



Surfacing System for Ship Recovery

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SUSY Goal

Technologies, systems and procedures for preventive and emergency post-accident interventions on vessels.

- *SUSY aims at rapid, effective and safe detection, notification and interventions on **vessels in emergency situations** (e.g. capsized ships, oil spills). This includes the development of technologies, systems and procedures for accident preventive intervention on vessels*
- *Concerning operations at sea, the research will for example address the **integration of underwater robotics, advanced sensing and tooling for effective interventions in wrecks and prevention of oil spills.***
- *Activities will also include the **development of accident modelling and simulation tools** for impact prediction and intervention definition in real time.*

Information from the Call Topic 2008

SUSY: Objectives

The development of a combination of **satellite booster technology** with **air pressure systems** and **balloon technology** to create a multi purpose modular system for ship rescue purposes.

Different application scenarios are envisaged,

- **preventive installation** of rescue systems on ships with hazardous cargo
- equipment for coast guard and rescue squads to quickly **stabilize capsized ships**
- equipment for teams to **lift sunken ships**

Finally SUSY will build a **prototype to proof the concept** in real sea test

Analysis of accidents: Fishing vessels

- Each year there is an average of **24,000 fatalities and 24 million non-fatal accidents**
- The fishing fatality rate is estimated at **80 deaths/100,000 individuals per annum**, which is **79 times higher than the overall occupational fatality rate**.
- It is estimated that there are some 4 million fishing vessels operated globally, 1.3 million decked vessels and 2.7 million un-decked vessels; about 15 million people are employed aboard fishing vessels and about 98% of these people work on vessels less than 24m in length. In 2006 the total **EU fishing fleet was 89,666 vessels**.
- The risk of a fishing accident in EU waters is 2.4 times greater than the average of all EU industry sectors.

Application case: Fishing Vessels

- **Characteristics:** Capsized and foundering is a very fast process
- SUSY system installation fixed on board (outside)



balloon

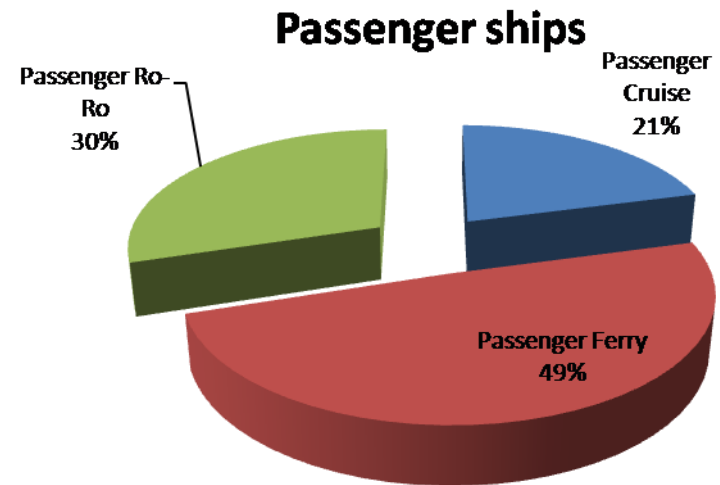
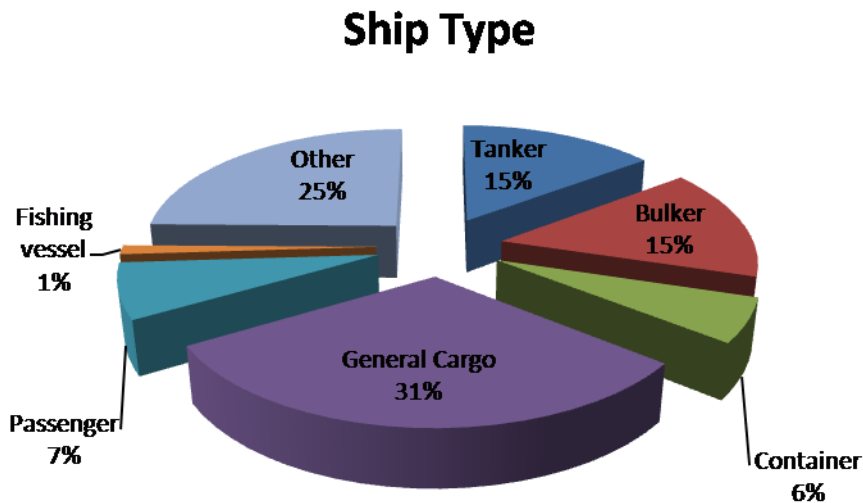


