SPECTOREMOTE

PRESENTATION
DIGITALIZATION

CREATION SOLUTIONS SPECIFIC TO YOUR NEEDS

ABOUT US

Our team has over 50 years of communication system implementation experience.

The company is part of the Gjermundshaug Group.

We are located in Oslo, Norway with branches in Bodö and in Stockholm, Sweden.

The company's core competency is wireless communication.

Spectoremote AS offers a wide range of advanced wireless products and services to our customers worldwide. This includes broadband solutions for Ferry's and Cruise ship.

WE ARE FOCUSED IN COMMUNICATION AND CONNECTIVITY USING MICROWAVE LINKS FROM SHORE TO SHIP.

OUR STORY

Gjermundshaug Gruppen is a socially conscious and innovative player in the construction industry. We appreciate experience and facilitate further professional development. Through local family ownership since 1949, we have built solid and visible values for the community and private individuals, such as roads, bridges, railways, water and sewage systems.

In recent years, we have contributed to nature and environmental clean-up through, among other things, the single largest project of nature restoration ever in Norway. This was the Armed Forces' firing range restoration project at Hjerkinn, where we developed a new technology in remote control of machines.
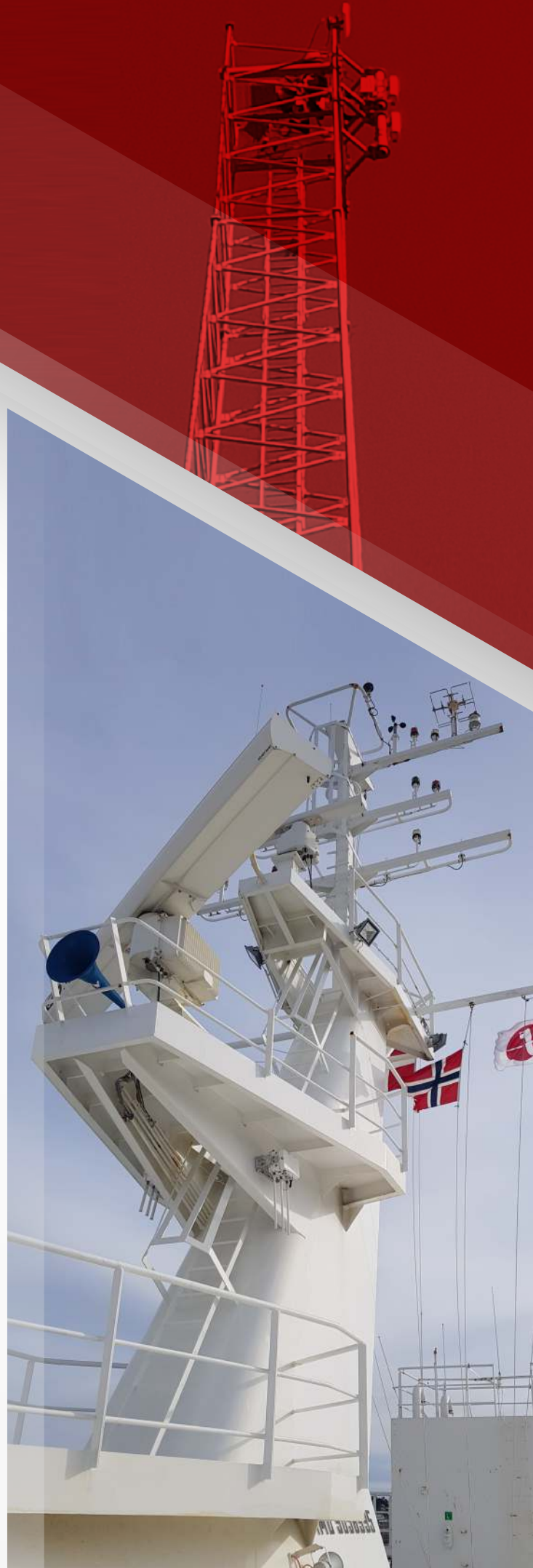
The Gjermundshaug Group carries the following ISO certification: ISO 9001: 2015 on the system quality, ISO 14001: 2015 on the systematic environmental protection and ISO 45001 on the system for the working environment.

