



SIGNS AND SIGNALS:
INLAND WATERWAYS AND LAKES



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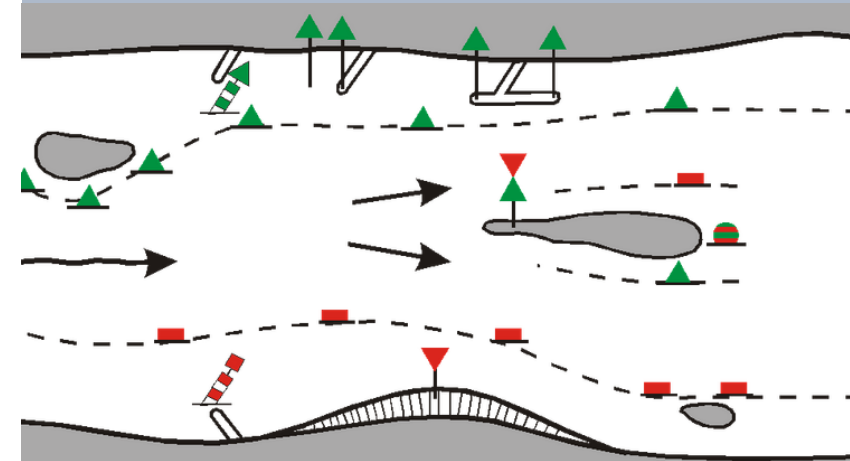


1. NAVIGATIONAL SAFETY



INLAND NAVIGATION RULES

- To ensure inland navigational safety, the competent authorities must comply with the codes for signs and signals on inland waterways such as:
 - The European Code for Signs and Signals on Inland Waterways (SIGNII).
 - The inland navigation rules in Central Africa CEMAC / DRC.
 - The US Inland Navigation Rules.
- These codes provide recommendations for the installation and application of buoyage and marking on inland waterways so as to ensure the navigational safety:
 - Buoyage and signals on the waterways.
 - Bank marking, port entrance marking, permanent structures marking.

