EUROCONTROL

A John Cockerill Company



PRODUCTS OVERVIEW

November 2026

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Design Activities

PRELIMINARY DESIGN

Customer Specification
Requirements
and Constraints

Reference Standards
MIL, STANAG, DEFSTAN,
NAV, IEC….

Reference Projects
Product portfolio
Background
Learned lessons

DETAILED DESIGN

Mechanical Design
3D design, FEM analysis

Magnetic Components
EMC filter, transformers,
inductors, sine filters

PCB Design
Application Specific CPU,
DSP, FPGA, I/O Interface

SW Development
HMI, Logics and Control
algorithm

TESTING AND QUALIFICATION

Testing and debug
Dedicated Test Bench
Simulators

Qualification Tests
External lab
EMC, Environmental,
Shock, Vibration, Noise

Integration Tests
Test with the overall system
on customer premises and/or
onboard

Please consider that each product and internal components are designed in detail

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Major Reference Standards

STANAG 1008 ED9	Characteristics of Shipboard **Electrical Power System** in Warship of the North Atlantic Treaty Navies
MIL-STD-108	Definition of and **basic requirement for enclosure** for electric and electronic equipment
MIL-STD-167-1A	Mechanical **Vibrations**
MIL-HDBK-454	**General Guidelines** for Electronic Equipment
MIL-STD-461	Requirements for the Control of **Electromagnetic** Interference Emissions and Susceptibility.
MIL-STD-740-1	**Airborne Sound** Measurement
MIL-STD-740-2	**Structure borne** Vibratory Acceleration Measurements and Acceptance Criteria of Shipboard Equipment.
MIL-STD-810	**Environmental** Test Methods and Engineering Guidelines.
MIL-STD-1310	Standard Practice for Shipboard **Bonding**, **Grounding** and Other Techniques for Electromagnetic Compatibility and Safety
MIL-S-901	**Shock Tests**, H.I. (High-Impact) Shipboard Machinery, Equipment, and Systems, Requirements for
MIL-STD-1399, Section 300	Interface Standard for Shipboard Systems, Electric Power, Alternating Current. (Metric)
DOD-STD-1399, Section 301	Interface Standard for Shipboard Systems, Ship Motion and Attitude. (Metric)
MIL-HDBK-2036	Preparation of Electronic Equipment Specifications


Under water
EURO CONTROL
Surface ships
WEAPON CONTROL
SERVO SYSTEMS
ELECTRO OPTICAL
CONTROL ELECTRONICS
ELECTRO-MECHANICS
POWER ELECTRONICS
land
avionic

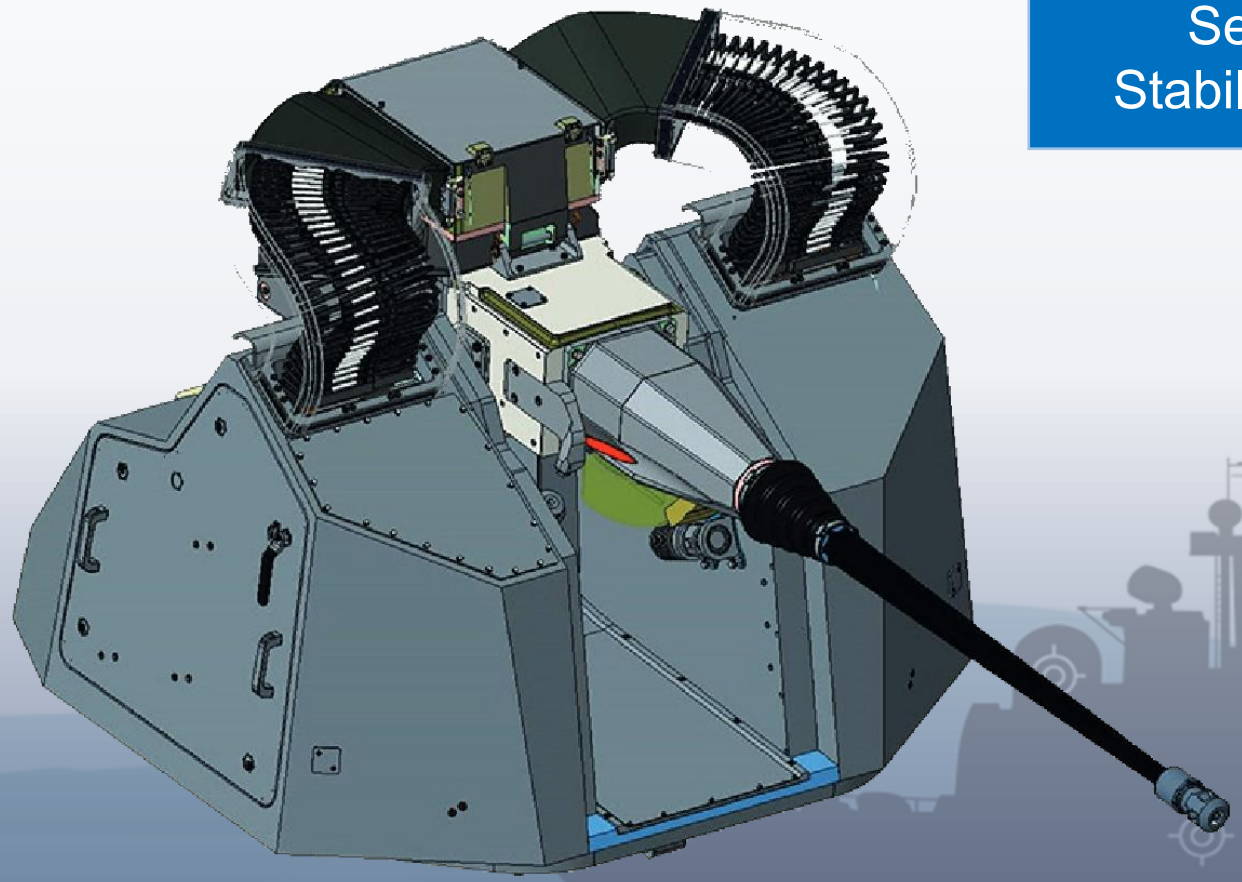
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Weapon Control Systems



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Weapon Control Systems



Turret Movement
Servo systems
Servo motors
Stabilized platforms

Target tracking
Electro optical Director
Video tracker
Remote Console

EUROCONTROL provides:

electric motors, control and power units,
HMI panels, Day Cameras,
Torsion Cables and Slip Rings,
Attitude Reference Units, Fire computers

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Servo Motors

Eurocontrol designs and manufactures AC and DC motors and generators, servo-motors, high precision linear actuators, motor generator sets and custom designed slip-ring assemblies for applications where stringent requirements dictate tailor made solutions.

