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Marine Rope Safety Matters

Who has seen or heard of a serious injury or near miss of crew life due to marine rope failure?



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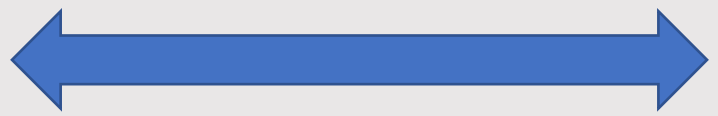
and who wishes they could have prevented such an event?





Commercial Company & Products

R&D division





Ssureline : a novel remote rope tension sensor offering

- Peace of mind and real-time monitoring of rope health & tensions.
- A step change in safety for vessel operators and crew alike.
- Allows users **confidence to operate winches and tension ropes** whilst monitoring the safe working loads of the ropes.
- Real-time data for more effective decision making
- Data for rope failures

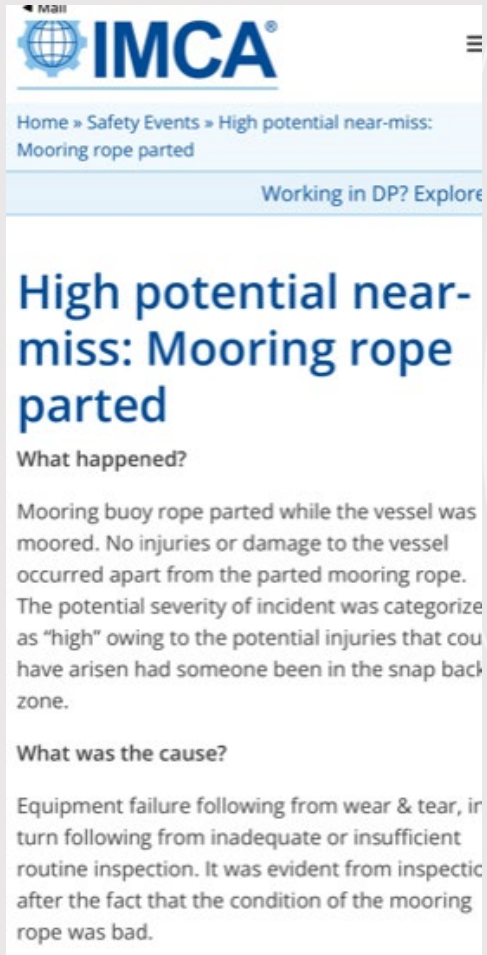


Rope Safety Market Factors:

- ship tonnage and use
- severe weather events
- marine environment responsibility
- crew numbers/vessel
- regulations
- insurance
- acceptance of technology



Recent news:



Home » Safety Events » High potential near-miss: Mooring rope parted

Working in DP? Explore

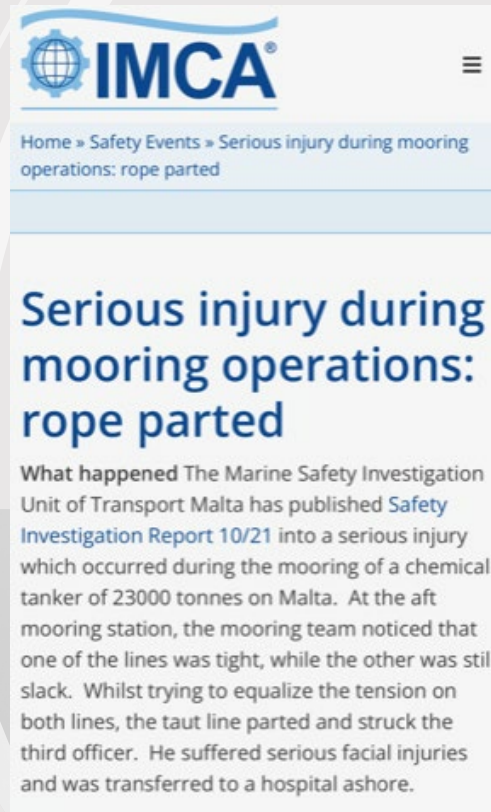
High potential near-miss: Mooring rope parted

What happened?