Gjermundshaug Gruppen founded Spectoremote AS 2010, its business is radio and data communication in areas such as offshore, shipping and other places with a need for advanced wireless communication solutions. The company is located in Oslo, but delivers services and products all over the world.
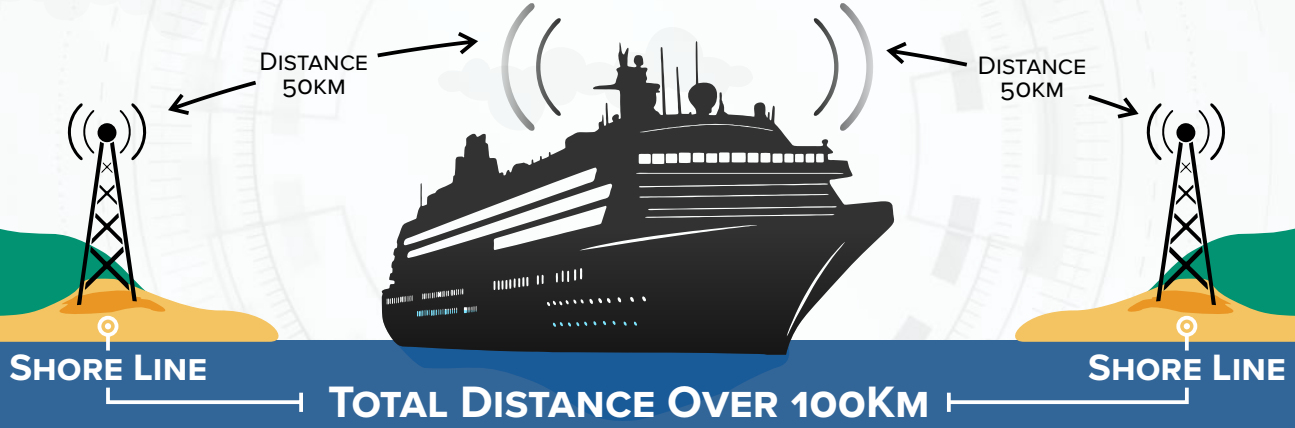
WE ARE CELEBRATING
70TH
ANNIVERSARY

OUR SOLUTIONS

- Complex communication needs fast, stable and interruption free wireless communication.

- We provide communication and connectivity solutions by using Microwave Links to transfer data from shore to ship.

- We deliver an affordable "Shore to ship" connectivity solution for the maritime industry in Europe and Worldwide.

- We deliver reliable high speed broadband with seamless connection, which is the fundamental base for your
- Digitalization strategy.

- Better stability, less downtime. Reduce your latency and increase your data speed.

- This will allow you to integrate with vessel IT systems, on a whole new level.

How Does
it Works

150 Mbps Uplink/Downlink
Line of Sight

Distance 50km

Distance 50km

Shore Line

Shore Line

Total Distance Over 100Km

Better Stability

Less Downtime

reduce your Latency

Increase your Data Speed

From the radio tower we are sending signals via microwave links to the vessel. If we have "line of sight" we can send signals over long distance and the data capacity is dedicated to the vessel.

We equip the vessels with several Radio trackers that keep contact with the Radio towers on the shore-line and since we have several antennas on board the Vessel, we bundle the data capacity in a router, located in the vessels data room that distribute the internet to the public and private network on board.

Our control / call centre in Oslo keeps track of each link and if a link goes down an alarm notifies us and a service call is executed to the technical department.