Here a list of the last year production

		MAX TORQUE	NOM TORQUE	MAX SPEED	NOM SPEED	WEIGHT
PART NUMBER	TYPE	Nm	Nm	RPM	RPM	Kg
MC259	DC	2,1			5800	6
MCC365	DC	2,2	0,73		3500	11
MCC371	DC	2,2	0,73		3500	11
MCC373	DC	130		1260	4800	
MCA350	AC	115	35	1500	4800	108
MCA373	AC		11	2500	5000	47
MCA380	AC	25	8	2500	5000	37
MCA381	AC	25	8	2500	5000	43
MCA399	AC	54	12,6	2500	3000	31
MCA402	AC	42	11	2500	5000	50
MCA403	AC	42	11	2500	5000	47
MCA405	AC	105	35	87	114	10

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Servo Motors

Brushless Motors
for Gun movements in Azimuth and Elevation (light and medium caliber)

NOMINAL TORQUE	11 Nm
NOMINAL SPEED	262 rad/s
MAX TORQUE	42 Nm
MAX SPEED	524 rad/s
MAX POWER	11kW

Manual disengagement of the brake
Manual maneuver with no-back

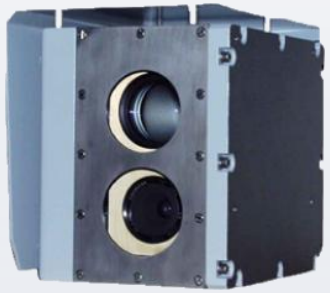


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Electro Optical Director



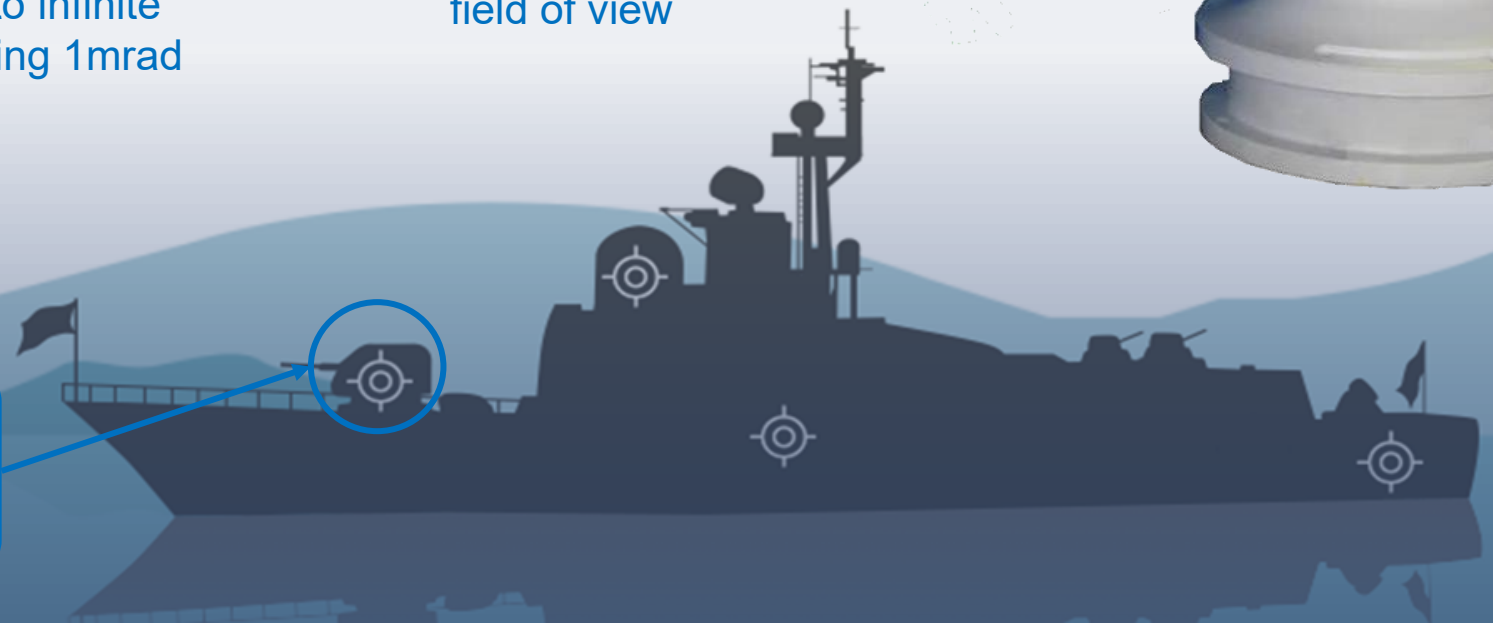
Color Daylight Camera
motorized 30X zoom
Focus from 1m to infinite
Image Bore sighting 1mrad



Color Daylight Camera
Switch from wide to narrow field of view



EOD
IR and Day camera, Laser Range-finder



WEAPON CONTROL SYSTEM

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Electro Optical Director

EOD
Control Unit and EOD with
day camera 10X, IR and LRF

Stabilization error base ± 1 mrad (peak 3mrad)
Elevation max perfomance 115°/s - 500°/s^2
Azimuth max perfomance 135°/s - 1000°/s^2

Elevation Angle -20° +70°
Azimuth Angle -172° +172°



Weapon control systems

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Color Daylight Camera

Camera Resolution 1920x1080
Motorized continuous zoom
from wide to narrow field of view.

