LASH FIRE

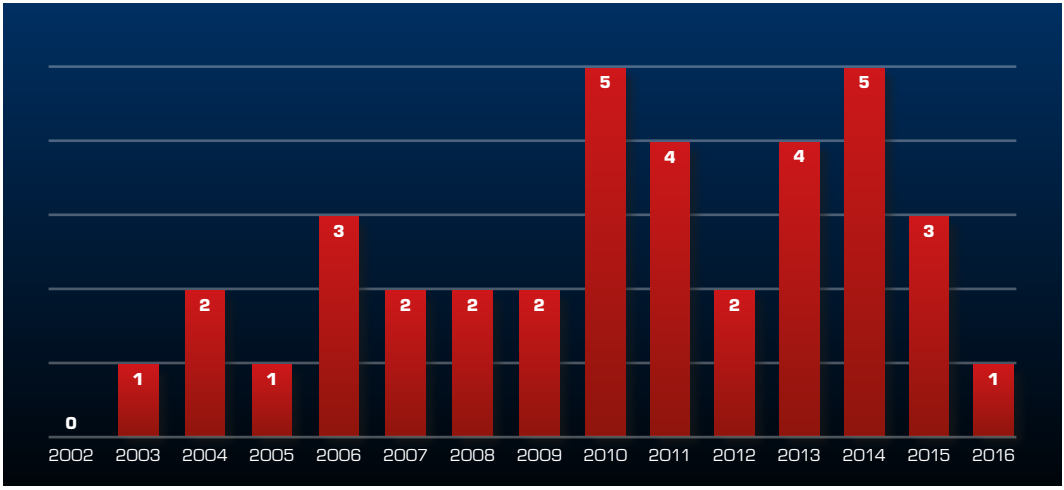
Legislative Assessment for Safety Hazards of Fire and Innovations in Ro-Ro Ship Environment

Enhancing fire prevention and ensuring independent management of fires on ro-ro ships in current and future fire safety challenges

The challenge - why LASH FIRE?

There has been a large number of significant ro-ro ship fires in recent years, establishing a trend which shows no signs of diminishing. This has led to a call for improved prevention and management of fires on ro-ro ships.

Ro-ro space fires (ro-pax)



Source: Leroux et al. (2018). FIRESAFE II Detection and decision. Lisbon: EMSA

Approach

LASH FIRE aims to provide a recognized technical basis for the revision of international IMO regulations, which greatly enhances fire prevention and ensures independent management of fires on ro-ro ships in current and future fire safety challenges.

"LASH FIRE will significantly reduce the occurrence of fires on ro-pax ships, ro-ro cargo ships and vehicle carriers; we will increase the proportion of fires detected and controlled at an early stage, and we will improve the independent fire management capabilities on board."

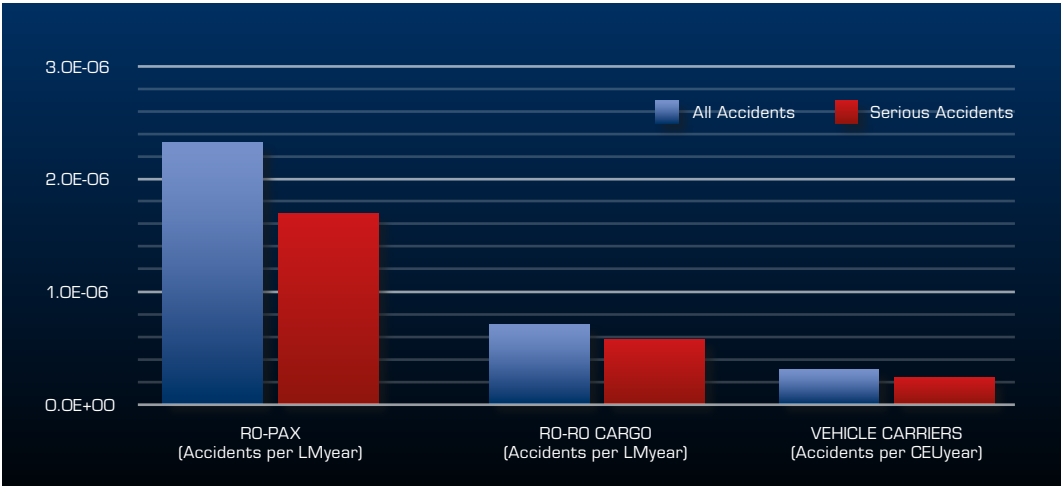
Franz Evegren, Coordinator of the LASH FIRE project

The potential risk reduction offered by the developed solutions will be balanced against effects on the environment, cost and crew operations to ensure that the fire protection on ro-ro ships is robustly enhanced from a sustainable, practical and long-term perspective.

Frequencies of fires - findings from LASH FIRE

- Fires in ro-ro passenger ships are way more frequent than on the rest of the fleet.
- The results obtained by the LASH FIRE study are in the same order of magnitude as those of previous studies on fires in ro-ro spaces (FIRESAFE II, DNV-GL).

Frequency of fires 2002 - 2018



LASH FIRE chose not only to compute frequencies in Shipyears, but also in Lane Meter Years and Car Equivalent Unit Years. In this way, returned frequencies take into account each ship's capacity.