We connect the vessels directly to the customer's office through MPLS Network, so they have contact with all Vessels in real time.
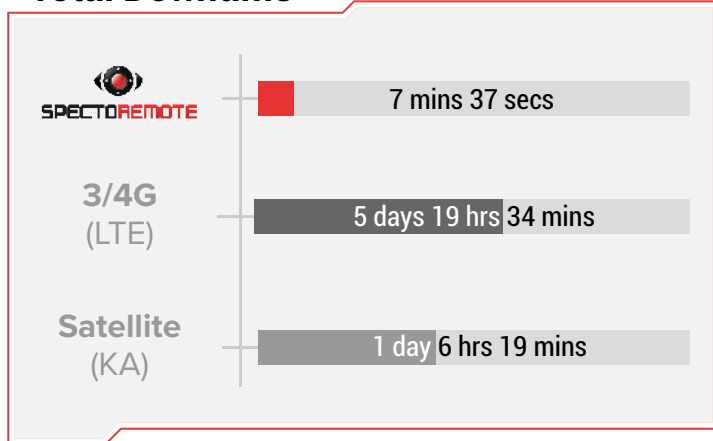
If needed, we can deploy our special trained technical team on site within 24 hours.

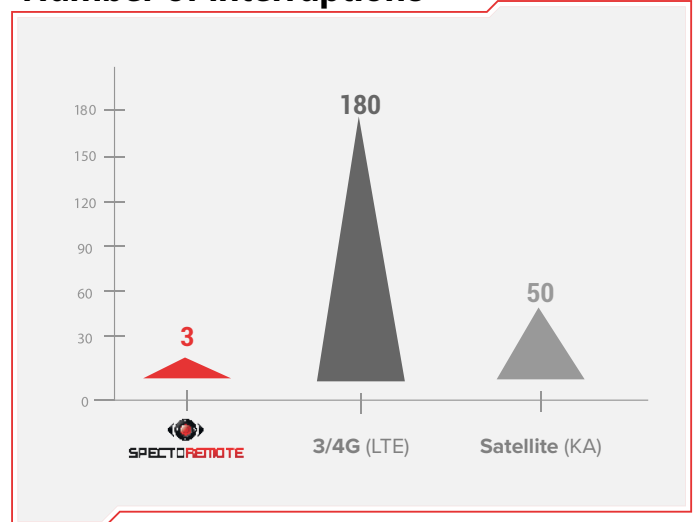# THE BENEFITS OF USING MICROWAVE LINKS FROM SHORE TO SHIP

This will boost your stability and throughput with less latency and allow you to integrate with vessel IT systems, on a whole new level.
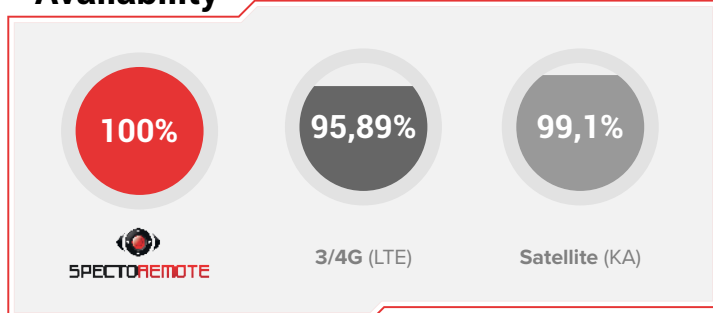
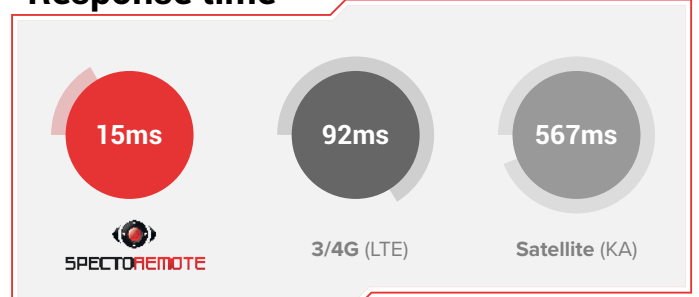## Time period: **6 months**