Input Line	24Vdc
Video Output	Composite Video (1Vpp, 75ohm unbalanced)
Option	HD-SDI
Dimensions	250x155x185 [mm]
Mass	6kg

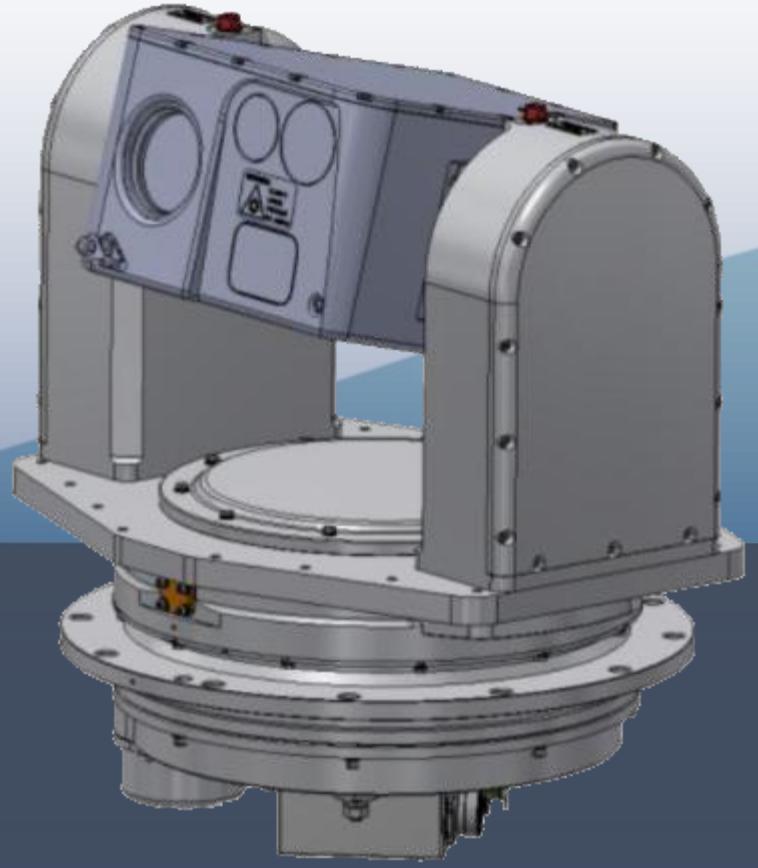


Key Point

- **Incremental 30x zoom**
- **Focused from 1m to infinite**
- **Bore sighting of the image over the entire range of the zoom, within 1mrad**

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Pan and Tilt



Pan&Tilt
two-axis motorized platform

Input Line	18…32Vdc
	250W (150Wmax delivered to payload)
Video	2 video channels HD-SDI
Elevation	-25°….+60°
Azimuth	N x 360°
	available also with limit stops -5°…+5°
Operative T	-32°C …. +62°C
Payload	15 kg

land application

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Videotracking solutions



VMU

Video Management System

Implements tracking functionalities, including target detection, tracking, and video switching



- Data acquisition
- Trajectory estimation & prediction
- Kinematic & Dynamic Control



TARGET'S POSITION ESTIMATION AND PREDICTION

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Human Machine Interfaces

Maintenance Panel



Remote Control Unit



Weapon control systems

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Avionic Applications



WEAPON CONTROL SYSTEM



Turret Control Electronic Unit
Power and control circuits for movement and firing

DC servomotors

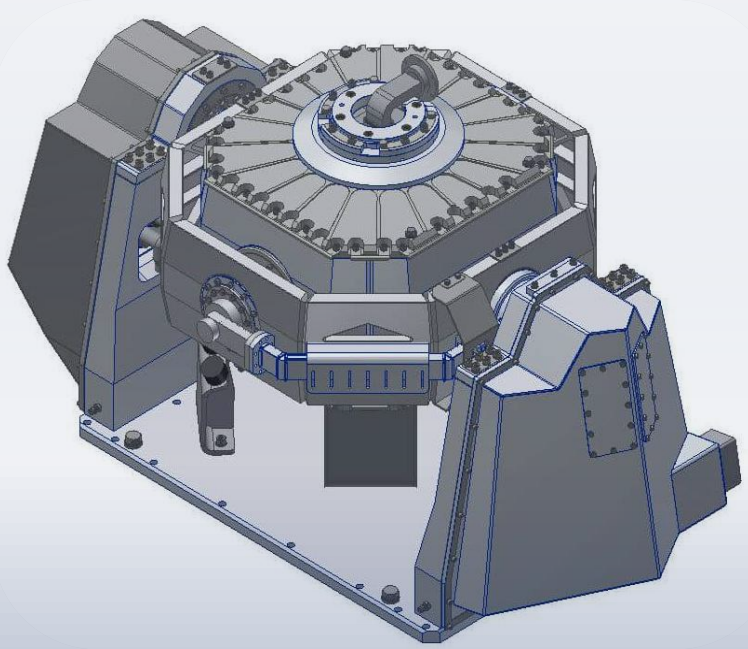
VOLTAGE	24 VDC
MAX CURRENT	60 A
MAX SPEED	6000 rpm
MAX TORQUE	2 Nm
WEIGHT	6 kg





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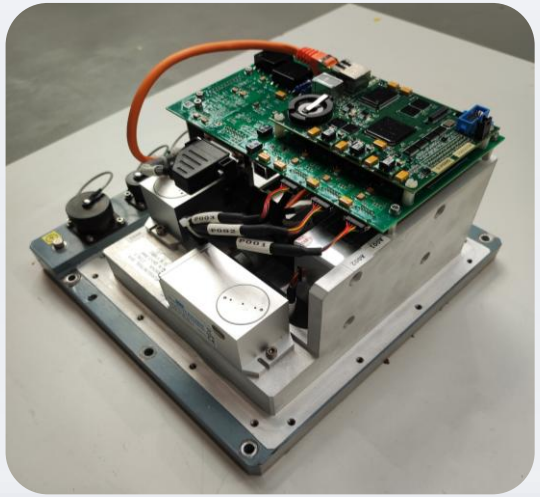
Stabilization Systems