Mooring buoy rope parted while the vessel was moored. No injuries or damage to the vessel occurred apart from the parted mooring rope. The potential severity of incident was categorized as "high" owing to the potential injuries that could have arisen had someone been in the snap back zone.

What was the cause?

Equipment failure following from wear & tear, in turn following from inadequate or insufficient routine inspection. It was evident from inspection after the fact that the condition of the mooring rope was bad.



Home » Safety Events » Serious injury during mooring operations: rope parted

Serious injury during mooring operations: rope parted

What happened The Marine Safety Investigation Unit of Transport Malta has published *Safety Investigation Report 10/21* into a serious injury which occurred during the mooring of a chemical tanker of 23000 tonnes on Malta. At the aft mooring station, the mooring team noticed that one of the lines was tight, while the other was still slack. Whilst trying to equalize the tension on both lines, the taut line parted and struck the third officer. He suffered serious facial injuries and was transferred to a hospital ashore.

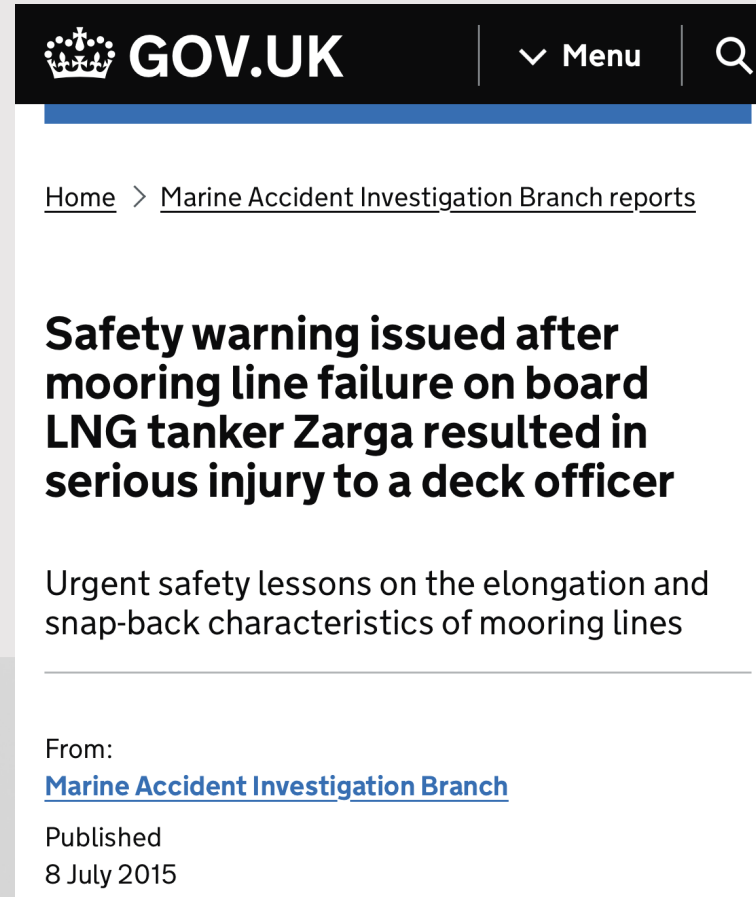


Home » Safety Events » Dutch Safety Board: fatality when mooring line snapped

Dutch Safety Board: fatality when mooring line snapped

What happened

The Dutch Safety Board has issued the following report on a mooring line fatality onboard chemical tanker *RN Privodino* on 28 June 2018, while entering the Noordersluis lock at IJmuiden, en route to Amsterdam. Shortly after the port forward spring had been paid out, it unexpectedly came under severe tension. The mooring team on the foredeck was no longer able to respond adequately in good time, as a result of which the mooring line parted. The section of mooring line that was connected to the on-board winch recoiled, and struck a crew member, killing him instantly.



Home > [Marine Accident Investigation Branch reports](#)

Safety warning issued after mooring line failure on board LNG tanker Zarga resulted in serious injury to a deck officer

Urgent safety lessons on the elongation and snap-back characteristics of mooring lines

From: [Marine Accident Investigation Branch](#)

Published 8 July 2015



Sureline : Rope Tension Monitoring Sensor

Sensor designed to **cover range of rope diameters** with plaited construction.