Total Downtime

SPECTOREMOTE — 7 mins 37 secs

3/4G (LTE) — 5 days 19 hrs 34 mins

Satellite (KA) — 1 day 6 hrs 19 mins

Number of interruptions

	SPECTOREMOTE	3/4G (LTE)	Satellite (KA)
	3	180	50

Availability

- **100%** — SPECTOREMOTE
- **95,89%** — 3/4G (LTE)
- **99,1%** — Satellite (KA)

Response time

- **15ms** — SPECTOREMOTE
- **92ms** — 3/4G (LTE)
- **567ms** — Satellite (KA)

Speed (Mbps)

- **150**Mbps — SPECTOREMOTE
- **13,5**Mbps — 3/4G (LTE)
- **0,5**Mbps — Satellite (KA)
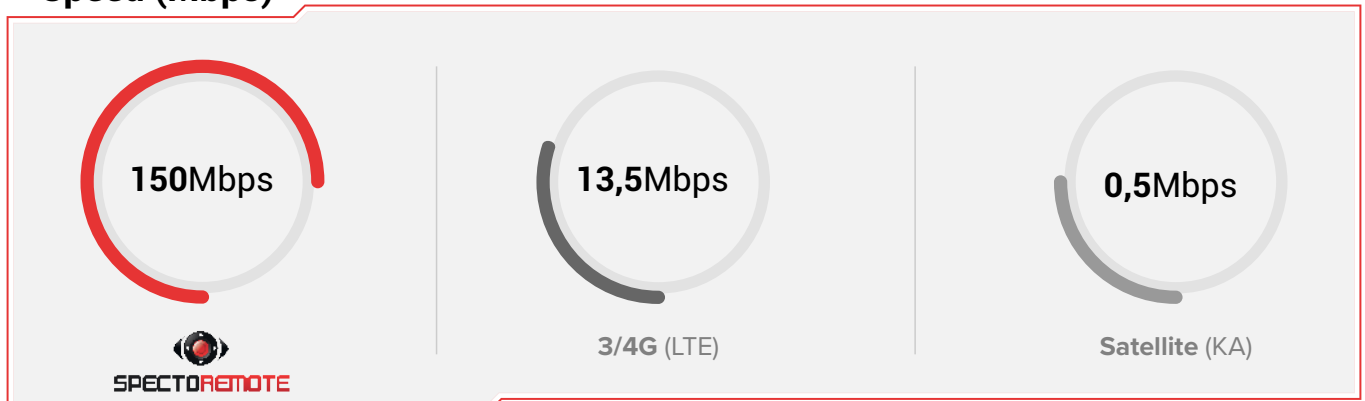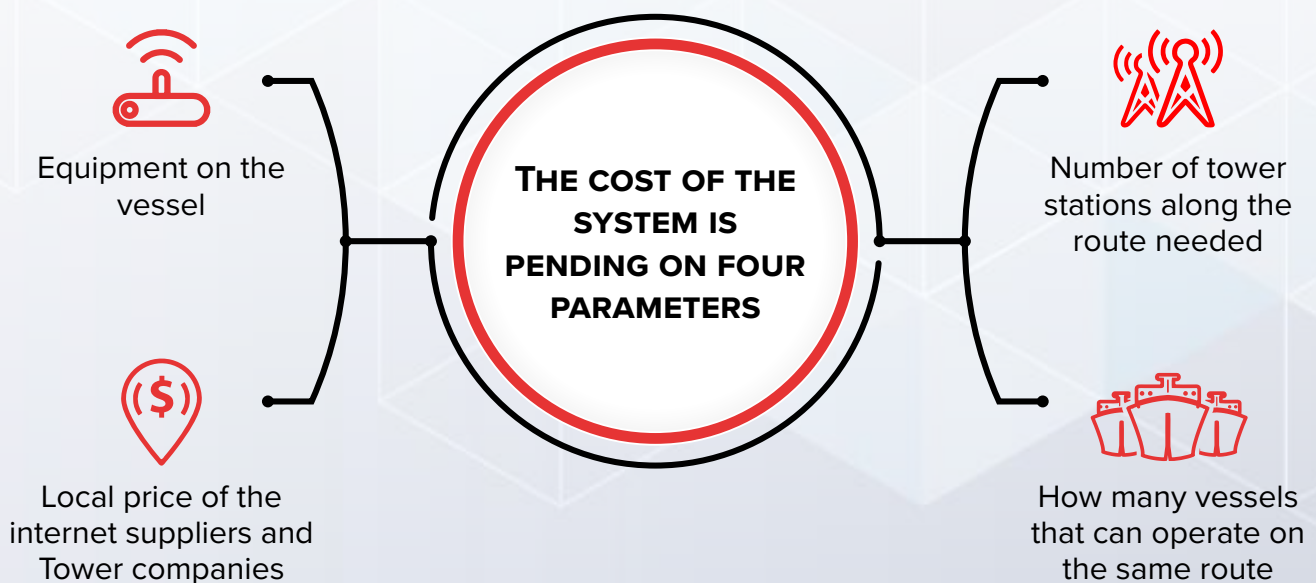
WHAT IS
INCLUDED