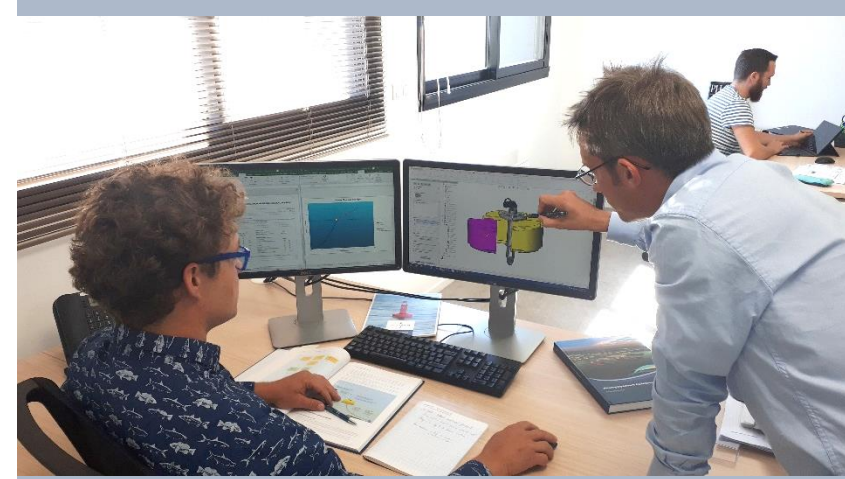
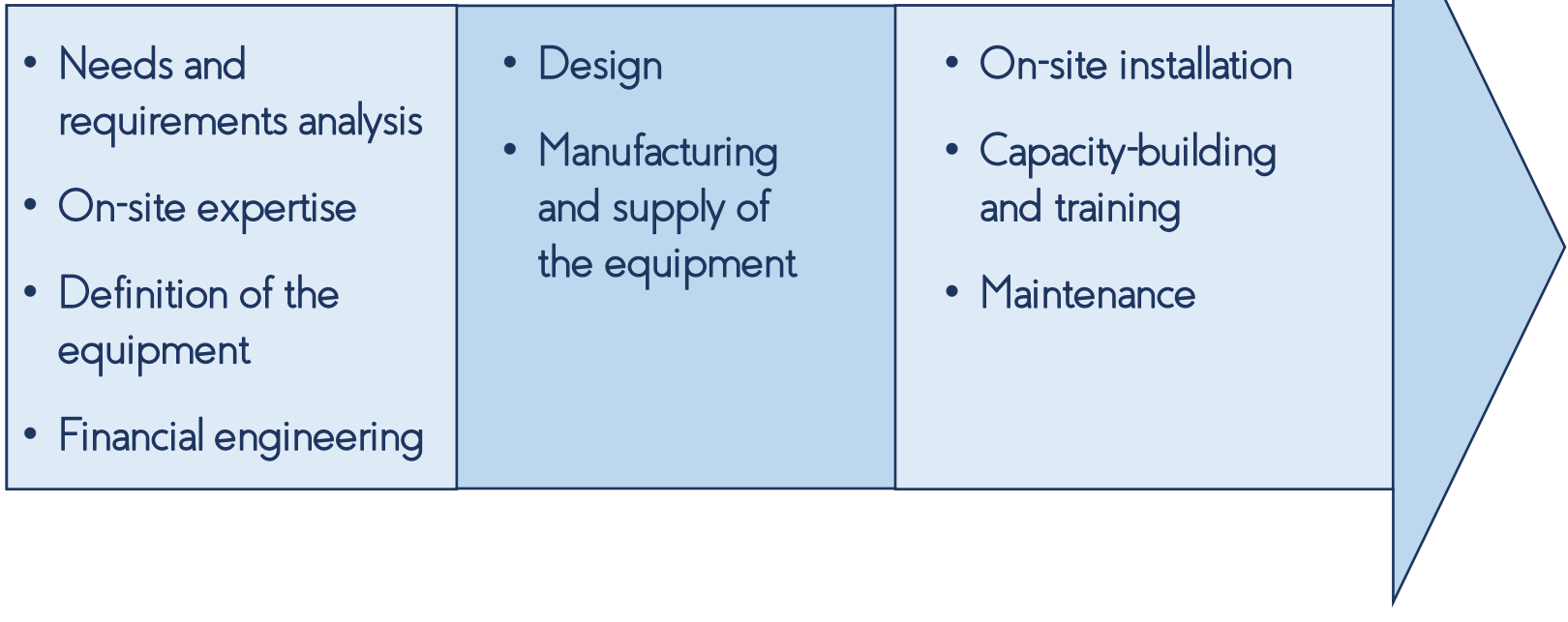




2. A COMPREHENSIVE AND FLEXIBLE OFFER

GISMAN's OFFER

- GISMAN's in-house Design and Engineering office together with its Project Management team is a guarantee of competitive and technically compliant solutions. in line with budgets, deadlines and quality.





3. A SOLUTION MATCHING ALL SIGNING AND MARKING REQUIREMENTS

3.1. FLOATING SIGNS

Different types of applications

- Buoyage of fairway limits in the waterway.
- Buoyage of groins, shifting shoals and shallows.
- Buoyage and marking of danger points and obstacles.
- Marking for navigation by radar:
 - Bridges' piers.
 - Overhead cables.
- Buoyage and marking of lakes and broad waterways.
- Marking of prohibited and restricted zones.
- Harbor entrance marking.



3.1. FLOATING SIGNS

A comprehensive range of PE buoys

- Buoys for all on-site locations: rivers, lakes, lagoons, estuaries, etc.:
 - From 0.9m to 2.6m diameter.
 - For currents up to 7 knots.
- Polyethylene buoys:
 - Cost effective (low maintenance) and environmentally friendly (recyclable).
 - Easy to deploy.
 - High and durable conspicuity (UV stabilized) with a remarkable stability.
 - Many additional options: radar reflectors, LED lanterns for navigation at night, remote control and monitoring systems (GSM, Satellite, AIS).
 - Supplied with mooring lines and anchoring systems (mooring chains, sinkers, cables, anchors, etc.).



