

FINCANTIERI AND CNR: INNOVATION IN THE MARITIME FIELD

Trieste, June 18, 2019 – Fincantieri and the National Research Council (CNR) presented the results of six multidisciplinary research projects, in a program aimed at innovation in shipbuilding supported by the Ministry of Infrastructure and Transport.

CNR performed the function of scientific coordination of the six projects, involving nine institutes of the Department of engineering, ict and technologies for energy and transport (Cnr-Diitet), one of the Department of chemical sciences and materials technology (Cnr-Dsctm) and three universities (Genoa, Trieste and Sapienza). The entire program is part of the Open Innovation strategy of Fincantieri, a paradigm under which companies develop competency networks, linking their suppliers, universities and research centers, in order to cooperate in solving complex problems. In this approach, the CNR carried out the role of innovation “hub”, serving as an “entry point” of the public research system to the industry, thus operating a function of selecting the skills and collecting the results, and coordinating, with the support of the industrial partner, the summary work of the different goals achieved in an overall road-map. In detail, the six projects of the program concerned:

- a preliminary design of the electrical systems and the electricity network of a ship whose energy is partially supplied by a fuel cell plant (“**Innovative electricity generation**”);
- software and calculation models, experimentally validated, to assess the best strategy for the ship’s energy efficiency (“**High efficiency**”);
- an intelligent cabin prototype, equipped with both environmental and wearable sensors to automatically provide customized services and applications; new "energy harvesting" technologies allow an exploitable energy recovery in various ways (“**E-Cabin**”);
- a mixed reality system, now-casting virtual systems and control systems integrated with steering and propulsion systems, providing information to support decisions of the bridge officers through virtual glasses (“**E-Navigation**”);
- a system to increase physical safety on board, including automatic drones to be used in case of a man overboard (“**Secure platform**”);
- an integrated model of energy recovery from waste produced on board (“**PiTER**”).

The results achieved with the projects meet the recent ship owners requirements related to new cruise prototypes of the Fincantieri order book. In fact, following the data presentation, the Merchant Ships Business Unit, supported by CETENA (a research and consultancy center in the naval and maritime field, part of the Fincantieri Group), CNR and the Universities of Palermo, Genoa and Naples, have launched an initiative to define the industrial project of a small-sized ship whose energy is partially supplied by a fuel cell plant ("TECBIA" project). Other companies of the Group have begun an assessment on how to best industrialize the "E-Cabin" prototype, making it available as an on-shelf product to be proposed on the current prototypes and on ships which undergo refitting activities.

Every year Fincantieri commits large human and economic resources in research and development. This effort is deemed as crucial in order to preserve the worldwide leadership in the segments in which the company operates. **In 2018, these activities entailed an investment of 122 million euros, equal to 2.2% of the Group consolidated revenues.** The strategic positioning of the company is, in fact, on high value-added naval products, tailored to meet the specific needs of the ship owners; these products represent the state-of-the-art in terms of technology and innovation, notably in the areas of emission reduction, energy efficiency, safety and security, on-board intelligence, and quality and comfort of passengers and crew.

The Department of Engineering, ICT, Energy and Transport of the CNR (DIITET), the largest of the seven departments of CNR, with about 1100 researchers, pursues a double mission: knowledge development and scientific-technological support to the business system. In the course of 2018, it developed the largest portfolio of projects in CNR, for a total of about 70 million euros.

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Fincantieri is one of the world's largest shipbuilding groups and number one for diversification and innovation. It is leader in cruise ship design and construction and a reference player in all high-tech shipbuilding industry sectors, from naval to offshore vessels, from high-complexity special vessels and ferries to mega yachts, as well as in ship repairs and conversions, production of systems and mechanical and electrical component equipment and after-sales services.

With over 230 years of history and more than 7,000 vessels built, Fincantieri has always kept its management offices, as well as all the engineering and production skills, in Italy. With over 8,600 employees in Italy and a supplier network that employs nearly 50,000 people, Fincantieri has enhanced a fragmented production capacity over several shipyards into a strength, acquiring the widest portfolio of clients and products in the cruise segment. To hold its own in relation to competition and assert itself at global level, Fincantieri has broadened its product portfolio becoming world leader in the sectors in which it operates.

With globalization, the Group has around 20 shipyards in 4 continents, over 19,000 employees and is the leading Western shipbuilder. It has among its clients the world's major cruise operators, the Italian and the US Navy, in addition to several foreign navies, and it is partner of some of the main European defense companies within supranational programs.

Fincantieri's business is widely diversified by end markets, geographical exposure and by client base, with revenue mainly generated from cruise ship, naval and offshore vessel construction. Compared with less diversified players, such diversification allows it to mitigate the effects of any fluctuations in demand on the end markets served.

www.fincantieri.com

The **National Research Council (CNR)** is the largest public research institution in Italy. It was founded in 1923 with the mission of carrying out research projects, promoting the innovation and competitiveness of the national industrial system, the internationalization of the national research system, and providing technologies and solutions to emerging needs in the public and private sector. These objectives are achieved through a wealth of human resources with over 8,000 employees, half of which is represented by researchers and technologists and another 4,000 young researchers engaged in post-doctoral research at the laboratories of the organization. CNR is first in Italy by number of spin-offs and number of ERCs (European Research Council) grants won by individual researchers. Through competitive planning and scientific and technological support for companies, CNR finances itself for 40% of its budget. In the world rankings for the scientific quality of the research institutions (Shimago Institutions Rankings), CNR occupies the eighth place.

www.cnr.it

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FINCANTIERI S.p.A. – Media Relations

Antonio Autorino

Tel. +39 040 3192473

Cell. +39 335 7859027

antonio.autorino@fincantieri.it

Laura Calzolari

Tel. +39 040 3192527

Cell. +39 334 6587922

laura.calzolari@fincantieri.it

Cristiano Musella

Tel. +39 040 3192225

Cell. +39 366 9254543

cristiano.musella@fincantieri.it

Micaela Longo

Tel. +39 040 3192247

Cell. +39 366 6856280

micaela.longo@fincantieri.it

Emanuele Macaluso

Tel. +39 040 3192667

Cell. +39 344 2737019

emanuele.macaluso@fincantieri.it

FINCANTIERI S.p.A. – Investor Relations

Tijana Obradovic

Tel. +39 040 3192409

tijana.obradovic@fincantieri.it

Emanuela Cecilia Salvini

Tel. +39 040 3192614

emanuelacecilia.salvini@fincantieri.it

Marco Pesaresi

Tel. +39 040 3192663

marco.pesaresi2@fincantieri.it

Ufficio stampa Cnr: Emanuele Guerrini, emanuele.guerrini@cnr.it tel. 06.4993.2644; **Responsabile:** Marco Ferrazzoli, marco.ferrazzoli@cnr.it, cell. 333.2796719; **Segreteria:** ufficiostampa@cnr.it, tel. 06.4993.3383 - P.le Aldo Moro 7, Roma