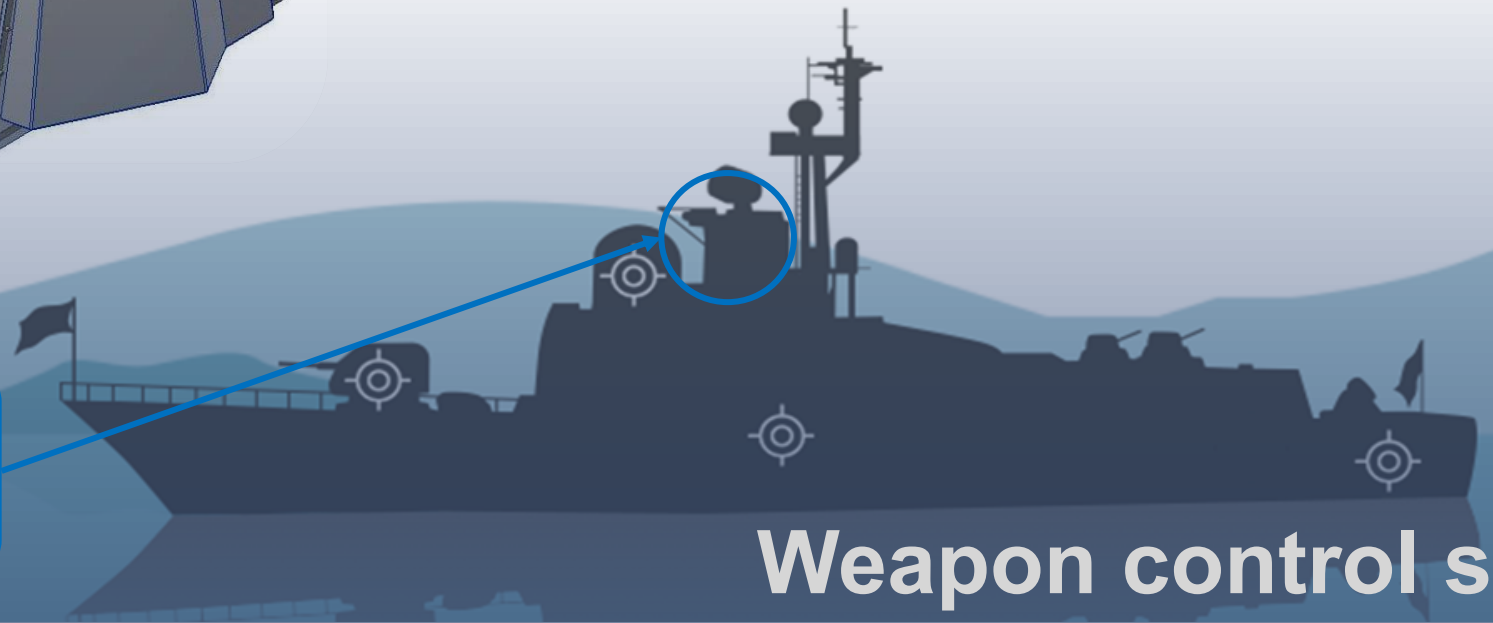


3 Axes Stabilized Platform
to remotely operate a missile system



Attitude Reference Unit





WEAPON CONTROL SYSTEM

Weapon control systems

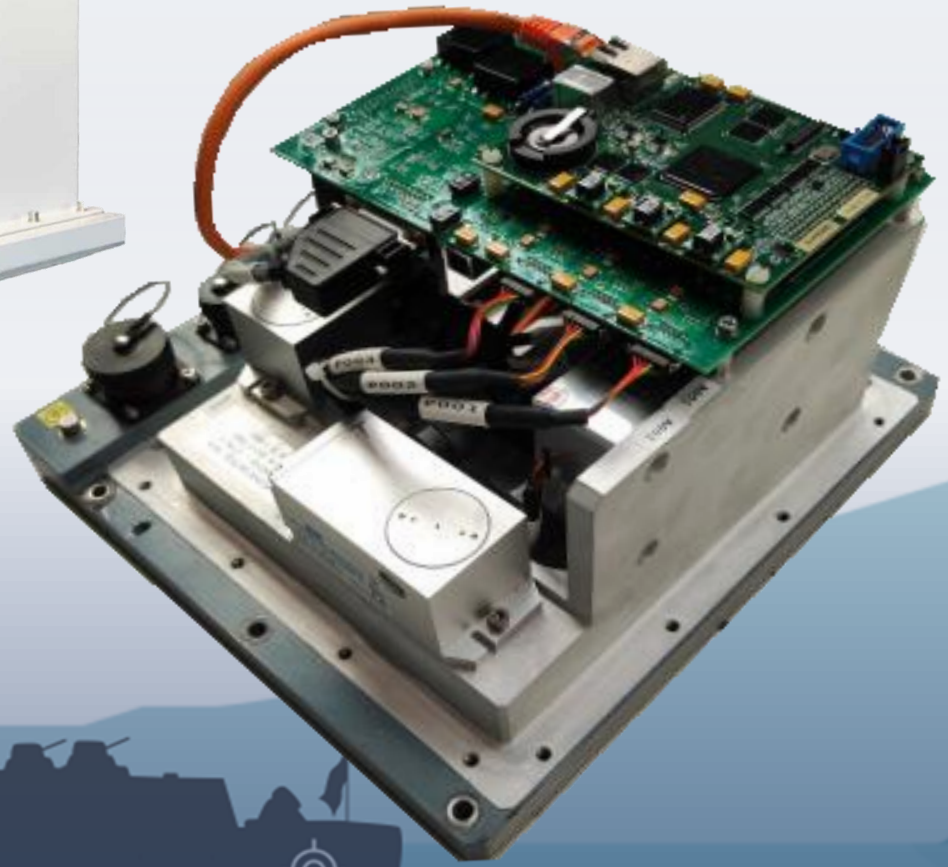
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Stabilization Systems

Attitude Reference Unit

The ARU measures the angles of roll pitch and heading of the support to which is fixed. These angles may be utilized for stabilization purposes (for example of a line of fire or a line of sight) and for the algorithms of an FCS.