3.1. FLOATING SIGNS

To be deployed on all on-site conditions

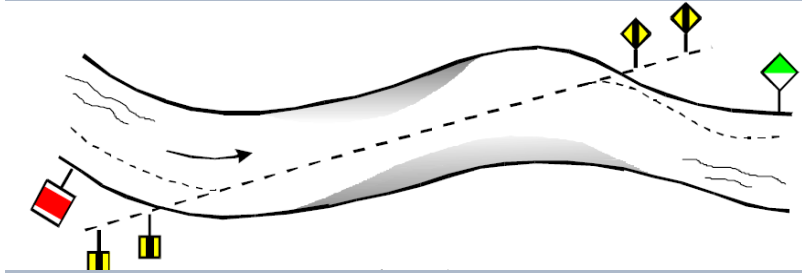
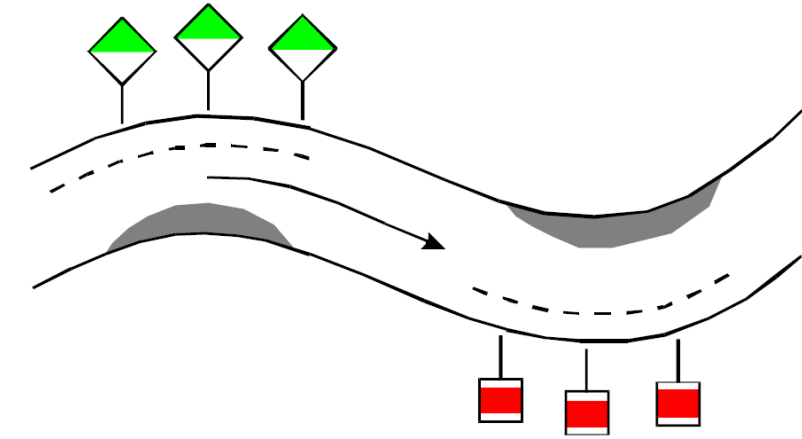
	GISMAN buoys	<u>GBP-900</u>	<u>GBR-1250</u>	<u>GBP-1500</u>	<u>GBP-1800</u>	<u>GB-2600-ECO</u>
Float diameter		0.90 m	1.25 m	1.50 m	1.80 m	2.60 m
Application	Lake / lagoon	X	X	X	X	X
	River	X	X	X		
	Large river			X	X	X
	Estuary				X	X
	Max. current speed	2 knots	7 knots	7 knots	3 knots	6 knots



3.2. MARKS ON LAND

Different types of applications

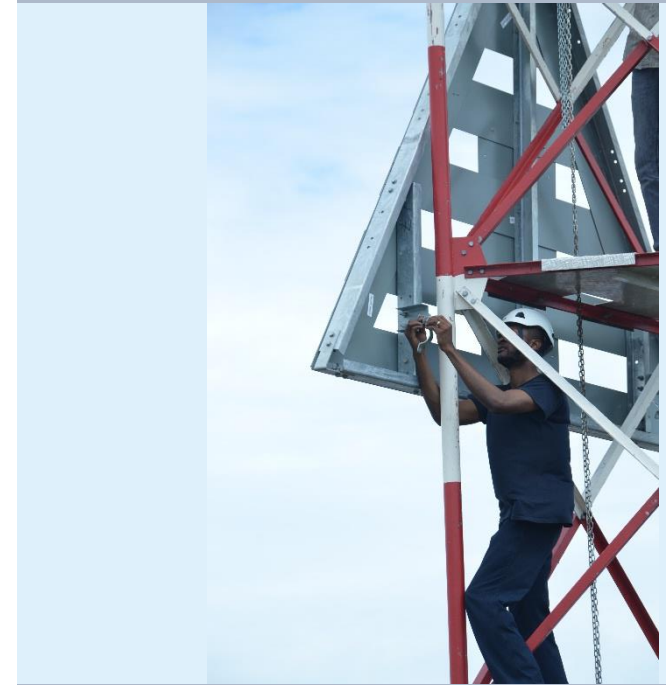
- Position of the fairway in relation to the banks.
- Crossover marks from one bank to the other.
- Danger points and obstacles.
- Harbor entrances.
- Leading marks.
- Bifurcation of the fairway.
- Miles markers.
- High waters marks.



