

# **FLOODED MEMBER DETECTION**



YOUR SPECIALISTS IN  
**SUBSEA TECHNOLOGY & RENTALS**

Aberdeen | Great Yarmouth | Perth | Singapore

# FLOODED MEMBER DETECTION

## INTRODUCTION

Subsea Technology & Rentals (STR) was established in Scotland and is a specialist technology company providing rental and sales services globally to the offshore marine sectors. For over 20 years, STR has delivered mission critical solutions to support offshore survey, ROV, IRM, positioning, environmental and subsea construction sectors.

As an innovative company, STR understands the importance of developing new technology and delivering class leading services to give our customers the very best solutions.

## FLOODED MEMBER DETECTION

Flooded Member Detection (FMD) has long been the method of choice for the inspection and monitoring of subsea structural members for the detection of water ingress. FMD inspection technique can also be applied to locating blockages in pipelines as a result of pigging or silt build up.

STR offers its clients the 'STR SeaGamma' and 'STR SeaSonic' FMD Technology to provide a turnkey solution for gamma radiation and acoustic inspections.

## ABOUT STR SEAGAMMA FMD

With climate change warming our coastal waters, progressive marine growth means traditional methods of NDT inspection can be costly and inefficient.

### STR SeaGamma FMD System

The STR SeaGamma FMD standard system has been designed by STR's R&D team to rapidly survey components up to 2m diameter from an inspection or workclass ROV and requires no marine growth removal to deliver results. The STR SeaGamma FMD 'Ultra System' can be deployed from larger workclass ROVs and is capable of surveying components up to 3m in diameter. Both systems have the ability to measure and report the quantity of water contained within a partially flooded member.

### STR SeaGamma FMD Acquisition and Reporting Software

To complement the systems, STR has developed its own acquisition and reporting software packages in which all as built data is logged into the software prior to survey. The components are then grouped in sizes relative to the frame configuration to generate an efficient inspection programme.



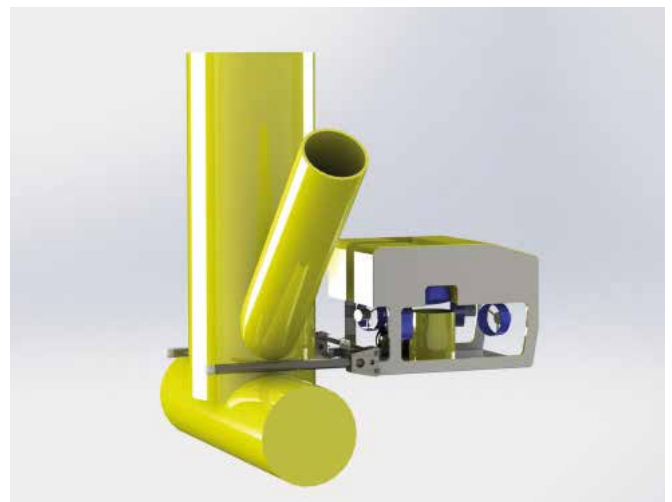
Calibration of air and water counts taken prior to each dive are entered into the software which then provides the operator with a real time predicted dry or flooded status. At this moment, the operator will be given an unambiguous diagnosis of each component, which is automatically logged into the software for post inspection reporting. Any anomalies found are discovered real-time, with a detailed report supplied post survey.

## CONCEPT

Unlike most ultrasonic systems that are commonly available in the market, STR SeaGamma FMD System is based on the use of low level collimated gamma radiation for efficient FMD inspection. Our deployment frame can easily be configured for horizontal and vertical components of different sizes.



The mechanically robust FMD system has two arms. In one is a double encapsulated Caesium 137 source protected in a custom designed Tungsten collimator for improved safety. This sends out a narrow beam to reduce unwanted gamma exposure. In the other arm lies the scintillator Gamma radiation detector. This high-sensitivity detector is capable of more than 1 million counts per second. All the electronics are protected and concealed in the arms.



*“The system has a number of tangible benefits. Importantly, there is no need to clean away marine growth build up from the members prior to the survey, with the result that the readings are fast and reliable. Operators can get a reading and a status report within seconds. This makes the SeaGamma technique particularly cost effective.”*

## METHOD

The deployment frame should be radial to the component and as low as operationally possible to vertical and vertical diagonal members.

An adjustable frame is attached to a host vehicle, using a supplied installation skid. Alternatively, a ROV mounted rotator can be utilised. The rotator offers more flexibility and efficiency, resulting in a reduction in ROV recovery time for frame adjustments.

System power consumption is low, requiring a nominal 24 VDC from the host vehicle. A range of standard communication protocols are supported for telemetry.

## STR SEAGAMMA FMD PACKAGE

- SeaGamma Flooded Member Detection System
- Qualified Flooded Member Detection Operators
- PC complete with advance acquisition and processing software
- Radioactive source mounting frame for host ROV
- Fully certified gamma sources, documented in accordance with current regulations
- 100% redundancy of equipment spread
- Flooded Member Detection Reporting Offshore and Onshore

*“Our team of professionals carry substantial experience in this vitally important field of inspection.”*

## ABOUT STR SEASONIC FMD

The STR SeaSonic Acoustic Flooded Member Detection System is a bespoke development providing the optimal accuracy and reliability attainable for acoustic flooded member detection. The system draws from experiences gained with the field proven STR SeaGamma FMD system. Unlike the STR SeaGamma system the STR SeaSonic system does not require the use of ionising radiation, this aids handling and transportation.

The system is typically ROV manipulator mounted, utilising the STR designed mounting and alignment tools. This arrangement may also be supplemented with video camera recording and laser guided alignment. Unlike SeaGamma, the SeaSonic requires localised cleaning of marine growth from the member for correct operation.

Diver deployment is also supported as the active transducer head is highly compact and manoeuvrable.

The STR SeaSonic is particularly well suited for use on very large member sizes not supported by gamma radiation systems. It is equally well suited to inaccessible or very small members where gamma based systems have restricted access.

Much like the STR SeaGamma, the STR SeaSonic system is provided with highly comprehensive software allowing job planning, data acquisition, display, recording and report generation. The reports generated can be easily compiled along with SeaGamma reports should both systems be used during the inspection campaign.



# STR

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