



# "NEW CAMELLIA"

## The Modern ROPAX Ferry Link between Japan - Korea

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### 1. Introduction

This ship is a 20 000 GT-type Ropax ferry ordered by Nippon Yusen K.K. that entered service on an international sea route connecting Japan and South Korea from 5 July 2004 under the operation of Camellia Line Co., Ltd.

The name of the ship is derived from the "camellia", which is the city flower of Pusan City, and the "Camellia sasanqua", which is the city flower of Fukuoka City. The common element shared in the names of the flowers of the two cities connected by the sea route sailed by this ship was used to name the vessel the "New Camellia."

### 2. The present state of Japan - Korea sea route

With the rapid development of information networks in recent years, there is a growing tendency to place greater emphasis on the temporal elements of marine logistics. At the same time, the needs for logistics and human transportation between Japan and her nearest neighbor, South Korea, are steadily on the rise, as can be seen in the recent South Korea "boom" in Japan, and can be expected to develop even more in the foreseeable future.

### 3. Features of the vessel

Although the construction plans for the "New Camellia" originally began with the renewal of the older features of its forerunner, the "Camellia", the concept for the new ship was aimed at significant advances of

marine transport between Japan and Korea.

In short, available cargo loading capacity has been increased while daily service could be achieved through greater service speed. The result is a state-of-the-art Ropax ferry that realizes the best in greater transport capacity and shorter transport times combined with accommodation facilities that serve as a stage for creating an elegant and comfortable voyage.

The previous sailing schedule before this ship entered service consisted of three sailings per week with an evening departure and arrival in port the following morning before the start of immigration and customs procedures at 8:00 A.M. Now, the ship departs Hakata at 11:30 in the morning, arrives at Pusan at 17:00 in the evening and then leaves Pusan six hours later at 23:00 to arrive once again in Hakata at 06:00 the following morning, comprising a daily service of six round trips each week (services are suspended during the weekend).

This is twice the number of services offered under the previous sailing schedule. When the increased container loading capacity of the ship is taken into consideration, the new service represents a 2.6 fold increase in overall transport capacity over the previous service.

The principal particulars of the completed ship are shown in **Table 1**. An overview of the general arrangements of the vessel is shown in **Fig. 1**.

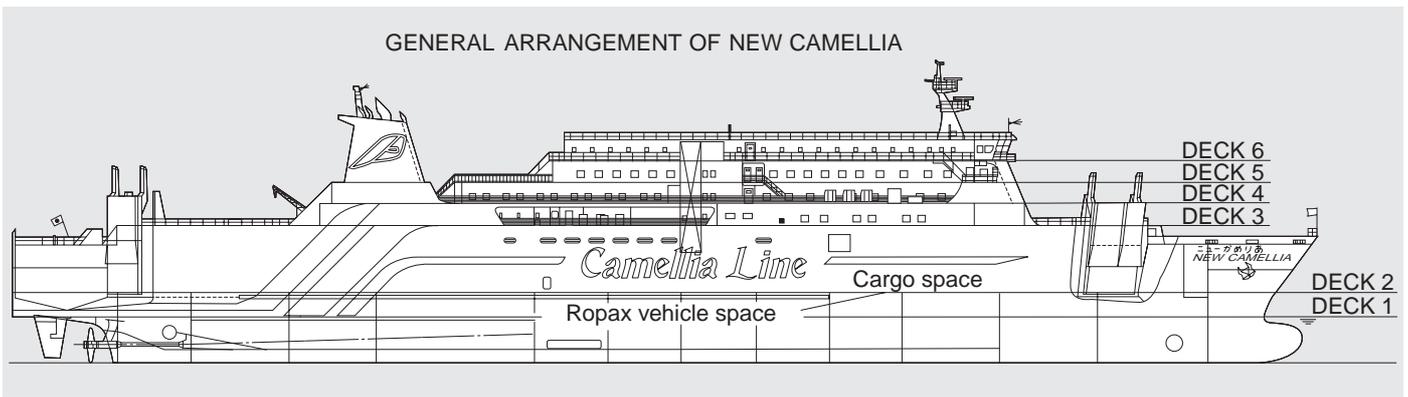
Table 1 Principal particulars

Classification	JG, International coasting service
Length overall x width x depth (m)	170.0 x 24.0 x 17.9
Gross tonnage (international)	19961
Maximum trial speed (kt)	25.9
Sea speed (kt)	23.5
Main engines	Two medium speed diesel engines 9900 kW x 520 min <sup>-1</sup>
Cargo loading capacity	40 ft container 83 FEU, 20 ft container 54 TEU, 41 passenger cars
Complement	522 passengers
Cargo handling equipment	Bow & stern side ramp: one set, each
	Inboard fixed ramp (with opening cover) : one set
Other equipment and facilities	Fin stabilizers: one set
	Bow & stern thrusters: one set, each
	Elevator: one set

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**Fig. 1 General arrangement of the ship**

This ship is a Ropax ferry with two decks dedicated to cargo space and four decks for passenger use and accommodation spaces.