3.2. MARKS ON LAND

Bank marking

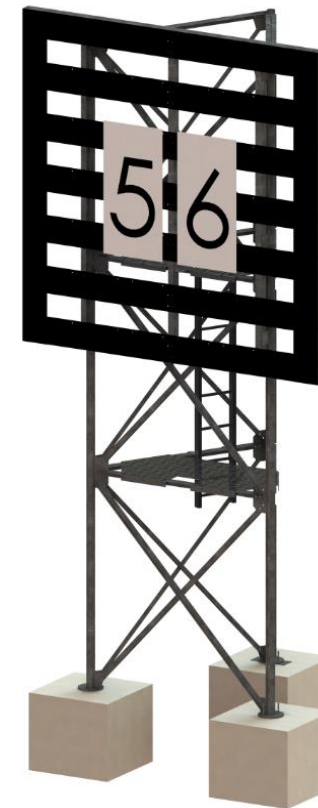
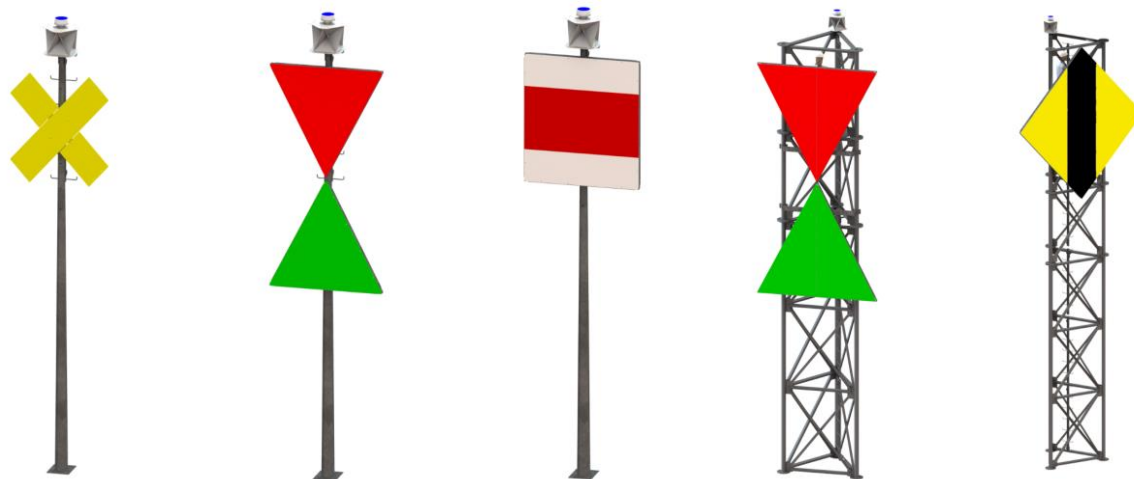
- Modular design:
 - Easy to transport to installation sites.
 - Do not require heavy logistical resources (easy installation even in remote areas).
- Durability free of maintenance:
 - Sandwich panels in aluminium / polyethylene / aluminium = high resistance of the materials to temperature variations. UV exposure and humidity.
 - Color fastness.
 - Tamper-resistant protection: unusable materials for recovery. self-locking nuts.
 - Optional retro-reflective film.



3.2. MARKS ON LAND

Support structures for bank marking

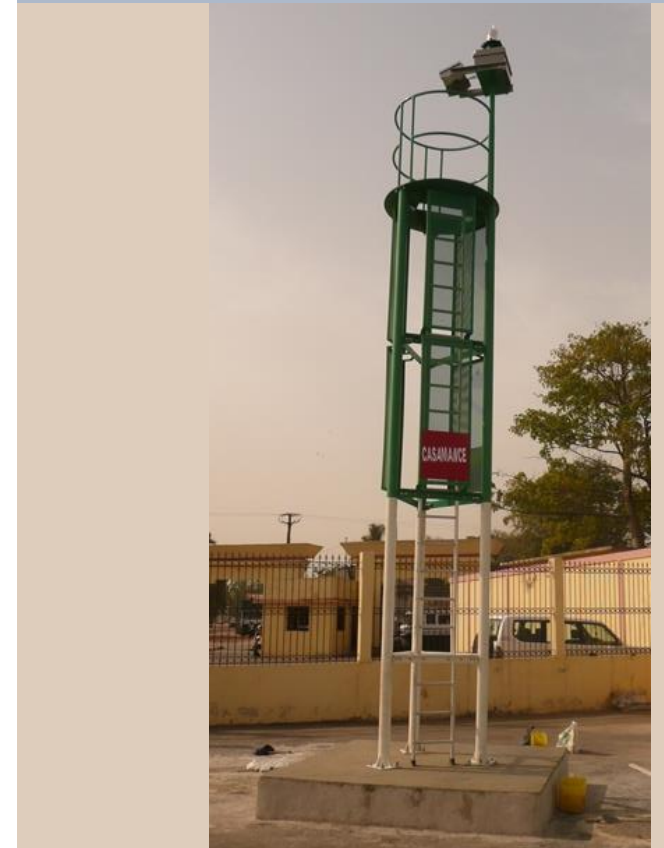
- Single tube structures:
 - Galvanized steel masts from 3 to 14 m height.
 - GRP masts from 6 to 8.2 m height.
- Reinforced support structures:
 - Galvanized steel tripod structures with bolted construction from 4 to 12 m height.