Sensor **installed quickly and easily** in core of rope

Sensors **calibrated** to work with specific diameters, constructions and rope material.

Sensor **records and transmits rope tension, angle and displacement** data .

Sensor Size 01 : 30mm to 48mm \emptyset rope

Sensor Size 02 : 46mm to 80mm \emptyset rope





Sureline sensor features

96hr continuous use

Easy rope install and extraction

1 hr fast charge via multipod charging unit.

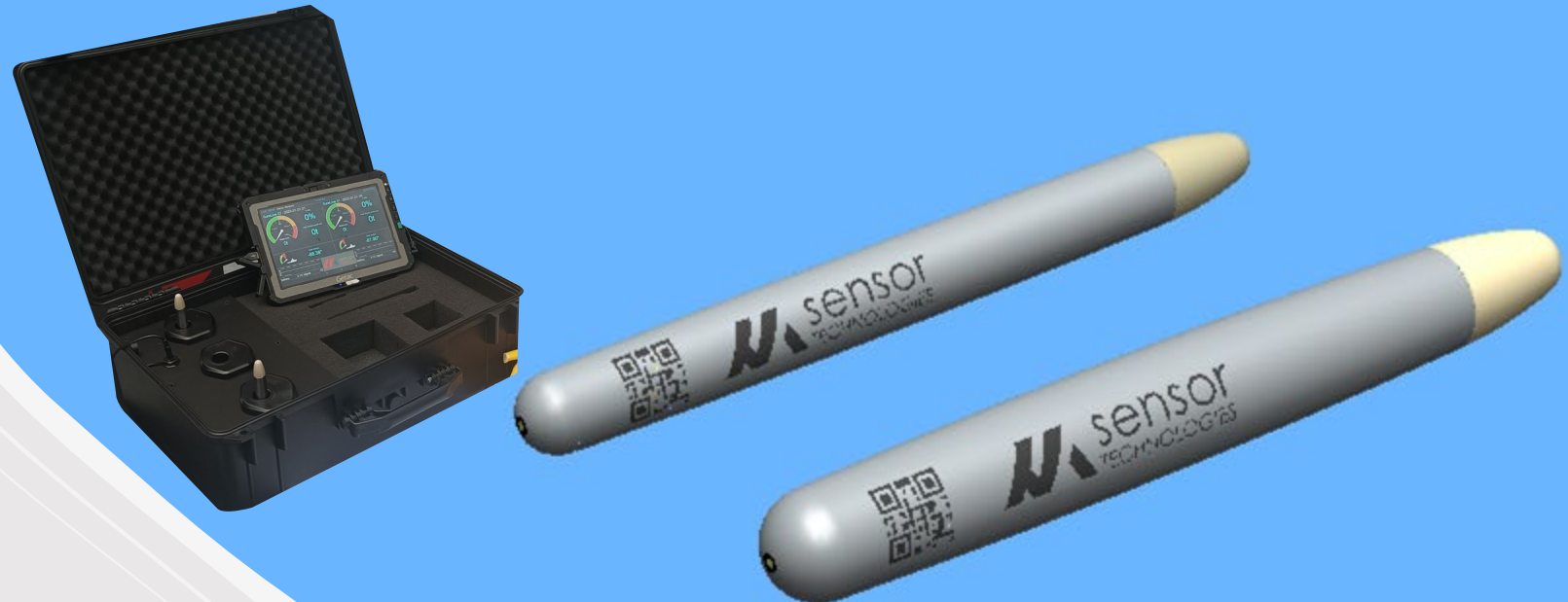
Sensors identified for individual rope deployment

Up to 10 data points per second

Bluetooth 5.0 long range 150m communication to Master Control Unit (MCU)

