



# DIGITAL BUOYANT WIRE ANTENNA SYSTEM

Ensuring operational capabilities.  
Passing on information.



# The trailing antenna system

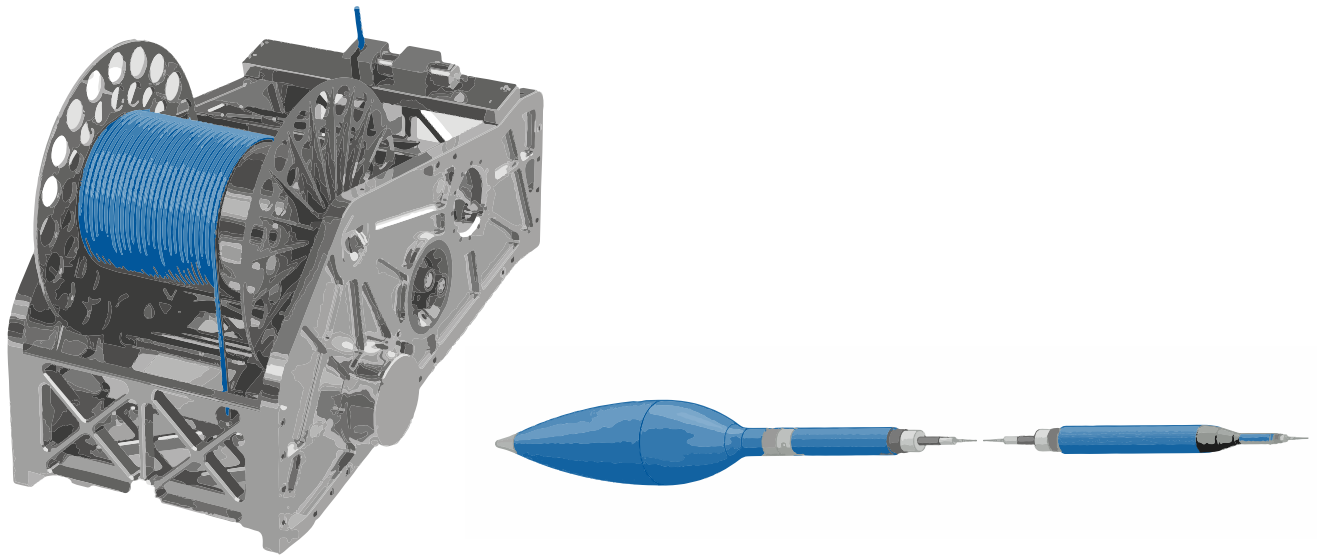
The capability to rely information to submarines at any time during their missions without revealing their location is essential for success or failure of operations.

We at Gabler are able to provide a comprehensive, multifunctional communication and navigation solution that exactly cope with this challenge.

Together with our partners, we developed a flexible yet compact and cost efficient HF and VLF communication system that in addition offers features that were not seen with towed antenna systems before.

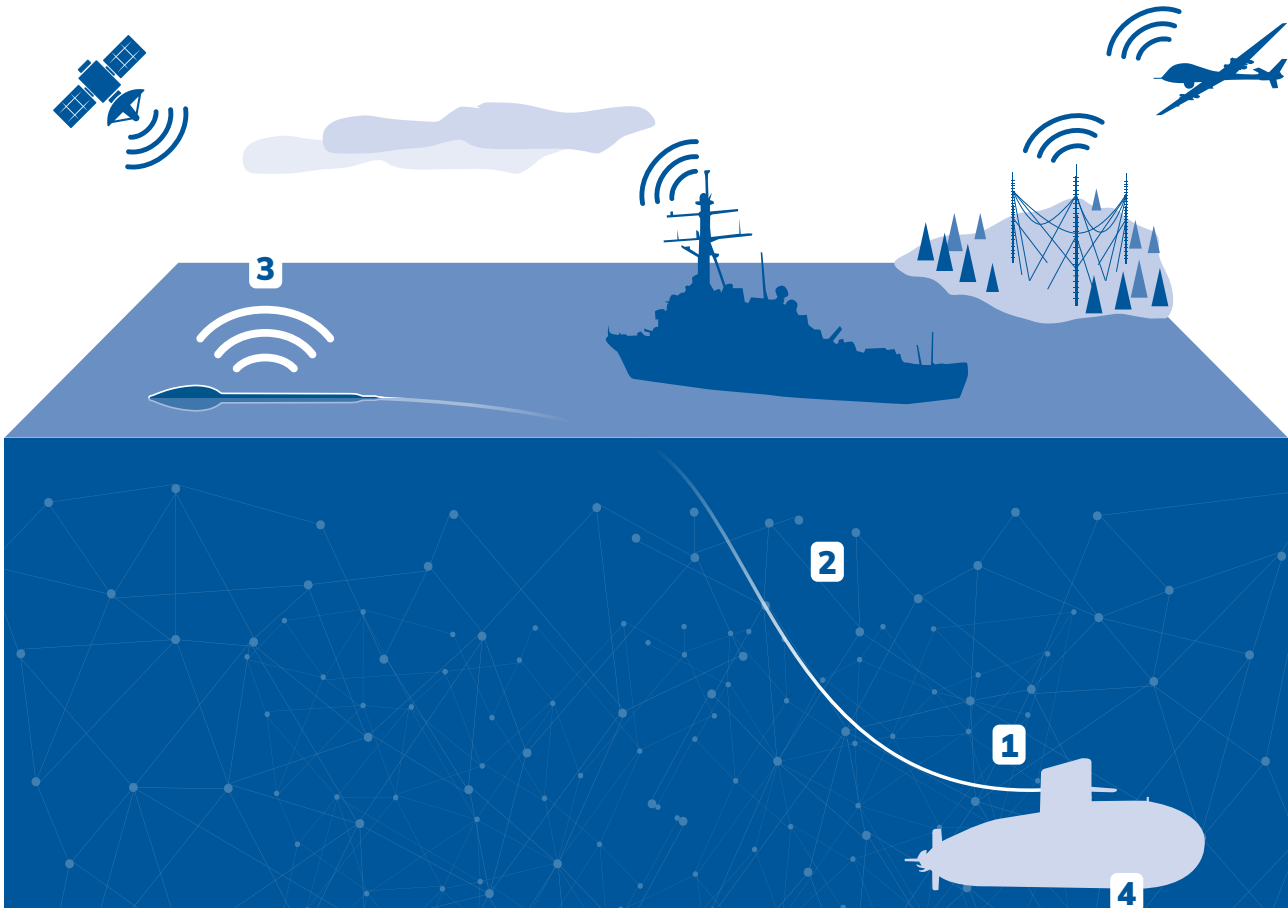
Our technology leading fully Digital Buoyant Wire Antenna system (DBWA) allows reception of inbound HF and VLF transmissions, reception and transmission of data via satellite and reception of GNSS position with minimal surface exposure.

