

## **MESSIN – An autonomously operating unmanned surface vehicle**

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**MATNAV**

# MESSIN

**The Measuring Dolphin**



**University of Rostock**

## The autonomously operating unmanned surface vehicle MESSIN

The autonomously operating unmanned surface vehicle MESSIN is used as carrier for measuring devices in the field of oceanographie, water ecology, hydrology, cartography and other fields of scientific marine research.

This vehicle can operate in extreme shallow waters without having a detrimental impact of the surrounding environment. With its integrated high-precision positioning and navigation system it can survey on rivers and in areas of difficult access.

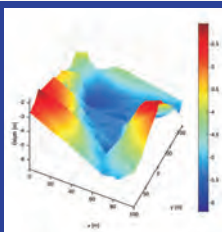
For solving a measuring task you can remotely navigate or use the integrated closed loop control system for track guidance to follow a predetermined surveying programme. The onboard multi-channel wireless data communication system can be used for transmission of measured and important functional data to an operation base or for setting up the parameters and manage of the measuring equipment.

To guarantee the required speed and the length of operation the MESSIN was developed with a hydrodynamically optimized hull structure, effective drives and hybrid energy concept.

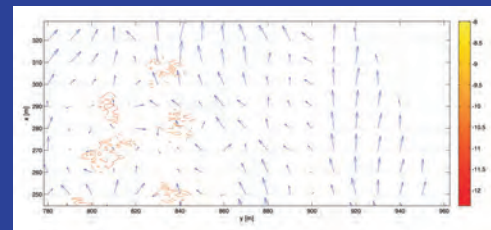
### Characterizations



- Variable carrier for various measuring equipment
- Integrated high-precision positioning and navigation system
- Two effective rudder-propulsion devices
- Hierarchically and modular structured control system
- Closed-loop control system for high-precision track guidance
- Multi-channel wireless data transmission and remote control (433MHz, 2.4Ghz)

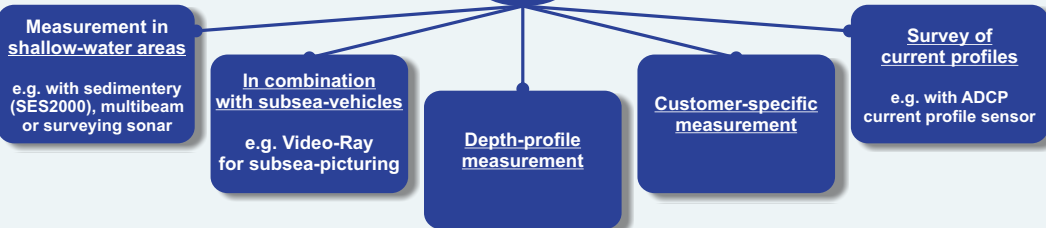


Depth-profile in the Warnow river near „Traditionsschiff“ (on the right)



Section of the current profile of the artificial reef in the Baltic Sea to the north of Nienhagen near Rostock (Germany)

### Potential Applications



### Conception of Construction

- Catamaran with glass fibre-reinforced plastic hull
- Electrical rudder propulsion system
- Variable platform for different measurement technologies
- Integrated positioning system (Septentrio, Trimble)
- Automatic trajectory control
- Inertial sensor system (Crossbow)
- Telemetry system for device control and transfer of data
- Device for transport, launching and slipping
- Hybrid power supply

### Technical Parameters of the MESSIN

<b>Dimensions</b>			
Length	3,3 m	<b>Draft</b>	Min Equipment 200 mm
Width	1,8 m	Full Equipment	400 mm
<b>Mass</b>		<b>Duration of Action</b>	
Weight (Full Equipment)	350 kg	Hybrid	10 h
Max Payload	100 kg	Battery Operation	3 h
<b>Movement Parameters</b>			
Min Velocity	0,5 kn		
Max Velocity	ca. 4 kn		

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