

# Go Under Water by Submarine Bicycle

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A water-proof multipurpose submarine apparatus with bicycle-like principle of moving is created by specialists from the St. Petersburg State Marine Technical University. It is sized for **two people that can operate it without preparatory training**. Now the submarine apparatus "Goluboi Kosmos" ("Blue Space") exists only in form of a miniature work model. An estimated price of the apparatus is 19 000 USD. A ticket for a tourist will cost 50 USD per hour. Taking into account expenditures on servicing the rental station, the invested sum can be repaid in no longer than 3 or 4 months.

Only very few people can enjoy a trip into the submarine world that extends to 360 million square kilometres. Those lucky individuals are specially trained divers that have no medical contra-indications. Diving is a risky sport, where a smallest mistake can be fatal.

Some examples of tourist submarines already exist. There is an apparatus called "Mir" moving with the speed of 2-3 knots, i.e., 1-1.5 m/s, using 2-5 kW of power from accumulator battery, a bit tricky in operating and servicing, and rather expensive (from 100 to 200 thousand USD). A holiday-maker needs to be accompanied by a professional instructor in such a submarine and needs to pay up to 32 000 USD for one excursion, for example, to the sunk "Titanik".

There are other tourist submarines designed to carry 20-40 passengers and the ship crew. They are produced in the United States, Canada, and France. An average cost of such a submarine (not counting the cost of an accompanying ship or a floating dock) amounts to 2-3 million USD, and

ticket price for an hour-long cruise varies from 100 to 200 USD.

The apparatus "Goluboi Kosmos" created by the specialists from St. Petersburg is easy to operate by any untrained tourist that wants to see the submarine world. The apparatus has room for two persons and can immerse to the depth up to 30 meters. It can continuously stay under water up to 4 hours. It is moved by muscular exertions of passengers. In fact, this is a submarine bicycle, where the passengers sit on comfortable seats, press the pedals like those of a bicycle, use also hand controls, and observe the surroundings through the transparent corpus of the ship. The original construction allows for riding in water at a speed of 4-6 km/h.

The apparatus can't sink below the maximal permissible depth of immersion, being controlled by automatic gauges and emergency rise system. It is equipped also with individual surviving kits for emergency rise to the surface, though the inventors are confident that emergency risk is minimal. In addition, the apparatus is equipped with automatic, electronic, and optical devices for determining the point of location (that is necessary also for the rescue personnel) as well as radio transmitter and alarm bell.

No preparatory training is needed to operate this apparatus - the system of controls and equipment on the board are very simple. Design and ergonomics of the apparatus are similar to the interiors of modern small cars.

Of course, the submarine "Goluboi Kosmos" can be used not only for satisfying tourist curiosity. It can be employed in video survey, submarine research (including archaeological), exploration, rescuing and security services, technical inspection of underwater constructions, pipelines, etc. It is advantageous for specialists that cannot swim.

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