IN RO-RO PASSENGER SHIPS	Exposure time (LMyear)	Number of accidents	Fire frequency - All accidents ($LMyear^{-1}$)
Closed ro-ro space	1.0E+07	24	2.4E-06
Open ro-ro space	1.7E+06	5	3.0E-06
Weather deck	1.2E+06	1	8.6E-07

Fires are slightly more frequent in open ro-ro spaces. Despite a much higher representativeness of closed ro-ro spaces in the fleet, the likelihood of ignition for one unit of open ro-ro space is slightly higher than for one unit of closed ro-ro space.

For further information see Deliverable D04.2 publicly available on the project website.

Developing and demonstrating 20 innovative Risk Control Measures for effective fire protection on ro-ro ships

WP06 Effective Manual Operations

- 6-A Manual screening of cargo fire hazards and effective fire patrols
- 6-B Quick manual fire confirmation and localization
- 6-C Efficient first response
- 6-D Effective and efficient manual firefighting

WP07 Inherently Safe Design

- 7-A Improved fire detection system interface design
- 7-B Efficient extinguishing system activation and inherently safe design
- 7-C Firefighting resource management centre

WP08 Ignition Prevention

- 8-A Automatic screening and management of cargo fire hazards
- 8-B Guidelines and solutions for safe electrical connections
- 8-C Fire requirements for new ro-ro space materials

WP09 Detection

- 9-A Detection on weather deck
- 9-B Detection in closed and open ro-ro spaces
- 9-C Technologies for visual fire confirmation and localization

WP10 Extinguishment

- 10-A Local application fire-extinguishing systems
- 10-B Weather deck fixed fire-extinguishing systems
- 10-C Updated performance of alternative fixed fire-fighting systems

WP11 Containment

- 11-A Division of ro-ro spaces
- 11-B Ensuring safe evacuation
- 11-C Safe design with ro-ro space openings
- 11-D Ro-ro space ventilation and smoke extraction

Ship Integration:

Ro-ro ships representative of the world fleet serve as a development and evaluation platform for integration assessments, fire simulations, performance evaluations of new solutions and cost estimates. The selection primarily considered the arrangement of ro-ro cargo holds and passenger and cargo capacity compared to the statistical data of the world fleet. Three types of ro-ro ships are assessed:

Generic Ships

Ro-Pax:
Stena Flavia
operated by Stena Line

Ro-ro Cargo:
Magnolia Seaways operated by DFDS

Vehicle Carrier:
Torrens operated
by Wallenius Wilhelmsen

The operators of the ships are participating in the project and:

- support the development of safety measures
- evaluate the proposals and
- indicate the implementation conditions and costs.

Formal Safety Assessment

Cost and effectiveness evaluation

Each proposed Risk Control Measure (RCM) is applied to the generic vessels and Impact on ship fire safety and its operations and associated costs are established. During this procedure the 15 most promising proposals to bring forward will be selected.

Cost-effectiveness assessment

An evaluation of each Risk Control Measure, in line with IMO Formal Safety Assessment (FSA) procedures, will be carried out within the project. This includes the development of a ro-ro fire risk model and a cost-effectiveness assessment of each Risk Control Measure.

Development of new proposals for regulation

Risk Control Measures with sufficient cost-effectiveness will then be expressed as regulation proposals for amendment to applicable regulatory instruments. These proposal will be fed into the IMO regulatory process.

Communication and Co-operation

Advise / Concensus

A twelve strong Maritime Operators Advisory Group (MOAG) was established, consisting of nine ship operators, one shipyard and two companies which supply equipment and services to the ferry business.

MOAG
Maritime
Operators
Advisory Group

DFDS, Stena, Wallenius Marine, Balearia, BCFerries, Caledonian MacBrayne, Condor Ferries, Flensburger Schiffbau-Gesellschaft, Grimaldi Lines, MOL, Scandlines, 9b Spies, RelyOnNutec Fire Academy, Cefor, IGP&I International Group of P&I Clubs, IUMI International Union of Marine Insurance

MOAG facilitates dissemination of results to, and feedback from, the group to ensure:

- practical feasibility and
- broad acceptance of new technology solutions and ultimately
- new regulations by the end-users

Further engagement comes from twelve IMO Member States or their nominated Recognised Organisations (ROs) in the Maritime Authorities Advisory Group (MAAG).

MAAG
Maritime
Authorities
Advisory Group

BE, FR, SE, UK, DE, FI, IT, NL, NO, PA

BUREAU VERITAS S.A.

European Maritime Safety Agency

RINA

The main aim of the MAAG is to allow for review of project results and discussion of regulatory aspects and solutions prior to communicating them to IMO. This will facilitate;

- a wide support and
- gain consensus of the findings which
- increase the probability of formal implementation.

The project consortium

25 partners from 13 EU countries aim to develop and demonstrate 20 new procedures and technical innovations to strengthen the independent fire protection of ro-ro ships.

Sept 2019 – Aug 2023

25 partners
13 EU countries

Budget: EUR 13.5 M
Funding: EUR 12.2 M

Instrument: Innovation Action (IA); Programme: H2020-MG-2018-2-2
Call topic: Marine Accident Response, Subtopic C
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