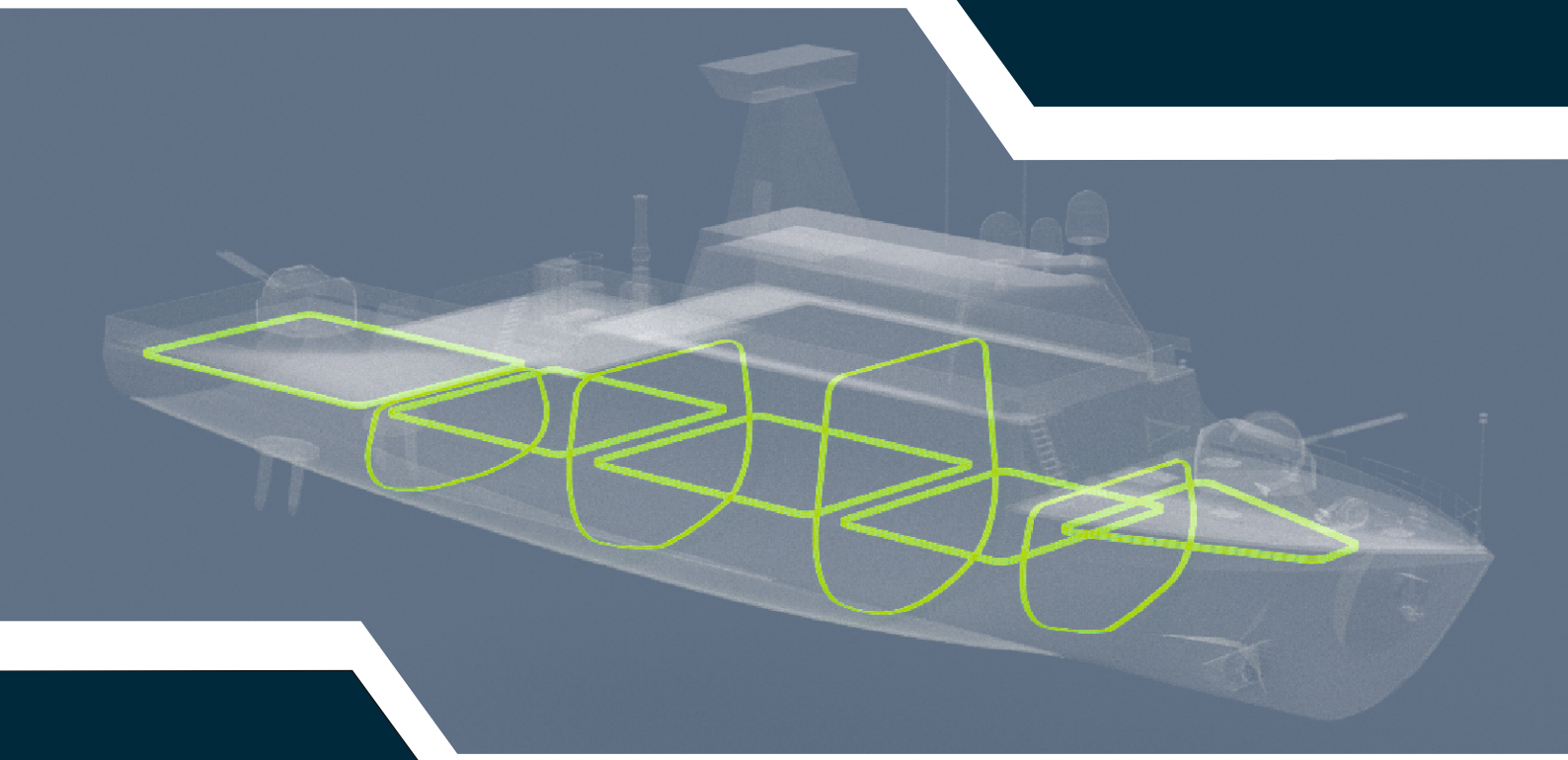
SHIP DEGAUSSING SYSTEM

UNDERWATER WEAPON SYSTEMS



The System performs the functions of:

- monitoring of the magnetic field from ship's magnetization,
- automatic minimization and formation of the magnetostatic field resolution,
- automatic minimization of magnetic field from induced rotational currents in the hull of the ship under the influence of the movement in the geomagnetic field,
- minimization of dispersed magnetic fields (screening, operation screens),
- monitoring and signaling of operating parameters / emergency conditions of the system devices;
- information exchange with other ship's systems by KOB,
- monitoring and control of operation parameters of device for electromagnetic compensation of magnetic compass deviation,
- manual control in emergency.

The Ship Degaussing System allows to form (in the water area) resolution of the spatial-time and amplitude-frequency spectrum of magnetic field parameters for effective mine countermeasures.

The System is composed of demagnetization wiring sectional structure around the ship and local, assembled in three planes perpendicular and parallel to the plane of symmetry of the ship and passive and active magnetic screens. The control of the system operation is automatic trough the demagnetization device driver, basing on integrated data bases, navigation data and analytically measured and fixed external geomagnetic field.

