

Publishable summary

The propagation of spillages is one of the biggest environmental problems after a ship disaster. Instead of cleaning the dirty areas the system developed by the SUSY project will avoid the spillages by stabilizing vessels immediately after an accident. Additionally the same technology can be used to lift sunken vessels by spending less effort than today.

The SUSY concept bases on the following main technologies:

- Gas generators to produce high amount of buoyancy in a short time;
- High pressure air devices to stabilise the buoyancy for a longer time period;
- High tech textiles for balloons for the buoyancy gas;
- Underwater vehicles to attach the SUSY devices to a sunken vessel;
- Simulation technologies to predict the behavior of the ship with the operating SUSY system.

The combination of these technologies creates a multipurpose modular system for ship rescue purposes. Four different application scenarios have been defined within the project:

- Tankers: Preventive installation of rescue systems on ships with hazardous cargo;
- RoPAX: Equipment to quickly stabilize capsized ships;
- Fishery vessels: On board fixed equipment for teams to lift sunken vessel;
- Salvage teams: Moveable equipment for teams to lift sunken ships.

The target of the project was to make the SUSY system applicable for these scenarios. It was clear that not all scenarios can be tested under real life conditions in open water tests. Therefore only the tanker and the salvage team applications have been selected for open water tests. The other two scenarios have been analysed theoretically.

The first project phase was focusing on emergency scenario definitions based on real cases and on the feasibility study for the different components as well as for the integrated system.

The second phase was essentially characterized by the detailed concept definition, system design and the preparation of the demonstrator. These tasks were accompanied by the simulation tools in different fields and life cycle cost calculations for the whole system. The different components (balloons, gas generators, high pressure air installations) have been developed based on the requirements analysis for the different scenarios. The components have been assembled and tested. The tests have shown some difficulties and some areas for improvements.

The test experiences were the basis for further system developments and for a six months extension of the project. This report covers the work during the extension phase of the project. The improved system has been successfully tested for one week in Greece in September 2012. The project has been finished in February 2013 with very good results and solutions.