This system was designed to overcome the classic tradeoff between low cable diameter, drag, weight and long tow cable length and low attenuation on the other side. We are able to provide a towed antenna solution operational at larger cruising speeds and greater diving depths than any other system available on the market today.



## KEY TECHNICAL DATA

Tow cable length	Tow cable length	Up to 6000m
Winch performance	Reel speed	Up to 8m/s
	Pulling force	Pulling force: up to 8kN
		Mechanical brake
	Low magnetic signature	
	Gearless direct drive for low acoustic signature	
	Fully shock rated according to German standard BV0430	
Supply		100V-400V DC up to 4-32kW (configurable)
Interfaces	Hardware	2x 1000BASE-T/SX/LC (according to specification)
	Onboard Communication Systems	Bespoke
RF reception		HF 30kHz - 30MHz
		VLF 7-30 kHz optional
Satcom		IRIDIUM SBD, optional NEXT (up to 22kbps transmit/88kbps receive at low seastate)
		Other systems on request
GNSS		GPS, Galileo, Glonass, Beidou



### 1. DBWA submersible winch

Our submersible winch system is a silent, low magnetic signature friction winch design with gearless direct drives for storage drum, tractor unit and cable guide. Coupled with our Automatic Depth Control option, it is able to automatically control the depth of the VLF receiving section so that there is no surface exposure at all while still maintaining good reception properties.

### 2. Tow Cable + Flexible Antenna Rod

Our 8mm high strength hybrid tow cable integrates single mode optical fiber communication for data and signal relaying and thin, lightweight high voltage conductors for supply of the digital antenna controller. The cable is positively buoyant, depth rated and reinforced with liquid crystal polymer fibers. For optional VLF reception it also integrates the VLF antenna section. The flexible 20mm, 30m long HF antenna rod attaches to the tow cable and is terminated by the Digital Antenna & Satcom Controller. A service friendly purely mechanical emergency cable cutter is integrated into the winch system.

### 3. Towed Digital Antenna & Satcom Controller (TDASC)

The TDASC unit integrated the HF antenna frontend with remote controlled tuneable bandpass filters, LNAs, ADCs and fiber optical interface.

Furthermore it contains the stabilized SatCom antenna and transponder (IRIDIUM). Additional functionalities include depth sensor, LED flasher (selective activation) and other optional transponders.

### 4. Inboard Control and Interface Unit (ICIU)

Our ICIU provides all essential information about the system status via the integrated display and external system interface, allows local and remote control of the system (including manual and automatic modes) and provides the interface to the HF/VLF radio system. The radio interface is available either purely digital (front-end control + signal data) or analog for legacy radios by analog reconstruction of the signal from the digitized waveform. An SDR receiver is also integrated into the ICIU for diagnostic purposes.

### 5. Auxiliary Options

- Surface Vision System  
panoramic surface live view
- Short range surface system transponders (drone control)  
control and data reception for UAVs (e.g. ECB.Drone)

# BWAs by Gabler Naval – Unique Features



Small form factor and lightweight design allows easy integration and retrofitting



The most intriguing feature is the fully digitized RF signal chain and transmission



Only 8mm hybrid tow cable diameter with positive buoyancy and no hard limit of the overall length



Minimal integration efforts due to intelligent system design

## FROM THE OVERALL SYSTEM TO INDIVIDUAL COMPONENTS

Our mast systems and submarine components represent highest reliability and innovation – to the delight of shipyards and navies all over the world, for almost 60 years. Our products can be integrated into every conventional and nuclear submarine base and meet all common military standards.

**165**

submarines  
equipped

**130**

GABLER  
submarine  
experts

**60**

years  
of experience

**900**

masts  
delivered