
ITALIAN CRUISE-SHIP PRODUCTION BY FINCANTIERI

This appendix documents discussions with the Italian shipbuilder Fincantieri. Fincantieri Cantieri Navali Italiani S.p.A. is the primary ship-construction company in Italy, building both commercial and naval ships, and is one of the world leaders in the design and construction of cruise ships. It can trace its lineage back almost 200 years and has constructed over 7,000 vessels of all types. The current company was first established in 1959 as a holding company for the shipbuilding sector within the IRI Group.¹ It was converted to an operating company in 1984 under its current name and currently operates two separate divisions, one dedicated to designing and building commercial ships and the other to designing and constructing military ships for the Italian Navy and for sale to other countries. A third division, specializing in diesel-engine design and construction, has recently spun off as a separate company.

The company is owned by the government but is operated as a commercial business (similar to a government-owned, commercially operated [GOCO] organization in the United States).² The company operates several shipyards throughout Italy, employing approximately 9,500 people, including 550 managers and design engineers at the Trieste headquarters. Although the workforce has been reduced in the past 10 years, production, especially in cruise-ship construction, has increased. Fincantieri currently has approximately 40 percent of the world cruise-ship-construction business (measured in number of beds) and 15 percent of the European commercial market.

Fincantieri's decision to reenter the passenger-ship business at the end of the 1980s, after a 25-year absence, proved just in time to catch a rising tide of orders for very large cruise ships accommodating thousands of passengers. Fincantieri has also been helped by the weak Italian lira, which has allowed it to undercut

¹IRI stands for *Istituto per la Ricostruzione Industriale*, the largest Italian industrial conglomerate owned by the state.

²Although government-owned, the company is not subject to civil service personnel rules and policies. It uses commercial business practices to reduce or expand its labor force.

not only the Finns but other rivals in Germany and France. During 1990–1995, Fincantieri showed a positive return on investment, from 2.2 percent (in 1990) to over 10 percent (in 1995).

As with other European countries, Fincantieri receives a subsidy of approximately 8 percent. However, this subsidy is scheduled to be eliminated in 1998. Also, company leaders consider themselves somewhat disadvantaged in the commercial shipbuilding market, since one of their major competitors, Meyer Werft, receives a higher subsidy for performing some construction in East Germany (where higher subsidies are permitted in order to encourage economic development of former Soviet Bloc countries) and since financing is more difficult to obtain in Italy than in Northern European countries.

Fincantieri's Naval Shipbuilding Division has headquarters in Genoa and operates shipyards at Muggiano and Riva Trigoso, both on the Mediterranean coastline of northern Italy. It has constructed all types of ships for the Italian Navy, including the aircraft carrier *Garibaldi* and submarines (both at the Monfalcone shipyard),³ plus destroyers, frigates, corvettes, and patrol vessels. Because of the reduction in naval shipbuilding programs, Muggiano and Riva Trigoso are currently building fast ferry boats for the commercial market in order to maintain workload in the yards.

While the Naval Shipbuilding Division has suffered from reduced defense spending in Italy, the Merchant Shipbuilding Division has grown in sales in the past decade as a result of the increased market in cruise ships. The commercial division operates six shipyards throughout Italy. Monfalcone and Venice-Marghera on Italy's northern Adriatic coast specialize in cruise-ship construction. Trieste and Ancona on the Adriatic coast, Palermo in Sicily, and Castellammare di Stabia on the Mediterranean coast build other types of commercial ships, including tankers and cargo vessels.

As mentioned, Fincantieri is recognized as one of the premier builders of cruise ships in the world. It builds ships for all the major cruise-ship operators and has recently won a contract from Disney for two 85,000-gross-ton⁴ cruise ships. In November 1996, Monfalcone delivered the then largest cruise ship in the world (at 101,000 gross tons), *Carnival Destiny*. Monfalcone has since finished construction on and delivered *Grand Princess* (109,000 gross tons), which surpasses *Carnival Destiny* as the largest cruise ship in the world.

³Although once prominent in the construction of naval ships because of its large dry dock, Monfalcone now specializes in the construction of cruise ships.

⁴Gross tonnage is a measure of the enclosed volume of the ship, converted to tons at 100 cu ft/ ton. It is the standard measure used for cruise ships.

The commercial-shipbuilding practices at Fincantieri are similar to the practices of other commercial yards in Europe. The shipyard views itself as building the structural (hull, mechanical, and electrical) portions of the ship; the majority of the outfitting is accomplished on a turnkey basis by subcontractors.⁵ Subcontractors and suppliers account for approximately 75 percent of the cost of the ship and concentrate on the hotel functions, such as cabins, galleys, and entertainment areas. Fincantieri works closely with the subcontractors during the design phase, specifying the customer's needs and the physical arrangements of the basic hull form and utility services.

Fincantieri has flexible and adaptable arrangements with suppliers, trying to take advantage of changing economic environments and other opportunities as they arise. It tries to have several suppliers for a given commodity, thereby fostering competition and, hopefully, lower prices. But it strives to maintain long-term relationships with suppliers, realizing that such relationships help to avoid unknowns and typically provide quality products at a fair price. It tries to purchase materials, such as pipes, and subcontractor items, such as cabins, in large quantities to again obtain lower prices. For example, the Monfalcone shipyard has relationships with four steel suppliers that provide steel plates cut to size.

Fincantieri estimates that the first of a class for the current-size cruise ships requires approximately 2 million man-hours of Fincantieri employee labor plus an additional 60 to 70 percent for subcontractors—a figure Fincantieri expects to decrease by about one-third for the second ship in a class. Construction time for current cruise ships is approximately 18 months from contract award to delivery. The approximate cost is \$15 per kilogram, based on displacement tons.⁶

Monfalcone is the largest Fincantieri shipyard in dry-dock size (350 meters long, 56 meters wide, handling ships up to 300,000 deadweight tons), facilities, and employees (approximately 2,000). In fact, we were told that Monfalcone is the largest shipyard in Europe. The steel-fabrication facility is modern, clean, and well-lighted and well-ventilated. A modern automated fabrication system (flexible automated steel prefabrication [FASPI]) uses robotic articulated single arms to weld stiffeners to the steel plate. The yard is in the process of installing a laser welding capability and a line heat-shaping facility. Although the yard uses modular construction (with an 800-ton gantry crane to place the modules into the dock), it does not pre-outfit modules to the degree that is common in other European and American shipyards. For example, electric cables are

⁵Fincantieri says that a system in which it contracts out 70 percent of the workload to a network of local subcontractors enables it to deliver ships more punctually than can its rivals.

⁶As an example, using the \$15-per-kilogram rule of thumb, we see that *Grand Princess*, which displaces approximately 28,000 tons, would have cost \$420 million. This cost metric is comparable to that of other European commercial shipbuilders.

installed after launch instead of during pre-outfitting of the modules (although cable trays are installed during pre-outfitting). Shipyard managers stated this was done since the splicing of cables was not permitted.

Other construction in current ships is stainless low-pressure piping, joined with pressed or swaged joints, which is used throughout the ships; circular, low-cross-section ventilation ducting with double-walled construction and foam insulation to reduce noise; and composite materials, which are being used experimentally in the Disney cruise ships, in one of the stacks that houses public spaces. Ship designers and builders also place great emphasis on the internal arrangements for the handling and moving of passenger luggage and ship supplies. Innovative methods make it possible to move 3,000 passengers and 9,000 pieces of luggage off and on the ship in a matter of hours.