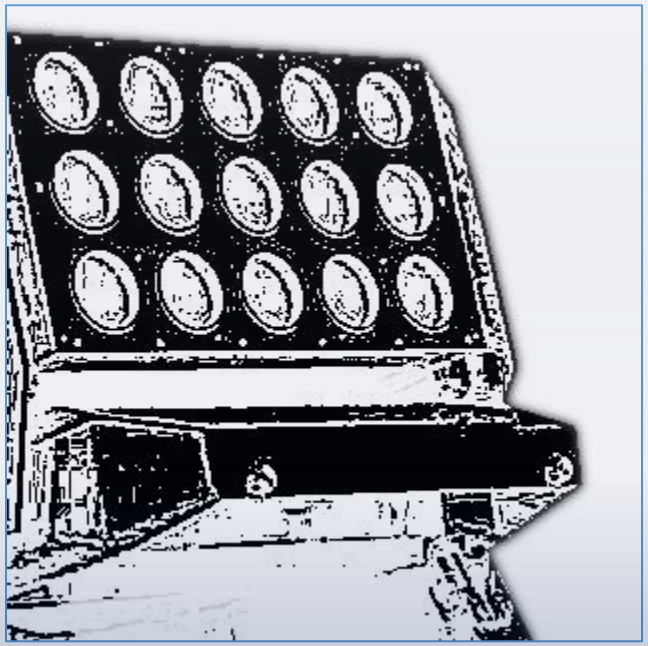




	ROLL	PITCH	HEADING
drift	0	0	0
accuracy	0,02 °	0,02 °	0,02 °
resolution	$\pm 2^{20}$	$\pm 2^{20}$	2^{21}
	±180°	±180°	360°
Steady time	15 min	15 min	20 min

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Decoy Launcher



Complete Control System of a decoy launcher

EUROCONTROL supplies the control system that interfaces with the combat system and drives the launcher.
It is composed of a power unit and two servomotors that control the movement of the launcher unit; a local control panel for service operations, a firing box installed on the launcher that manages the firing pulse and the **programming sequence for different types of countermeasures**.

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Missile Interface Unit



The Unit provided by EUROCONTROL represents the interface between the Control System and the launcher. The equipment manages the missile in terms of power supply, auxiliary devices, and **launch sequence.**

In addition, EUROCONTROL provides a **Missile Simulator** that replicates both signal and power absorption of the real missile and all its devices.



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Power Converters



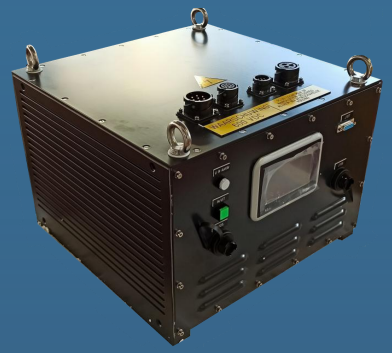
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Power Converters – Under Water

AC and DC onboard power supplies



6kW DC/DC
28Vdc 250A



2kVA DC/AC
60Hz 1ph



10kVA DC/AC
400Hz 3ph
2xParallel = 20kVA



70kVA DC/AC
60Hz 3ph
3xParallel = 210kVA

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Power Supply



70 kVA, 115V 60Hz 3ph
DC/AC 60 Hz Converter (2007)

HEIGHT 2000 mm

LOAD SHARING: UP TO 3 IN PARALLEL
(for a total power of 210kVA)
WIDE INPUT VOLTAGE RANGE
HIGH POWER DENSITY
WATER COOLED
IN OPERATION SINCE 2007 WITHOUT FAULT
VERY LOW MAINTENANCE (8 HRS/YEAR)

DSP F28335, IGBT, f_{sw}=8kHz

submarine applications

EURO CONTROL
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Power Supply



2x10 kVA, 115V 400Hz 3ph

DC/AC 400 Hz Converter (2007)

2 CONVERTERS = HEIGHT 2000 mm

LOAD SHARING: UP TO 2 IN PARALLEL
(for a total power of 20kVA)
WIDE INPUT VOLTAGE RANGE
HIGH POWER DENSITY
WATER COOLED
IN OPERATION SINCE 2007 WITHOUT FAULT
VERY LOW MAINTENANCE (8 HRS/YEAR)

DSP F28335, IGBT, f_{sw}=8kHz

submarine applications

EURO CONTROL
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Power Supply

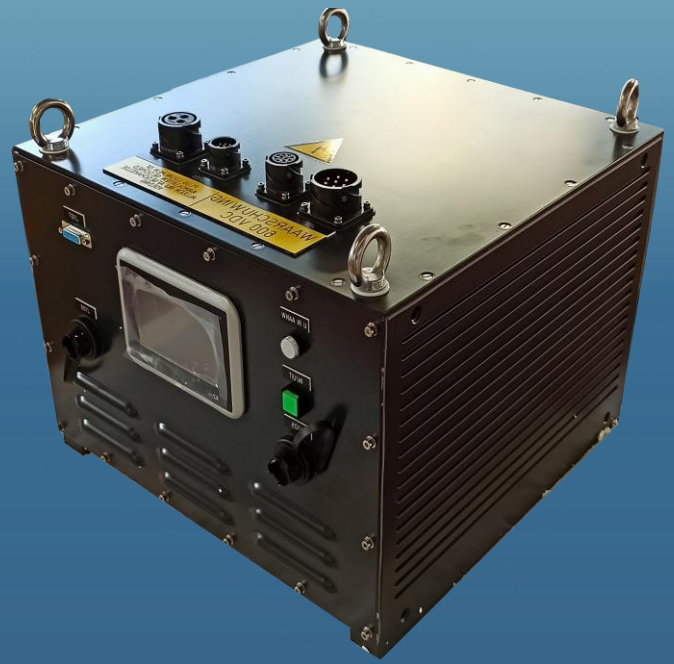
2,5 kVA, 115V 60Hz single phase

DC/AC 60 Hz Converter (2023)

HEIGHT 300 mm

WIDE INPUT VOLTAGE RANGE
VERY LOW VOLTAGE AND FREQUENCY DEVIATION
HIGH SHOCK RESISTANCE (tested @ 70g)

DSP F28379D, IGBT, f_{sw}=16kHz





submarine applications

EURO CONTROL
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Power Supply

6kW, 28Vdc 250A

DC/DC Converter (2026)

HEIGHT 300 mm

WIDE INPUT VOLTAGE RANGE
HIGH EFFICIENCY (96% MAX)

DSP F28P650, SIC MOSFET, f_{sw}=40kHz





submarine applications

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Power Converters



3,5kW DC/AC
Drive



10kVA DC/AC
Drive
Wide input Voltage



10kVA DC/AC
Inverter
Motor Starter



15kW DC/DC
Motor Starter



100kVA DC/AC Drive
for **BILGE pumps**
Wide input Voltage



MOTOR DRIVES for pumps

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Motor Drives and Starters



10 kVA, 50 amp
DC/AC Inverter Motor Starter (2012)