3.2. MARKS ON LAND

Marking of harbor entrances

- Tailored-made support structures to match customers specifications:
 - Masts, tripods, etc.
 - In aluminium, steel, stainless steel or GRP.
- To withstand extreme environmental conditions:
 - Anticorrosion surface treatment.
 - Winds of up to 200km/h.
- Designed to accommodate a wide range of equipment:
 - LED lights and lanterns.
 - Remote control and monitoring systems.
 - AIS transponders.
 - Radar reflectors.

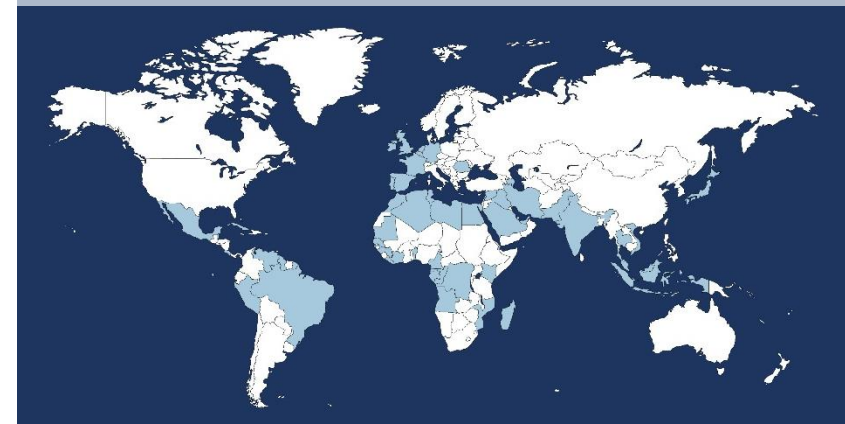




4. WORLDWIDE ACHIEVEMENTS

WORLDWIDE ACHIEVEMENTS

- **Democratic Republic of the Congo:** buoyage and marking of Congo and Kasai rivers (supply and installation of 33 buoys with 2.4m diameter and 539 bank marks) + buoyage and port entrance marking of Tanganyika Lake at Kalemie and Kalundu (supply and installation of buoys with 2.4m diameter and port entry lights).
- **Gabon:** buoyage of Ogooue river (supply and installation of 80 buoys) and Gabon estuary at Owendo (supply and installation of spar buoys).
- **Morocco:** buoyage of Marchica lagoon (supply of more than 60 buoys. with 0.9 to 1.4m diameter).
- **Senegal:** buoyage and marking of Casamance river (supply and installation of 40 buoys with 1.8m diameter and port entry lights).



WORLDWIDE ACHIEVEMENTS

- **Benin:** buoyage of Nokoue Lake (supply of 104 buoys with 0.9m diameter).
- **Ivory Coast:** buoyage of Abidjan lagoon (supply of buoys with 1.25 and 2.5m diameter).
- **Việt-Nam:** buoyage of South Can Gioc river in Hô Chi Minh area (supply of 36 buoys with 1.5m diameter).
- **The Netherlands:** river buoyage (supply of more than 300 buoys with 1.25m diameter).
- **France:** buoyage of Dordogne river (supply of buoys with 1.25m diameter).
- **Brasil:** river buoyage (supply of buoys with 1.80m diameter).



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