

LUXURY LINER

with Dots of Light

It took more than two years for the French shipyard Chantiers de l'Atlantique to build the first "Millennium" cruiser for the Norwegian shipping company Royal Caribbean Cruises. On board is the fiber optic lighting technique developed by Schott.

The intention is for the giant cruise ship to resemble the legendary "Titanic" – only an even more colossal version of it. "Millennium" is the name of the latest luxury liner for cruise travelers. Indeed, before the year 2000 ended, the last joint of this giant ship was welded in one of the most famous French shipyards, the Chantiers de l'Atlantique in St. Nazaire on the Atlantic coast. The 350 million dollar passenger ship undertook its maiden voyage in June 2000. In fact, this is only the first of four "Millennium" cruise ships commissioned by the Norwegian shipping company Royal Caribbean Cruises, headquartered in Miami. The company intends to start a Northern European tour soon, and Rostock is planned to be one of the ports of call. With its amazing 294-meter length (ca. 320 yards) and 32.2-meter width (ca. 35 yards) the floating behemoth weighing 91,000 register tons will be the largest passenger ship to ever anchor in a German port.

A holiday at sea is "in"

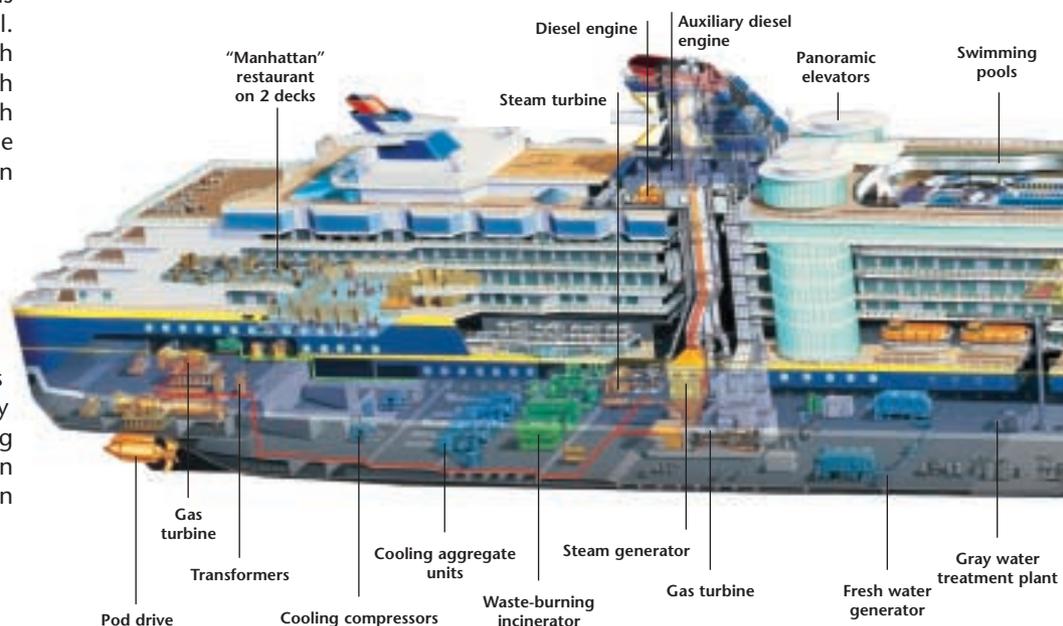
Since all ships of the Millennium class can sail in all of the world's oceans, the company will offer Caribbean as well as European cruises. A risky investment? Not at all, the shipping company expects a good return because in 1999 alone, nine million



Light dots give the piano bar a discreet atmosphere.

people went on a cruise – a holiday at sea is once again "in". So nobody gets bored on board, the "Millennium" will have not one but three swimming pools, a large disco with a capacity for

750 visitors, a two-story theater with 900 seats, a ball game court and even a golf practice course. If passengers want to go from one deck to another they take the glass elevator, which provides



Since mid-2000 sailing on the open sea: "Millennium", a passenger ship of massive proportions.

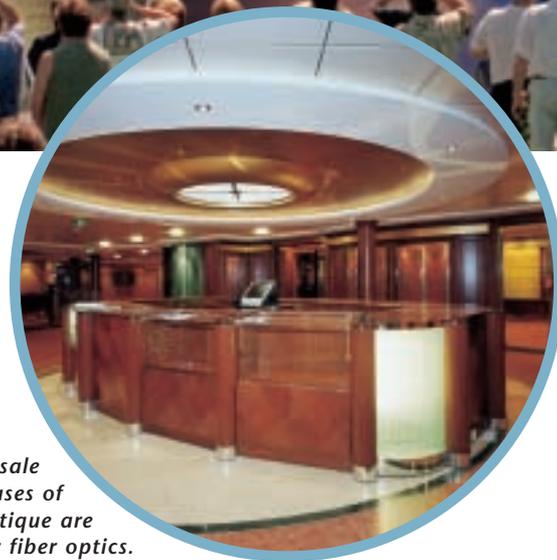


an unparalleled view of the ocean. Elegant shops, restaurants and bars round off the great number of attractions.