In case of failure of any of the elements providing the data needed for operation in automatic mode, the operator can control it manually by entering geographical position and course of the ship.

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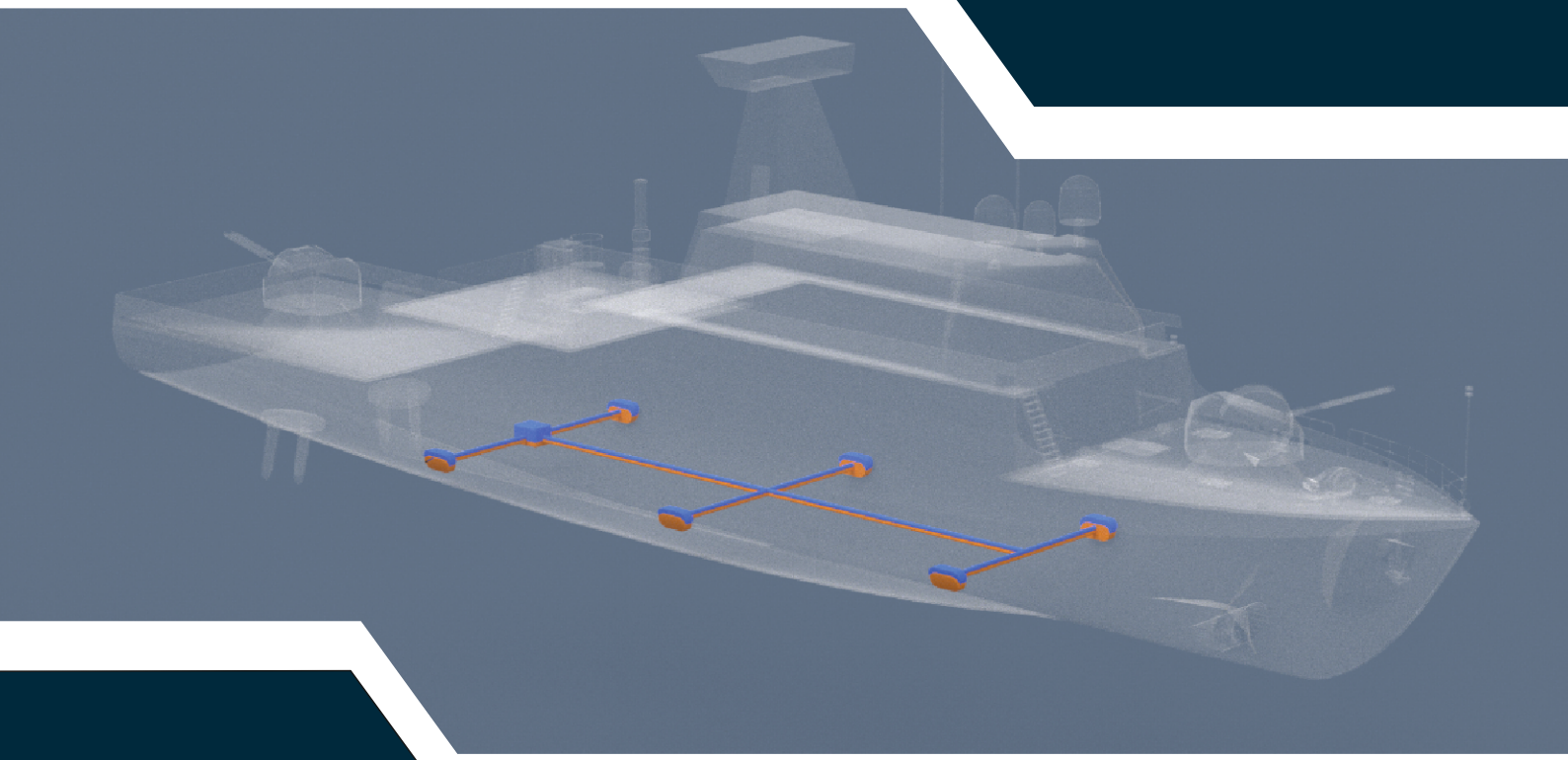
INTELLIGENCE CONNECTING US

ELECTRIC FIELD MONITORING AND MINIMIZATION SYSTEM

UNDERWATER WEAPON SYSTEMS



The System can operate in two regimes:

- electric field minimization – by forming and reducing electric field generated by the ship,
- cathodic protection – by protecting the hull of the ship and propulsion unit elements against the effects of corrosion.

The Cathodic Protection System, Electric Field Monitoring and Minimization System consists of the following elements:

- Multisector cathodic protection station, type MSOK, consists of:
  - control and processing sector,
  - power units sector.
- Set of polarization anodes,
- Set of control and steering electrodes.
- Reference electrode,
- Measurement module of an electric field.

The Electric Field Monitoring and Minimization System is integrally delivered with Cathodic Protection System (SOK). It is designated to protect the hulls of vessels and propulsion units against electrochemical corrosion in the sea water and to control and minimization of the electric field.