HEIGHT 500 mm

15 kW, 60 amp
40 kW, 160 amp
DC/DC Motor Starter (2012, 2024)

HEIGHT 500 mm



submarine applications

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Motor Drives and Starters



3,5kW 60 amp

DC/AC Inverter Motor Starter (2022, 2023, 2026)

HEIGHT 500 mm

LOW NOISE
SINGLE BOARD PANEL
DSP F28379D, IGBT, f_{SW}>20 kHz



1 kW Y/D starter

AC/AC Y/D Starter (2014, 2022, 2023, 2026)

HEIGHT 300 mm

submarine applications

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Motor Drives and Starters



10kVA 380V 120Hz 3ph

DC/AC Drive (2014, 2022, 2023, 2026)

HEIGHT 500 mm

AC MOTOR for PUMPS
WIDE INPUT VOLTAGE RANGE up to **900VDC**
HIGH POWER DENSITY
LOW NOISE
AIR COOLED
COMPLETE AUTONOMOUS PUMP MANAGEMENT
IN OPERATION SINCE 2014 WITHOUT FAULT

DSP F28335, IGBT, NPC, f_{sw}>18kHz



submarine applications

EURO CONTROL
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Motor Drives and Starters



100kVA 380V 180Hz 3ph

DC/AC Drive (2014, 2022, 2023, 2026)

HEIGHT 1200 mm

AC MOTOR for **BILGE PUMP**
WIDE INPUT VOLTAGE RANGE up to **900VDC**
HIGH POWER DENSITY
LOW NOISE
WATER COOLED
COMPLETE AUTONOMOUS PUMP MANAGEMENT
IN OPERATION SINCE 2014 WITHOUT FAULT

DSP F28335, IGBT, NPC, f_{SW}=18kHz

submarine applications

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Power Converters



Complete Management of
a **BWA system**
Wide Input Voltage

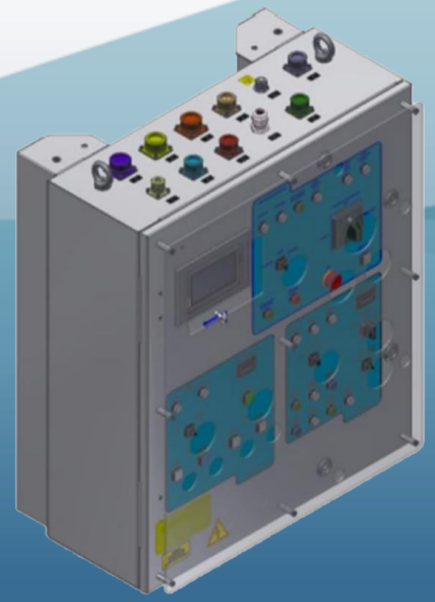


DC/AC Drive for
Winch and **Pusher**
of a **BWA system**
Wide Input Voltage



Complete Control of
a **Capstan** System
Equipped with **HHU**





Complete Control of
a **Windlass** System



Capstan, Windlass, BWA

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Motor Drives and Starters



Complete Management of a BWA system

DC/AC drives for PUSHER and WINCH motors (2016, 2020, 2026)

HEIGHT 600 mm

WIDE INPUT LINE: **425 to 1050 VDC**
VIDEO RECORDING SYSTEM

submarine applications

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Motor Drives and Starters

1,5kVA DC/AC Drive

DC/AC Drive (2020…2026)

HEIGHT 350 mm
AC MOTORS for WINCH and PUSHER of a Buoyant Wire Antenna System

Single board panel
DSP F28379D, IGBT, f_{sw}=8kHz





submarine applications

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Motor Drives and Starters

5kVA AC/AC Drive

(2015, 2022, 2023)

INPUT 230V 60Hz 3ph / OUTPUT 400V 15Hz 3ph
HEIGHT 500 mm

NATURAL AIR COOLED
EQUIPPED WITH AFE and INVERTER
SENSORED AND SENSORLESS OPERATION
COMPLETE MANAGEMENT OF THE CAPSTAN
PROVIDED WITH HAND HELD UNIT

DSP F28335, IGBT, f_{sw}=8kHz





submarine applications

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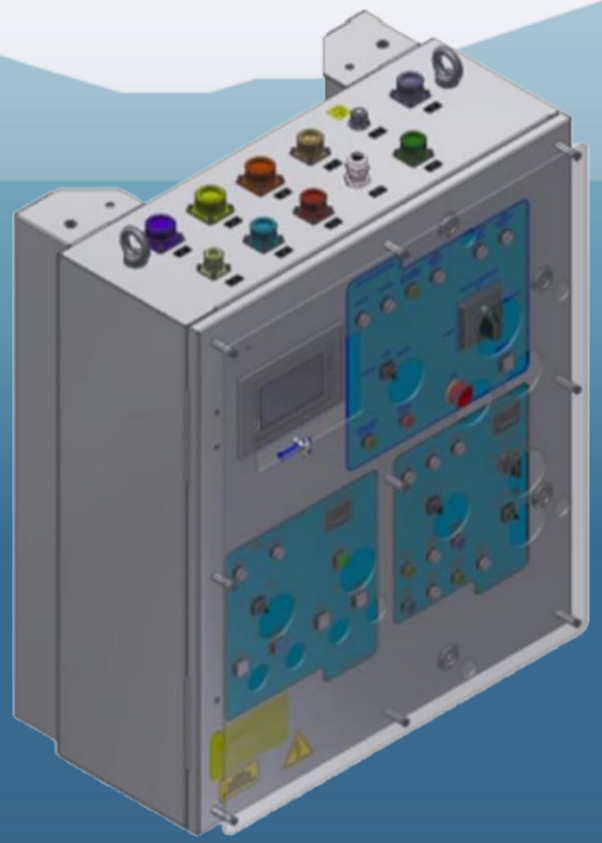
Motor Drives and Starters

5kVA AC/AC Drive
(2015, 2022, 2023)