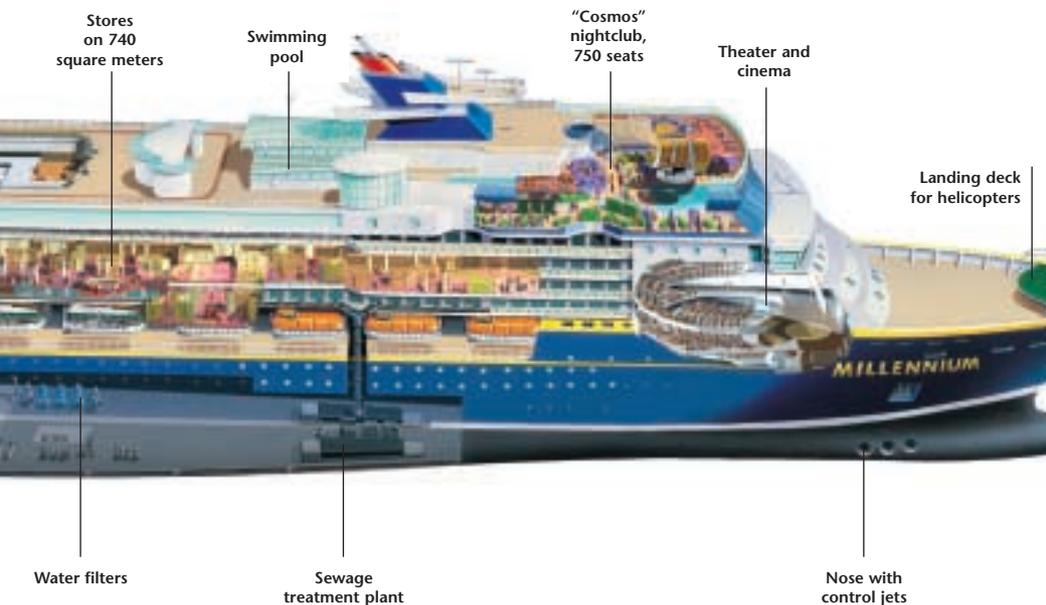
Original and easy to maintain

The furnishings in the luxury liner are modern yet nostalgic and remind of the golden age of the transatlantics. Fiber optic components from Schott provide creative lighting. The sales subsidiary

Schott France was in charge of the project. For decorative purposes, a total of 23,000 meters (ca. 25,300 yards) of glass fiber was used not only to simulate a starry sky in the theater, playroom and piano bar, but also to light the swimming pools,



The articles for sale inside the showcases of the ship's boutique are attractively lit by fiber optics.



FIBER OPTICS BRING OUT THE FEATURES

Approximately 170 generators and 23,000 meters of glass fiber allow thousands of light dots to shine in the first of four "Millennium" cruise ships. Some of the important areas of application are:

- ▶ Lighting in front of the elevators on each floor and around the panoramic elevators on decks 3 to 11
- ▶ Showcase, picture and bar lighting
- ▶ Starry sky in the theater auditorium (600 light dots), fitness club, playroom, piano bar and youth disco
- ▶ Glass rocks lit by fiber optics in the swimming pool area
- ▶ Decoration done with "Conturax" profile rods lit by fiber optics.

