

Press release

Title of Research Project: LNG – COMSHIP:

Implementation of LNG fuel in commercial ship propulsion plants



The research project LNG-COMSHIP is implemented under the Bilateral R&T Cooperation between Greece and China 2012-2014, under the National Action "Bilateral, Multilateral and Regional R&T Cooperation" of the General Secretary of Research and Technology and co-financed by the European Regional Development Fund (ERDF) of the European Union and by National resources. The partners of the project is the Hellenic Register of Shipping S.A. (HRS) and the Department of Naval Architecture of Technological Educational Institute of Athens (TEI-A). As for the Chinese side there are two partners, the Harbin Engineering University (HEU) and the China International Marine Containers (Group) Ltd. (CIMC).

The start date of the LNG-COMSHIP project was the 01/12/2012, while the project was completed on 30/11/2015, whereas from the Chinese side is expected to be completed in March 2016. The coordinator of the project is the Hellenic Register of Shipping (Mr. K. Krimitzas), while the project scientific supervisor is Dr. G. Theotokatos from the TEI-A. The Chinese side scientific supervisor is Dr. Ding from the HEU.

The basic concept of the present work was the development of new technology and technical Regulatory framework for conversion of the existing shuttle ferries and containerships in order their diesel propulsion plants to operate on either using liquefied natural gas (LNG) or Diesel fuel. Two types of ships were involved; open type ferries and large containerships. The Greek side focused on the shuttle ferries operating on (Greek) domestic routes and the Chinese side on the containerships operating on national and international routes. The study included the modifications on the ship propulsion installation, the auxiliary systems and machinery required for the storage and use of liquefied natural gas as fuel for ships, the additional requirements for the ship safety systems, the regulations required at national and international level for the operation of ships with LNG fuel, the land based installations and the means for LNG bunkering and the economic – environmental impact assessment of the proposed conversion.

The results of the project can be summarized as follows:

- Full set of plans and procedures required for an open type ferry to be issued a conversion permit towards the conversion of her propulsion plant into a dual fueled Diesel-LNG engine. Development of new technical Rules and Regulations governing the conversion of open type ferries and operate their main propulsion engines on either natural gas or diesel fuel.
- Theoretical and experimental investigations of the parameters affecting the Diesel-LNG fueled engine performance (power output, emissions etc.).
- Theoretical investigation of the critical parts/assemblies of the LNG fueling system (i.e. storage tanks, piping, cryogenic system, gasification system etc.) for open type ferries and containerships.
- Technical requirements and specifications of ship safety arrangements (i.e. fire fighting, gas detection, ship evacuation etc.).
- Investigation of LNG bunkering alternatives at national (Greece-China) and international level.
- Estimate the cost effectiveness of the proposed schemes for the Greek and Chinese sides.
- Environmental evaluation of the proposed schemes (gaseous emissions, EEDI, EEOI).

During the project, a workshop organized during the International Maritime Exhibition "Posidonia" on 05.06.2014, in order to present project results with more than 500 participants.

By participating in this project, significant experience was gained in all areas related to the procedures for converting propulsion plant to dual fuel type LNG - Diesel, as well as in areas related with storage systems, power supply and safety. The results of the program will be able to cover future needs of the shipping industry for the design, construction or conversion of ships that use LNG as a fuel. In particular, the Hellenic Register of Shipping, having strong background in open-type F/B ships, had the opportunity to acquire technical expertise in procedures related with to design and approval of conversions for use of LNG, while the TEI-A enriched his knowledge in basic and applied research areas.

On 14/12/2015, a project meeting will be held between Greek and Chinese partners of the project at the offices of the Hellenic Register of Shipping. More information about the LNG-COMSHIP project can be found at the websites (www.hrs.gr/Contents.aspx?CatId=63 and www.na.teiath.gr/lngcomship).

Hellenic Register of Shipping

Piraeus

11/12/2015