Individual sensor memory storage 48hrs of data

Up to 24 sensors to one MCU Sureline Hub/Dashboard



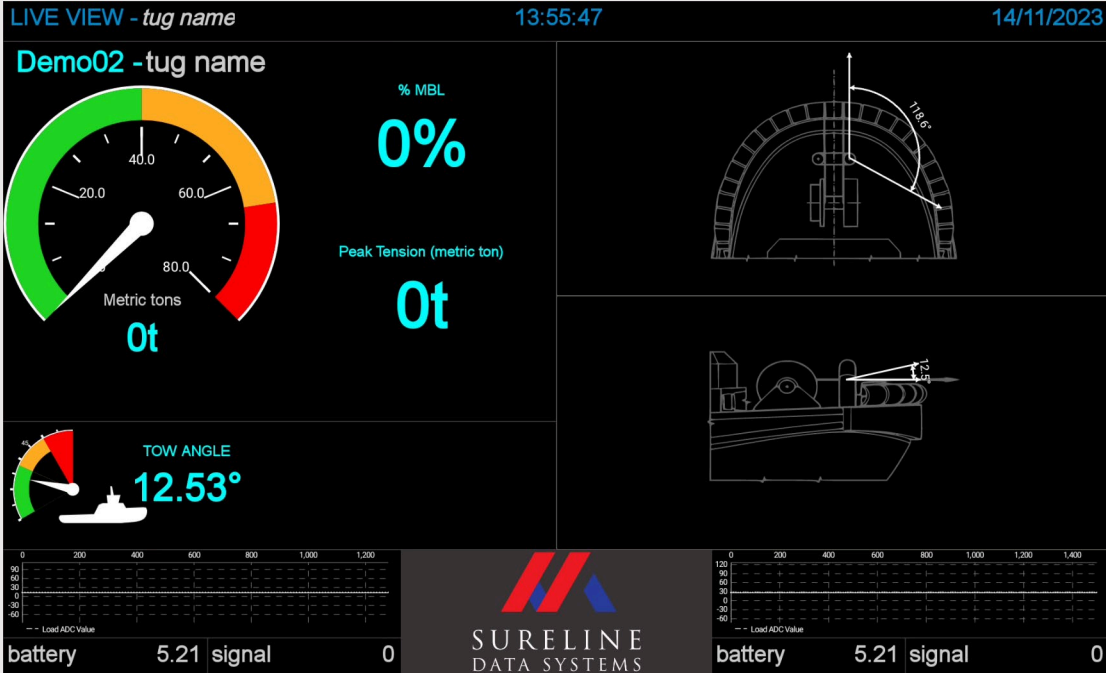


Dashboard for ease of operations and response.



Towage Screen HUI

Data showing Horizontal and Slew angle.





Sureline Data Systems

Press **F11** to exit full screen

Log in

mock up display

Live Alerts in
Fleet

Rope Lifetime	Time under Load	battery	Peak Load
12	14	11	11
1	0	2	1
2	1	2	3

Vessel name	IMO	location	No. of Ropes	No. of Sensors	Alerts				max safe load	DETAIL
					Rope Lifetime	Time under Load	battery	Peak Load		
SD SUZANNE	9680516	N51°44'15.96, W004°57'15.54	2	2	WARNING	LOW	OK	HIGH	70	VIEW
TIMBERLAND	8993320	N51°44'15.96, W004°57'15.54	2	2	LOW	LOW	WARNING	HIGH	90	VIEW
VOS GLORY	1010789	N51°44'15.96, W004°57'15.54	6	6	HIGH	HIGH	OK	HIGH	90	VIEW
STATESMAN	8937883	N51°44'15.96, W004°57'15.54	6	6	LOW	LOW	OK	OK	70	VIEW
SVITZER CASTLE	9316397	N51°44'15.96, W004°57'15.54	1	1	LOW	LOW	WARNING	OK	180	VIEW
SAND FALCON	9797395	N51°44'15.96, W004°57'15.54	4	4	LOW	LOW	CRITICAL	WARNING	70	VIEW
INDIAN PARTNERSHIP	9440904	N51°44'15.96, W004°57'15.54	2	2	LOW	LOW	OK	OK	70	VIEW
ENTERPRISE	9451197	N51°44'15.96, W004°57'15.54	6	6	LOW	LOW	OK	OK	70	VIEW
VOS FABULOUS	9647203	N51°44'15.96, W004°57'15.54	2	2	HIGH	LOW	OK	OK	90	VIEW
JAMES COOK	9440760	N51°44'15.96, W004°57'15.54	2	2	LOW	LOW	OK	OK	70	VIEW