INPUT 230V 60Hz 3ph / OUTPUT 400V 15Hz 3ph
HEIGHT 500 mm

NATURAL AIR COOLED
EQUIPPED WITH AFE and INVERTER
SENSORED AND SENSORLESS OPERATION
COMPLETE MANAGEMENT OF A CAPSTAN AND A WINDLASS SYSTEM
PROVIDED WITH HAND HELD UNIT

DSP F28335, IGBT, f_{SW}=8kHz



DRIVE PANEL



LOCAL CONTROL PANEL
MANAGES AUXILIARY DEVICES
AND POWER DISTRIBUTION

HAND HELD UNIT

submarine applications

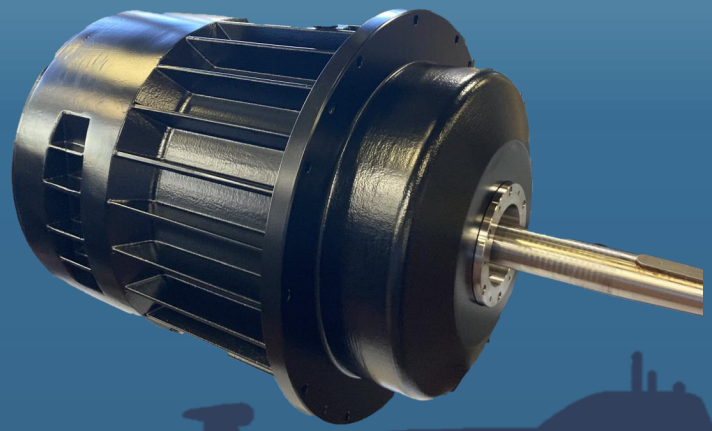
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Electric Propulsion



Motor Drive for silent propulsion on minehunters

Propulsion for small submersible craft



Includes
12kW motor and drive
PMSM with double windings
High Power density

Propulsion for submarines



120kW DC/DC Chopper



100 kVA AC Starter



200kW AC Drive

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Integrated Drive and Motor

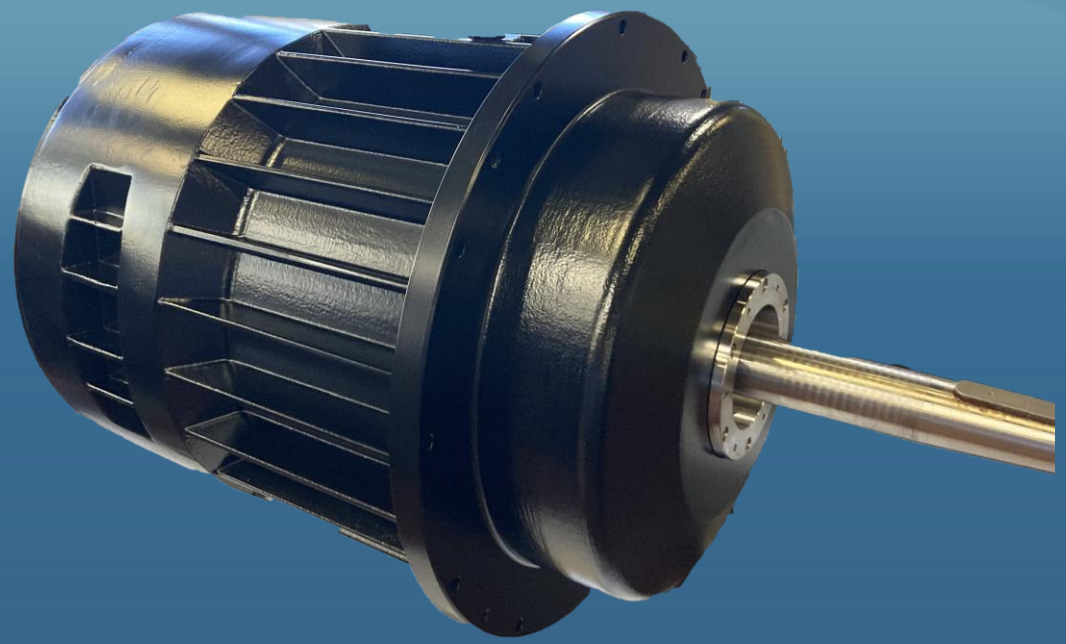
12kW Propulsion motor and drive

(2022, 2026)

POWER	3,6 kW	MAX 11,3 kW
TORQUE	230 Nm	MAX 514 Nm
SPEED	150 rpm	MAX 210 rpm
INPUT VOLTAGE:		96VDC-135VDC
EXTERNAL PRESSURE HULL		10 bar

OVERALL LENGTH 950mm (shaft included)

PMSM MOTOR WITH DOUBLE WINDINGS
HIGH POWER DENSITY
DUAL MOSFET POWER DRIVE
INPUT EMI FILTER
ABSOLUTE ENCODER



Submersible craft applications

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Electric Propulsion

120kW, DC/DC Chopper

DC/DC Converter (2026)

HEIGHT 330 mm

WIDE INPUT VOLTAGE RANGE
HIGH EFFICIENCY (94…99,5% MAX)
LOW RIPPLE @ 120kHz

DSP F28P650, SIC MOSFET, f_{sw}=20kHz





Electric propulsion for submarines

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Electric Propulsion



100 kVA - AC STARTER

(2010)

INPUT LINE	400V AC 3ph 50Hz
NOMINAL POWER	175kVA
PEAK OUTPUT CURRENT	1kA rms

Complete control of the electric motor and all auxiliary devices; able to perform a direct switch from HUNTING to CRUISING mode



Electric propulsion for minehunters

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Electric Propulsion





200kW AC Drive for silent propulsion

(2003)

INPUT LINE	450V 60Hz
NOMINAL OUTPUT CURRENT	310A
NOMINAL OUTPUT VOLTAGE	0-310V

Drive for an induction motor for hovering control.

