

Fire safety important for lightweight structures at sea

LASS (*Lightweight construction applications at Sea*) is a recently started project that will, as part of its work, investigate the fire risks associated with various lightweight concepts for ships. The project brings together several Swedish shipping lines, shipyards and ship designers, together with the defence industry and various industry organisations. It also includes other research institutes (SICOMP and SSPA) and universities (Chalmers and the Royal Institute of Technology). The project, which is coordinated by SP, will run for three years, with financing from the Swedish Agency for Innovation Systems and the participating companies.

The Swedish merchant marine sector is an important part of Swedish industry. Turnover in 1998 amounted to no less than SEK 45 000 million, spread over about 500 companies with a total of about 27 000 employees (SOU 1998:129). At the same time, about a further 33 000 persons were indirectly dependent on the Swedish merchant shipping industry (the engineering industry, transport industry, petroleum industry etc.). However, this is a sector exposed to severe competition, and so it is important to support the development of new technology.

Lightweight products and lightweight designs are becoming increasingly important for the transport industry, not

least in the marine sector. Composites or aluminium materials are used in order to reduce weight and for the construction of high-speed vessels. The lighter a vessel, the more it can carry, or the less energy it requires for propulsion. Replacing conventional materials by lightweight materials in ship superstructures lowers the centre of mass, in turn allowing either the amount of ballast to be reduced or for it to be replaced by useful cargo capacity. Reduced fuel costs also bring major environmental benefits. However, the development and use of lightweight materials at sea is being impeded not only by various technical problems but also by classification and design rules that are based on the use of steel.

Fire safety requirement restrictions

The major obstacle in the way of greater use of lightweight materials at sea is the requirement for fire safety. Lightweight materials generally have lower fire resistance than conventional steel, and they can in fact also make a direct contribution to a fire if, for example, plastic materials are used. However, various means of improving fire safety are available, and will be investigated in this project.

The main objective of the project is to develop and demonstrate methods of using lightweight materials and lightweight designs in ships and small craft. Combinations of steel, aluminium and composites



will be investigated. Vessel types in which use of the various material combinations could be of interest include ro-ro vessels, high-speed passenger ferries, fully composite vessels (e.g. stealth-type naval vessels) and smaller tankers. However, it is hoped that some of the results of the project will also be able to benefit the recreational craft sector.

Further information can be obtained from www.lass.nu or from Tommy Hertzberg at SP Fire Technology.

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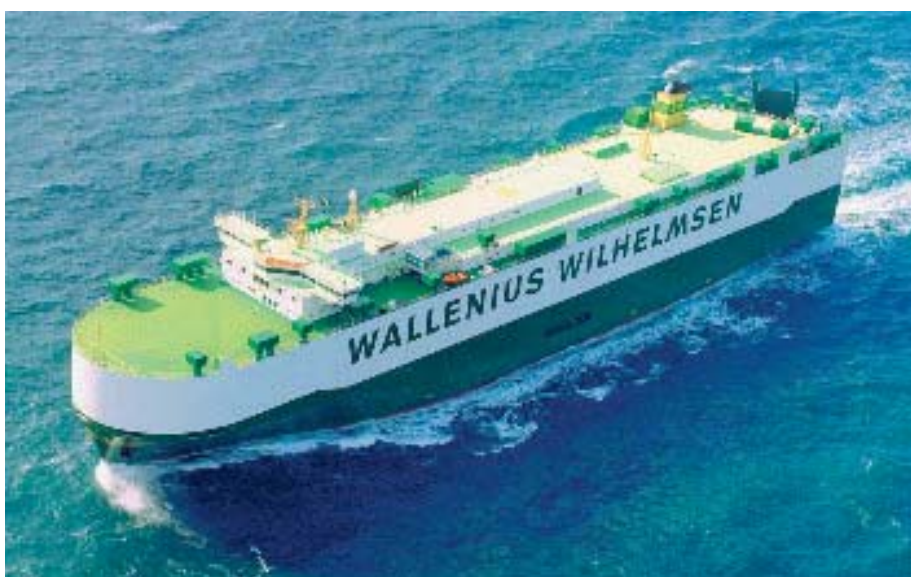
New version of BRANZfire



A new version of the BRANZfire simulation program is now available. The program is intended primarily for simulation of room fires, and is unique in that it combines a zone model with flame spread models for surface materials. The program runs in Windows, and is very user-friendly.

The full version is available for a free 60-day trial period from <ftp://ftp.sp.se/public/SP-Fire%20download/Branzfire>. Universities have free access to the program on request. New features of the latest version include the ability to estimate the quantity of hydrogen cyanide (HCN) in fire gases. The program has been developed by BRANZ, the New Zealand equivalent to SP.

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Ro-ro vessels could benefit from lightweight structures, enabling more cargo to be carried.