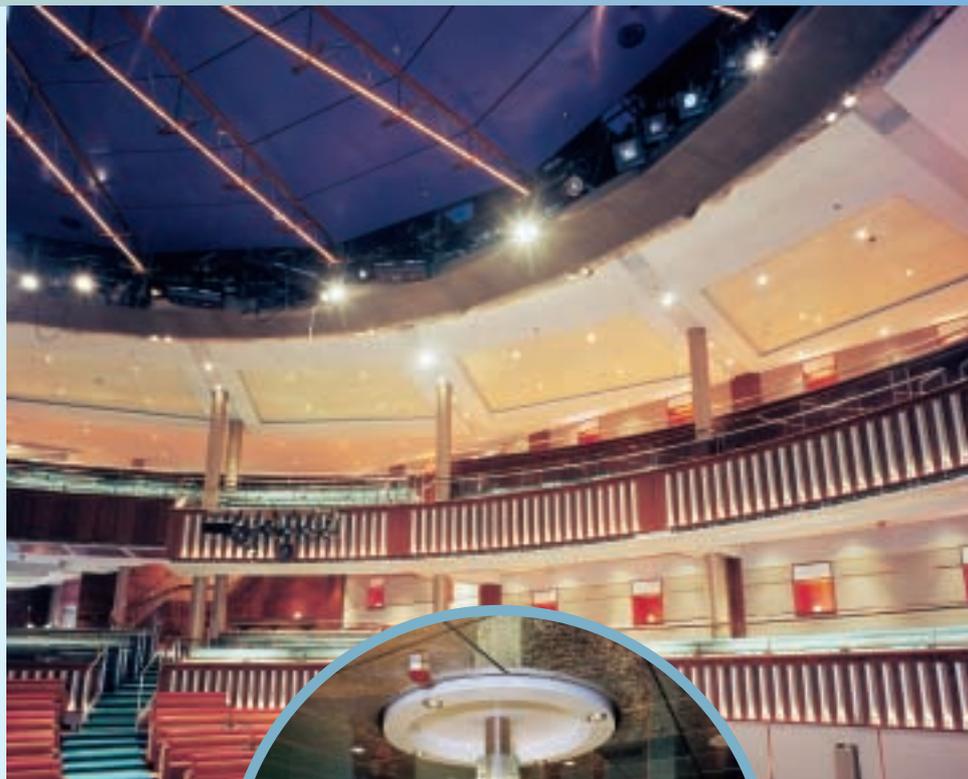


Easy servicing: Ceiling lighting with fiber optics.

aisles and showcases. The biggest advantage: extremely low maintenance costs when compared to conventional lighting systems. Since only one light source is needed to feed a multitude of light dots, this translates into significant energy savings as well.

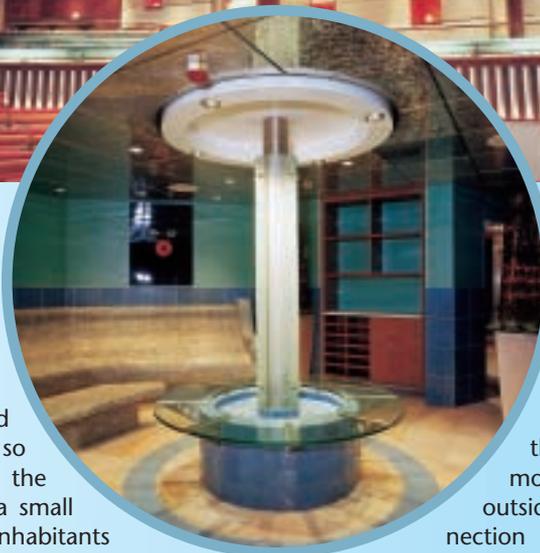
New energy concept

One innovation in modern luxury liners is the generation of electricity using the combination of gas turbines (supplied by an aeronautical company) and of steam. The system is a lot quieter, more compact and environmentally friendly, to the point that the "Millennium" can accommodate 50 additional passenger cabins! The kinetic energy from the



The starry night in the theater auditorium of the "Millennium" is made up of 600 light dots.

turbines is converted by a generator to so much power that the electrical needs of a small city of 30,000 inhabitants could easily be met! The electrical current flows along a so-called "pod system", a rather unconventional drive for cruise ships. This system was originally employed in ice-breakers: the driving motors are mounted on the exterior of the hull, under the stern, like outboard motors. The normal state of affairs is for the propellers to be connected to the engine in the ship's interior by a rigid axle drive shaft.

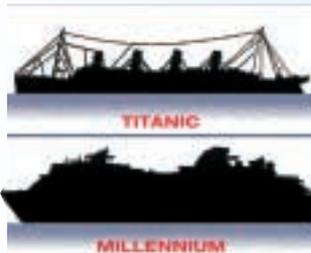


Even the well in the fitness area is lit by fiber optics.

However, since the cruise ship's motors are located outside, a rigid connection is no longer necessary: Now the propellers can rotate around their own axis. Thus, the conventional rudder becomes superfluous, making the ship highly maneuverable. So much so, that it can be parked almost like a car, allowing it to call on smaller ports. The bottom line: The shipping company can now offer more cruises.

Although the pod system allows the "Millennium" to cruise at a speed of 24 knots (about 27 mph), its regular cruising speed is 20 knots (23 mph) because the ship moves with less vibration at this lower speed. Such details are important because by the year 2005 it is expected that 50 new luxury cruise ships will simultaneously compete for customers. The "Millennium", however, stays one step ahead of the competition: Guests dining in its restaurant can admire the original wall panels from the old "Olympic" – the sister ship of the Titanic ■

Millennium: More Comfort for Passengers



Dimensions	Crew	Decks, GRT
269 m long 28 m wide 32 m high	approved for 5,016 passengers and 1,134 crew members	10 decks 46,328 gross registered tons
294 m long 32.2 m wide 62.5 m high	approved for 2,450 passengers and 997 crew members	12 decks 91,000 gross registered tons