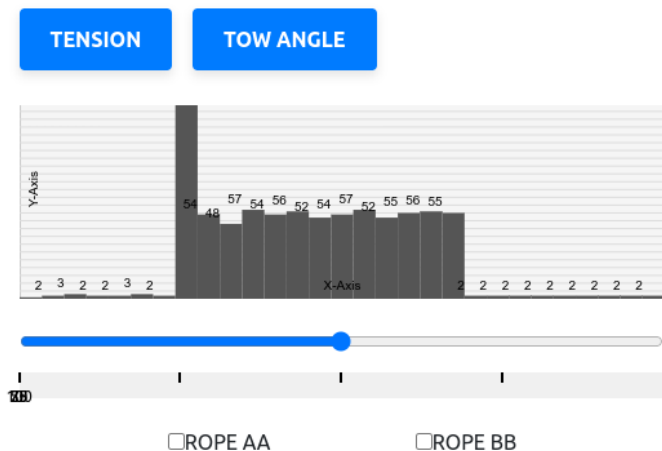
Sureline Data Systems

ROPE

SENSOR

ALERTS

Rope Name	Date of Rope manufacture	manufacturer	CofC	max safe tension (metric tons)	Sensor ID	Calibration Certificate	Rope Lifetime (hours)	Time under Load (hours)	battery (volts)	Peak Tension (metric tons)	Tow Angle
Rope AA	06/02/2020	Lankhorst	10112234	70	Sensor 01	2033456	>39456	17123	3.9	75	14
Rope BB	04/01/2023	Lankhorst	10112235	70	Sensor 02	2033457	22341	7456	3.4	25	14



10/11/2023

REPORTING

FLEET OVERVIEW

LIVE VIEW - Demo Sensors 19:29:08 31/05/2023

db:dc:ac:f0:c0:67 Not Connected Not Connected Not Connected

% MBL 90% 0% 0%

Peak Tension (metric ton) 0t 50t 0t

Metric tons 72t 50t

TOW ANGLE -9.37° 0°

battery 4.86 signal -71 battery 0 signal 0

sensor TECHNOLOGIES

What people say about Sureline



“This sensor will save lives”

Major tug owner operator Nov 2023



Sureline Next Steps

- **5 pioneer partners for 2024 commercial sea trials**
- **Working with regulators using sureline data insights**
- **Setting future standards for rope safety**

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Protecting Lives & Ropes

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Marine Rope Safety:

Marine accidents are costing the insurance industry >US \$34million

- >50% of accidents occurred where the ropes parted or broke
- A further 42% occurred when mooring ropes jumped/slipped off drums or bitts/posts.
- Only 5% of mooring rope accidents occurred due to equipment failure (eg winches).

1 in 11 mooring injuries result in amputation

1 in 7 mooring injuries result in fatalities

Ref: UK P&I club safety statistics, marine insight 2020, Nautinst. Org, Maib 2019



Increased usage of fibre ropes has brought significant benefits but also some safety concerns.

- Rope fatigue
- Rope failure premature parting
- Environmental impact
 - UV Fatigue
 - Salt Crystal impact
 - Chemical damage

Workboat's tow rope broke during a ship assist towage operation.	Damage / loss of equipment	Marine Incident to Vessel(s)	Marine Incident	2021	01/08/2021	55.0535	-7.241	Internal waters -> Port area	UK -> Northern Ireland
A tug was assisting a bulk carrier to berth. The tug was connected up to the centre lead aft. The pilot asked for 50% dead astern on the tug and this request was adhered to. After about 8 minutes the tow parted. The									

news section of Marinelink 17/6/21.

We would like to thank and recognise all data suppliers and Robert Allen
Incident data supplied under the FOI and accurate at time of print.