Indefatigable Turbine

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A new construction of the sea wave energy converter has been invented and tested on operating models, which allows getting rid of the main problem of all such converters - an extremely low service life caused by fatigue damage to the structure. We constantly hear about the pompous launch of wave energy converter projects, but we have never heard of the successful completion of bold experiments. The "Indefatigable Turbine" proposed in the project gives developers a chance to increase the service life of wave energy convertors that much that it will make them profitable. My hypothesis: a monolithic cylinder with asymmetric side chambers, without moving elements, will be subjected to periodic, but not alternating loads under the action of sea waves, which will increase its service life many times over. In order for the asymmetric chambers to emerge from the water on the leeward side of the turbine without unnecessary energy consumption, they are equipped with drainage holes through which air enters the chamber very quickly and the ballast water in the chambers does not resist the rotation of the turbine. On the windward side, where waves fill these chambers, significantly less than one percent of water will be lost through the drainage holes, which will have virtually no impact on profitability. During the work on the project, several working models were created, all experiments on which were quite successful and the hypothesis was fully confirmed - a monolithic turbine with asymmetric chambers rotates only in one direction, without experiencing alternating stresses in the structure. Since the invented turbine does not experience alternating stresses that cause fatigue failure of the structure, it was called the "Indefatigable Turbine".

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