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Power Converters – Surface Ships



300VA
AC/AC converter



1KW UPS



AC or DC UPS
10kVA – 5kW
for minehunters



20kVA UPS
AC and DC output
for minehunters

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Power Converters





20kVA multi-output UPS

for minehunters (2014)

HEIGHT 2000mm

Three output lines

15,5kVA	115V	60Hz	3ph
2,2kVA	115V	400Hz	3ph
2,5kW	24Vdc		

CAPABLE OF 2X PARALLEL OPERATION
BATTERY MANAGEMENT SYSTEM INCLUDED
AIR COOLED
LOW MAGNETIC SIGNATURE

Uninterruptible Power Supply

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Power Converters



10kVA 230V 50Hz
10kVA 115V 60Hz
5kW 24Vdc
(2011)

INPUT LINE 440Vac 60Hz 3ph

THREE DIFFERENT UPS
WITH SAME SHAPE AND DIMENSIONS
WATER COOLED
BATTERY MANAGEMENT SYSTEM INCLUDED
HIGH SHOCK RESISTANCE
LOW MAGNETIC SIGNATURE



Uninterruptible Power Supply

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Power Converters



17 kW UPS
(2016)

Emergency power supply for gun servosystem

NOMINAL POWER	1kW
MAX POWER	17kW
DUTY	PEAK PER 2S EVERY 90S
AUTONOMY	30 MINUTES



Uninterruptible Power Supply

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Power Converters



300VA Single phase AC/AC

(2013)

Emergency power supply for gun servosystem

WIDE INPUT	99…264V
	47…63Hz
OUTPUT	115V 400Hz 1ph 300VA
OVERALL WDH	280 x 170 x 135mm
WEIGHT	7 kg

Dampers Included

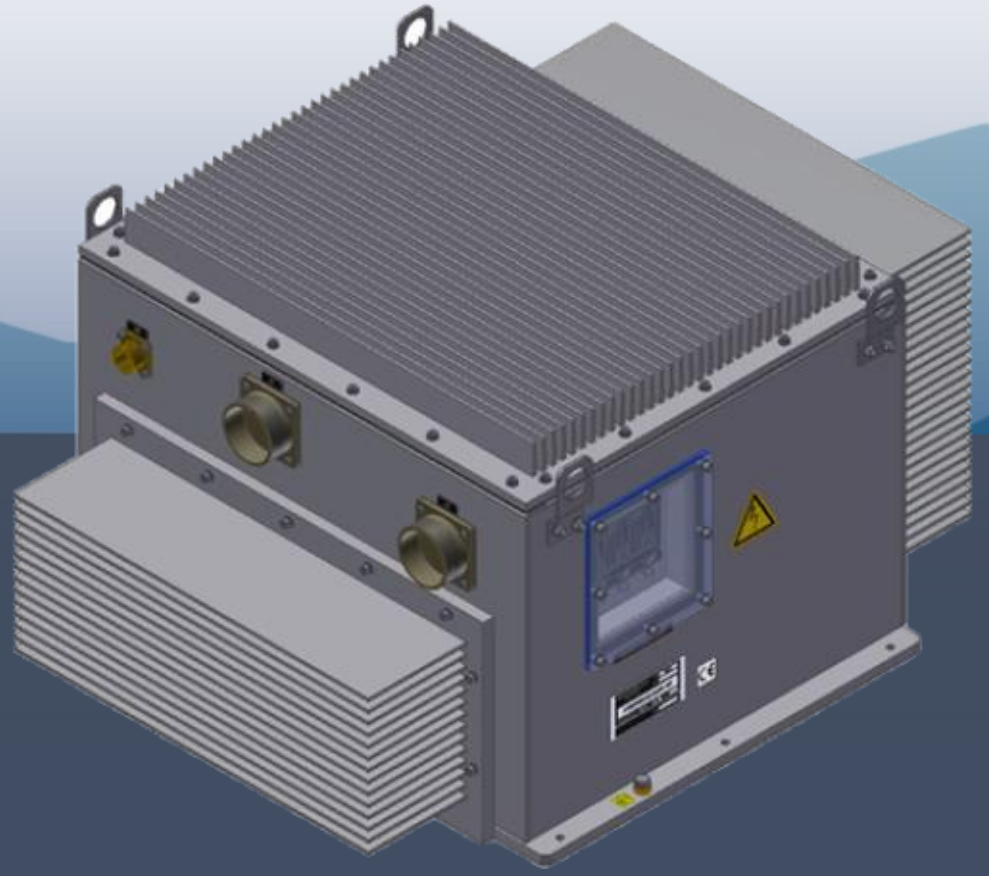
Galvanic insulation
Continuous duty
Provided with circuit breakers



Frequency converter

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Power Converters



30kW DC/AC motor drive

for avionic compressor system (2014)

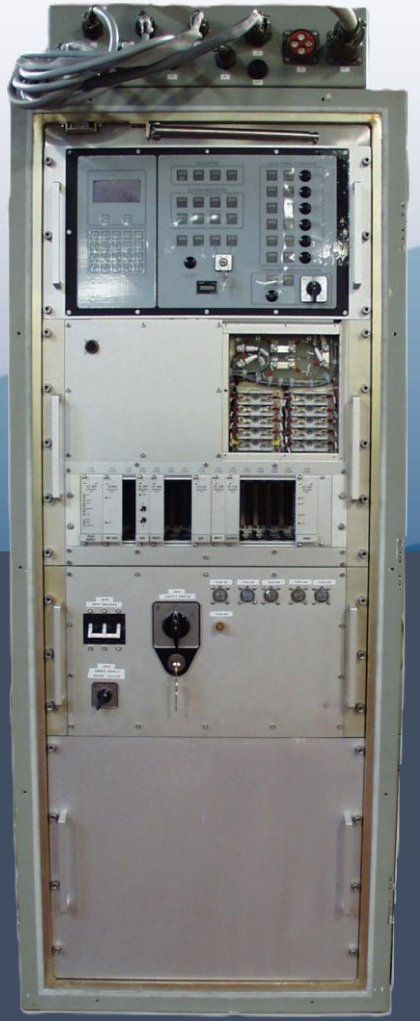
INPUT LINE	340V/480V 50/60Hz 3ph
MAX OUTPUT POWER	30kW
OUTPUT VOLTAGE	0-330Vac, 0-60Hz 3ph

Land application

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Power Converters





25kW Drive and special design
Brushless motor for antenna

OVERLOAD 30kW (30%)

TORQUE steady 187Nm / max 235Nm / starting 320Nm

Land application

Come visit us!

EURO CONTROL

A **John Cockerill** Company

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GOA AIRPORT