- We offer a Turn-key solution with a single vendor contact for data source and service.

- We include a site survey to inspect the vessel/s together with your technical team to define the right spot for the trackers on the vessel.

- We locate the tower stations on the shoreline and sign contracts with the owners as well as the local internet providers.

- We install the system on the vessels and the equipment needed on the Tower stations along the shore-line.

- We commission of the entire system and deliver the data signal to the interface of your choice, this take place in the control room onboard the vessel.

FIXED MONTHLY PRICE WITH
UNLIMITED DATA CAPACITY

THE COST OF THE SYSTEM IS PENDING ON FOUR PARAMETERS

Equipment on the vessel

Local price of the internet suppliers and Tower companies

Number of tower stations along the route needed

How many vessels that can operate on the same route

REQUEST AN OFFER FOR YOUR ROUTE.

INSTALLATION

- The actual installation normally takes 2 working days on the vessels and one working day per tower. Robust scheduling and precise planning is critical since third party supplier will be involved in the provision of the shore-line infrastructure.

- Tower owner normally wants to have control and overview of the installation of equipment as well as monitoring over the access to the control room beneath the tower.

- Internet suppliers need to have all infrastructure in place in order to deliver black fiber or internet to the tower locations.

- After the commissioning of the Network Spectoremote needs to do adjustments on the towers as well on the vessels, that's why we have the FAT for 14 days, before the actual contracts starts.

SERVICE AND MAINTENANCE
----------- SLA ------------

Our technical department receive service call from our Control room.

Most of the interruptions (95%) will be resolved from our office.

If a service tech is need to be on-Site, we will send a technician with in 24 Hours within Europe.

We always have spare parts in our warehouse in Oslo and can deliver these within 48 hours if the technician cannot bring them.

SITE SURVEY

After you have received a quote from us and you wish to proceed with the implementation of your system, we will offer a free of charge inspection of the vessels.

In collaboration with your in house engineering team our engineers will define the best spots for the antennas on the vessels. We will check your existing Equipment like Radar or satellite, LTE etc., so that measures to avoid any interference are implemented form the start.

We will also check where on the vessel we can install under deck equipment such as routers and switches.

We will work closely with your teams to define any works which might be required in order to support quick and seamless installation of all the equipment.

Link budgets are produced and reconciled so that we can see in advance what data capacity you can expect to get for your vessel.

All this is compiled in a FAT report which is then sent out within a week after the inspection is performed.

SPECTOREMOTE

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