The basic tenet of cathodic protection is to reduce polarize metal surface adjoined with electrolyte to the value allowing the corrosion processes to stop. The minimization of the electrical signature of the ship is carried out by generating an electric field with such structure and value level, so that the resultant electric field is brought back to the required level.

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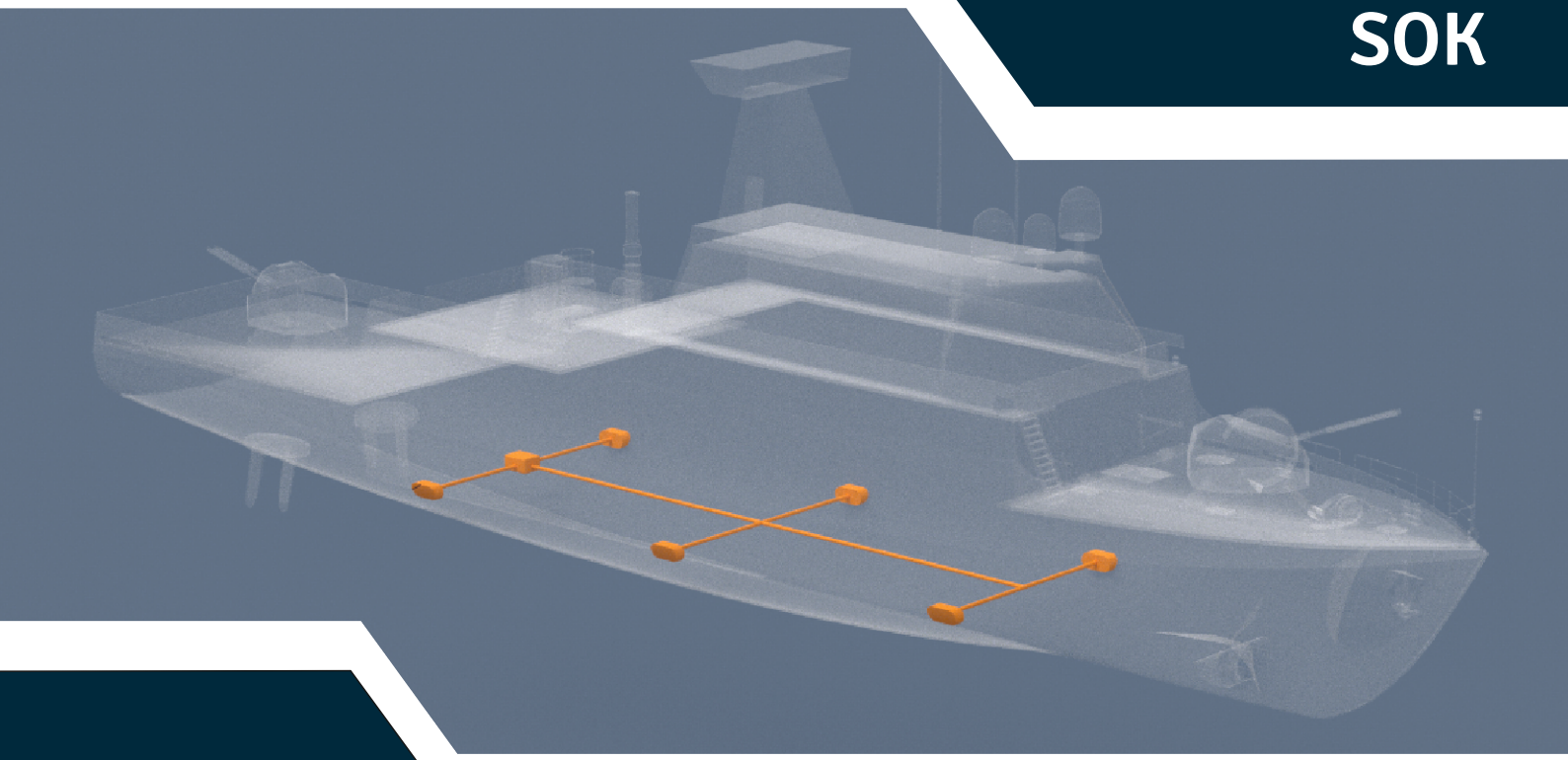
INTELLIGENCE CONNECTING US

CATHODIC PROTECTION SYSTEM

UNDERWATER WEAPON SYSTEMS

SOK



The Cathodic Protection System (SOK) is designated to protect the hulls of vessels and power units against electrochemical corrosion in the sea water.
The basic tenet of cathodic protection is to reduce polarize metal surface adjoined with electrolyte to the value, which allows the corrosion processes to stop.

Elements of the Cathodic Protection System:

- Multisector cathodic protection station, type MSOK, consists of:
  - control and processing sector,
  - power units sector.
- Set of polarization anodes,
- Set of control and steering electrodes.

The SOK System can operate in automatic mode, with possibility of manual and service steering (directly on MSOK), transferring and receiving data from the ships' computer system. The SOK System can be controlled either from MSOK level and the host system of the ship (e.g. console). It is designed as a modular and fully automated system.

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