Surfacing with balloons

Analysis of accidents: Ship Types

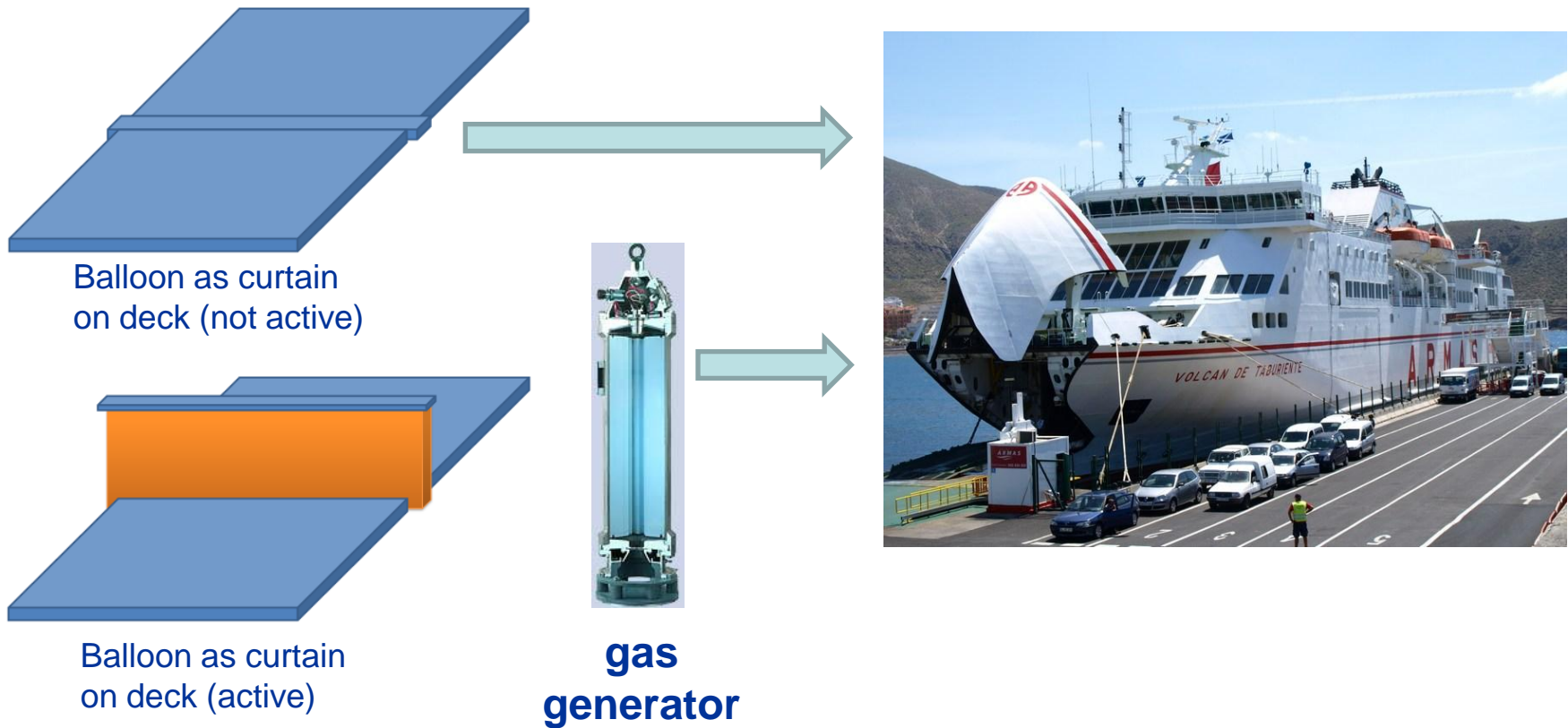
Grouping of similar kinds of ships under the same heading

- chemical, gas, crude oil, etc., tankers are grouped under the category “**Tanker**”;
- passenger ferries, catamarans, etc. they were all grouped under the category “**Passenger**”.
- The group “**Other**” contains tugs, dredgers, barges, etc.



Application case: RoPax Vessels

- **Characteristics:** Stabilization after collision
- SUSY system installation fixed on board (inside)



Project Challenges

The technical challenges where research is needed to develop the envisaged systems are:

- developing a **hydro-dynamical model** for the different possible scenarios
- developing a thermo-dynamical model as basis for a **controlled process** under the different scenarios foreseen
- find the **right material** to cope with the pressure the temperature and the dynamic loads of a rescue scenario
- define a **life-cycle cost model** to assure the design of a low cost modular system
- **simulate the different scenarios** to provide input for the design optimisation
- **develop fitting technologies for submarines** to apply the SUSY system to sunken vessels
- **test of the fitting technologies** with available submarines
- **develop and test the system** based on liquid or solid fuel boosters combined with air pressure and new balloon textile technologies.

Project Partners



Thank you for your attention

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