### 3.1 Faster daily service

Two measures were adopted to realize faster daily service. One consists of significantly increasing the service speed of the ship from the 20 knots of existing ships to 23.5 knots, which shortens the time underway by one hour. The other measure adopted to realize faster service is the speeding up of cargo loading and unloading operations resulting in quicker turn-around times and less time in port.

The latest CFD (Computational Fluid Dynamics) techniques were used to increase the service speed of the ship, and significant efforts were made to develop an exceptional hull form with superior hull resistance performance, as well as propellers with low vibration and high efficiency. In addition, HVFC (Hub Vortex Free Cap) has been adopted with the aim of improving propulsion performance and measures have been put in place to control vortex resistance generated by the propeller boss.

### 3.2 High-speed loading and unloading

Until now, there was plenty of time to load and unload cargo from the time when the ship arrives in port in the morning and unloads its passengers and cargo until it sailed again in the evening. The timetable of this new ship, however, only allows five and a half hours at anchor in Hakata and just six hours in Pusan, while at the same time the loading capacity of the vessel is significantly greater than its predecessor.

Side ramps have been installed in each side of the bow and stern of the ship to facilitate high-speed loading and unloading of cargo. Two 40 ft containers can be either on or offloaded simultaneously using a trailer chassis through these ramps. As can be seen in **Figure 2**, the containers that are carried onboard the ship are efficiently loaded with a large fork lift known as "Top Lifter."

The height of the cargo space is 8.7m, which is equal to the height of the two trailer decks of conventional domestic ferries. This makes it possible to double-stack 40 foot containers in the cargo space using a forklift.

In addition, pillar structures that support the upper deck and exhaust pipes from the machinery space are not arranged in the central part of the cargo space. This has made it possible to use the resulting vast cargo loading area more effectively, and loading of 220 twenty-foot containers is realized. This has resulted in an increased cargo loading capacity of 30% over the previous vessel and the realization of a system for completing loading and unloading operations within the shorter times that the ship is anchored in port.

In addition, Deck 1, which is one deck below the cargo loading space for containers and trailers, is dedicated to the carriage of passengers vehicles. This separation of cargo and passenger vehicles helps to improve loading and unloading efficiency.

### 3.3 Accommodation space plan

The plan for the accommodation space consists of four decks arranged from Deck 3 up to Deck 6. Deck 3 is a public space for passenger use, while Decks 4 and 5 are passenger cabins. The uppermost deck, Deck 6, is for the exclusive use of the crew. The accommodation space plan includes a wide range of amenities and facilities. They have been arranged to accommodate the various needs of the passengers under the concept of "a trip begins with a steam whistle."



**Fig. 2 Loading and unloading cargo with the "Top Lifter" cargo forklift**

This ship is capable of double stacking 40 foot containers in the cargo space, something that could not be done by previous ferries.



**Fig. 3 Entrance (Deck 3)**  
A wedding can be held in the entrance which can be said as the face of the subject vessel.



**Fig. 4 View of a deluxe cabin (Deck 5)**  
This cabin is comfortable, and has accommodation facilities comparable to those found onboard luxury passenger ship.

In particular, this includes a grand entranceway on Deck 3, the public space for passengers, that can be used for weddings, as shown in **Figure 3**, as well as a restaurant, grill, promenade, salon, television theater, game corner, karaoke room, view bath, duty-free shop, and an information desk, amongst other facilities. The ship is also graced with passenger accommodations that provide superior comfort, such as the deluxe cabin shown in **Figure 4**. Furthermore, the ship is designed considering the Japanese law on barrier-free access. Careful attention has been paid to the free movement of persons of limited mobility, such as disabled person and aged person, while onboard.

#### 4. Conclusion

It is expected that the exchange of people and material between Japan and various countries in Asia across the sea will increase more and more from now on, including the sea route between Japan and Korea serviced by this vessel.

MHI is dedicated to doing its part to contribute to the development of the Asian region through ferry-RORO ship technology, which is the core model of the Shimonoseki Shipyard & Machinery Works.



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